NOTICE OF REGULAR MEETING OF THE CITY COUNCIL OF THE CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH

Public Notice

Public notice is hereby given that the City Council of the City of St. George, Washington County, Utah, will hold a regular meeting in the City Council Chambers at the St. George City Offices located at 175 East 200 North, St. George, Utah, on Thursday, November 16, 2023, commencing at 5:00 p.m.

The agenda for the meeting is as follows:

Call to Order
Invocation
Flag Salute

1. **Mayor's recognitions and updates.**

2. **Consent Calendar.**

   a. **Consider approval of a Professional Services Agreement with Civil Science for the Design of the SR-7 Trail Project.**

   BACKGROUND and RECOMMENDATION: The project consists of the design, by Civil Science, of the SR-7 Trail from I-15 to Desert Canyons Pkwy. Funding for this project comes from a UDOT grant with a 20% local match. As indicated in the attached agreement and scope of work, the proposed design services amount to $352,900. The design includes one trail bridge at Desert Color Parkway and one tunnel under the on and off ramps from SR-7 near Desert Color Parkway. Staff recommends approval.

   b. **Consider approval of an Active Transportation Cooperation Agreement with UDOT for the SR-7 Trail.**

   BACKGROUND and RECOMMENDATION: The City applied for an active transportation grant from UDOT for the design and construction of the SR-7 Trail Project from I-15 to heading east. The City was granted, along with Washington City and Hurricane City, an amount of $10,240,000 (80% of total) from the State for the project. With a 20% local match of $2,560,000 (St. George - $2,220,440, Washington - $160,160, and Hurricane - $179,400), the project's estimated cost amounts to $12,800,000. As outlined in the cooperation agreement, it is proposed that City of St. George receive the State grant and the local match funds from Washington and Hurricane to administer the project design and construction. Staff recommends approval.

   c. **Consider approval of the Seventh Amendment to the Jviation contract dated September 23, 2021 for the Terminal Reconstruction Project.**

   BACKGROUND and RECOMMENDATION: Consider approval of the Seventh Amendment to the Jviation contract dated September 23, 2021 for the Terminal Reconstruction Project. Staff recommends approval.

d. **Consider approval of an agreement with Lion Energy, LLC to provide a Battery Energy Storage System at Millcreek Generation Facility not to exceed $1,553,943.36.**

BACKGROUND and RECOMMENDATION: In the event of a transmission failure, St. George Energy Services currently uses diesel-powered generators to energize the Millcreek Generation Facility. The diesel generators are aging and inefficient. The installation of this battery would allow for the initiation of Millcreek in the event of loss of electric transmission to the area. Staff recommends approval.

e. **Consider approval to waive the fees of the St. George Sunrise Market event that is taking place each Saturday at Hela Seegmiller Historic Park located at 2592 South 3000 East, for a six (6) month trial period from March 2, 2024 - September 2024.**

BACKGROUND and RECOMMENDATION: St George Sunrise Market is a new market wanting to start up for local entrepreneurs and to bring the community together. They are asking for 1) The permit fee to be waived ($150), 2) Hela Seegmiller fee to be waived every week ($480/week), 3) any vendor fees ($5 per vendor per week), and 4) Non construction encroachment permit fee ($150/week) if needed. Staff recommends approval.

3. **Public hearing to take comments and consider approval of Resolution No. 2023-xxxR adopting the updated Water Conservation Plan.**

BACKGROUND and RECOMMENDATION: The State of Utah requires all public water providers with more than 500 connections to file a Water Conservation Plan. It has to be updated every 5 years. The plan was last updated in 2018 and is due to the State by Dec 31, 2023. Staff made a presentation to the council earlier this year regarding a general update to the plan. The first draft was submitted to the State and this draft incorporates the comments from the Division of Water Resources. Staff recommends approval.

4. **Consider approval of Ordinance No. 2023-036 amending the existing Rillisante Villas Planned Development Residential (PD-R) zone on approximately 24.10 acres to amend the approved Rillisante Villas development with conceptual site plan and elevations, located generally on the west side of the intersection of Canyon View Drive and Gap Canyon Parkway to be known as Rillisante Villas with conditions from the Planning Commission. Case No. 2023-PDA-021**

BACKGROUND and RECOMMENDATION: In April of 2021, an application for 206 units (stacked units and townhomes) was approved by the City Council. The applicant desires to update the townhome elevations and make a minor revision to the roadway on the northern portion of the site. The Planning Commission held a public hearing and recommended approval of the application with a 7-0 vote and three conditions.+

5. **Consider a request for approval of a Hillside Development Permit to allow disturbance of areas in the 20% plus slope areas on an approximately 24.10 acre site generally located just west of the Canyon View and Gap Canyon Parkway intersection for a project to be known as Rillisante at Divario (PA-3). Case No. 2022-HS-012**

BACKGROUND and RECOMMENDATION: The application came as a result of approval of PA-3 in 2021 and was held in anticipation of the accompanying PD amendment

application. The Hillside Board and Planning Commission both held public meetings on the request and are recommending approval of the application with no conditions.

6. **Consider approval of Ordinance No. 2023-037 amending the city zoning map by extending approvals for the zoning on the subject property of R-1-20 (Residential Single Family 20,000 square feet minimum lot size) on approximately 18.62 acres located approximately at the southeast corner of 1580 South 3000 East for a project to be known as The Grove. Case No. 2023-ZC-015**

BACKGROUND and RECOMMENDATION: The zoning on the subject property was approved in 2022. Due to language in the ordinance, the zoning would expire after a year without reapproving the zoning. The Planning Commission held a public hearing on the request and recommended approval with a 7-0 vote and no conditions.

7. **Consider approval of a preliminary plat for The Grove subdivision, a 14-lot single-family development located on the southeast corner of 1580 South and 3000 East. Case No. 2023-PP-032**

BACKGROUND and RECOMMENDATION: The property is currently zoned R-1-20 (Residential, single-family residential 20,000 ft^2 minimum lot size). The applicant is proposing 14 lots. Lots 3-14 will all exceed 50,000 ft^2. Lots one and two are smaller due to the road connection into the stubbed road to the south but still exceed 20,000 ft^2. The road will tie into 3210 East which borders the east side of the property. The Planning Commission recommended approval, with one condition.

8. **Consider approval of Ordinance No. 2023-038 amending the city zoning map by amending the zone from PD-R (Planned Development Residential) to C-3 (General Commercial) on approximately 3.0 acres generally located on the east side of Riverside Drive at approximately 700 South. Case No. 2023-ZC-014**

BACKGROUND and RECOMMENDATION: The three acres that is proposed to be rezoned is part of a larger 16-acre parcel. In 2021, a PD-R for townhomes was approved on the overall parcel. Though the zoning covered the entire parcel, the townhomes were only planned on the bottom portion (roughly 10 acres) of the property that are flatter than the northern portion of the property. This left approximately six acres not occupied by townhomes. The Planning Commission held a public hearing on the zone change on October 24, 2023, and recommends approval of the application with a 7-0 vote and no conditions.

9. **Consider approval of a preliminary plat for the Willow Bend subdivision, a three lot, 16.37-acre subdivision located on the east side of Riverside Drive between 700 South and Judy Lane. Case No. 2023-PP-035**

BACKGROUND and RECOMMENDATION: This plat is part of a larger application to rezone the property and plat it. If the property is rezoned, this plat will keep the property from being split zoned. Lot one is proposed to be 3.0 acres and is the lot proposed to be rezoned to commercial. The Planning Commission held a public hearing on the request and recommends approval with a 7-0 vote and one condition.

10. **Consider a request for approval of a Hillside Development Permit to allow disturbance of areas in the 20% plus slope areas on an approximately 12.63 acre site generally located north of Snow Canyon Pkwy and east of the existing Paradise Canyon subdivision. Case No. 2023-HS-008**

BACKGROUND and RECOMMENDATION: The applicant would like to develop a six-lot subdivision. A portion of the area lies within the Hillside Overlay Zone (HOZ). The project will be completed in one phase. Desert landscaping will be used on the project and there will be minimal impact to the hillside areas on the site. The Chuckwalla Estates went to the Hillside committee on August 23, 2023. There was much discussion with the committee. A lot of the discussion took place on the access road to the lots. The hillside committee discussed making the walls and appearance of the access road to blend and match the colors and texture of the surrounding areas materials. The site does include a archeological site . The proposed lots do not disturb the historical site. At their meeting held on October 24, 2023, the Planning Commission recommended approval with the conditions in the staff report with a vote of 7-0.

11. Consider approval of a preliminary plat for the Chuckwalla development, a 6-lot subdivision located north of Snow Canyon Pkwy and east of Paradise Canyon subdivision. Case No. 2023-PP-030

BACKGROUND and RECOMMENDATION: The applicant is proposing to develop six residential lots. At their meeting held on October 24, 2023, the Planning Commission held a public meeting and recommended approval with conditions.

12. Consider approval of Ordinance No. 2023-039 amending Title 3 and Title 10 of the St. George City Code, to add provisions for temporary parking lot businesses to Title 3 and remove for mobile businesses from Title 10.

BACKGROUND and RECOMMENDATION: On December 15, 2022, an amendment was approved to add mobile business to Title 3 and Title 10. In Title 10, mobile business was added as a permitted use with standards, and specific standards were created. However, in 2023, the State adopted a new code that prevents cities from requiring a mobile business to comply with the adopted zoning ordinance. This amendment renames mobile businesses to temporary parking lot businesses and adjusts the associated requirements in Title 3. In addition, this zoning regulation amendment removes mobile business regulations from Title 10. The changes to Title 10 were presented to the Planning Commission on October 24, 2023 where a public hearing was held. With a 7-0 vote, the Planning Commission recommended approval.

13. Appointments to Boards and Commissions of the City.

14. Reports from Mayor, Councilmembers, and City Manager.

15. Request a closed session to discuss litigation, security, property acquisition or sale or the character and professional competence or physical or mental health of an individual.

Christina Fernandez, City Recorder — November 14, 2023 Date

REASONABLE ACCOMMODATION: The City of St. George will make efforts to provide reasonable accommodations to disabled members of the public in accessing City programs. Please contact the City Human Resources Office, 627-4674, at least 24 hours in advance if you have special needs.

Agenda Date: 11/16/2023 **Agenda Item Number:** 2a

Subject:

Consider approval of a Professional Services Agreement with Civil Science for the Design of the SR-7 Trail Project.

Item at-a-glance:

Staff Contact: Cameron Cutler

Applicant Name: Cameron Cutler

Reference Number: N/A

Address/Location:

SR-7 from I-15 heading east.

Item History (background/project status/public process):

The project consists of the design, by Civil Science, of the SR-7 Trail from I-15 to Desert Canyons Pkwy. Funding for this project comes from a UDOT grant with a 20% local match. As indicated in the attached agreement and scope of work, the proposed design services amount to $352,900. The design includes one trail bridge at Desert Color Parkway and one tunnel under the on and off ramps from SR-7 near Desert Color Parkway.

Staff Narrative (need/purpose):

City staff is planning to provide much of the design of the trail and preparation of the bid documents and specifications for the project in order to save a substantial amount of money. The purpose of the grant from the State was to install as much trail as possible. Since the project includes two large structures, it was determined best to hire a consultant to provide the design of these two structures. The rest of the trail alignment and design elements for the project will be done in-house by city staff with some assistance, as needed, by the consultant.

Name of Legal Dept approver: Danial Baldwin

Budget Impact:

Cost for the agenda item: $352,900

Amount approved in current FY budget for item: $11,650,000

If not approved in current FY budget or exceeds the budgeted amount, please explain funding source:

Amount was approved in the FY23-24 budget.

Description of funding source:

UDOT grant and City TIF (2700) funds.

Recommendation (Include any conditions):

Staff recommends approval of the agreement.

CITY OF ST. GEORGE PROFESSIONAL SERVICES AGREEMENT
FOR SERVICES WITH CIVIL SCIENCE FOR THE SR-7 TRAIL PROJECT

This Professional Services Agreement (hereinafter "Agreement") is made and entered into on _____ by and between the City of St. George, a municipal corporation, with offices at 175 East 200 North, St. George, Utah 84770 (hereinafter called the "CITY"), and Civil Science, with offices at 1453 S Dixie Dr, Suite 150, St. George, UT 84770 (hereinafter "CONSULTANT").

WITNESSETH THAT:

WHEREAS CITY desires professional services to be performed and has solicited CONSULTANT to provide design services, construction plans, and specifications for the SR-7 Trail project (hereinafter called the PROJECT); and

WHEREAS, CONSULTANT has submitted a proposal, which outlines the general scope of services to be provided and the fees for the PROJECT; and

WHEREAS CITY selected CONSULTANT to perform the services for the PROJECT;

NOW, THEREFORE, for the consideration hereinafter set forth, the parties hereto do mutually agree as follows:

1. **ENGAGEMENT OF CONSULTANT.**

1.1 CONSULTANT is a professional licensed by the State of Utah and the City of St. George. CONSULTANT has all licenses, permits, and approvals that are legally required for CONSULTANT to practice its profession and shall keep them in effect at all times during the term of this Agreement.

1.2 CONSULTANT states that it has the necessary knowledge, experience, abilities, skills, and resources to perform its obligations under this Agreement and agrees to perform its obligations under this Agreement in a professional manner, consistent with prevailing industry standards and practices as observed by competent practitioners of the profession in which CONSULTANT and its subcontractors or agents are engaged.

1.3 CONSULTANT certifies that it does not and will not during the performance of this contract knowingly employ, or subcontract with any entity which employs workers in violation of 8 USC §1324(a). CONSULTANT agrees to require all subcontractors at the time they are hired for this project to sign a Certification of Legal Work Status and submit the Certification to CITY prior to any work being performed by the subcontractors. CONSULTANT agrees to produce, at CITY'S

request, documents to verify compliance with applicable State and Federal laws. If CONSULTANT knowingly employs workers or subcontractors in violation of 8 USC § 1324(a), such violation shall be cause for unilateral cancellation of the contract between CONSULTANT and CITY. In addition, CONSULTANT may be suspended from participating in future projects with CITY for a period of one (1) year. In the event this contract is terminated due to a violation of 8 USC § 1324(a) by CONSULTANT or a subcontractor of CONSULTANT, CONSULTANT shall be liable for any and all costs associated with such termination, including, but not limited to, any damages incurred by CITY excluding attorney fees. For purposes of compliance, CITY requires CONSULTANT and subcontractors to use E-Verify or other federally accepted forms of verification to verify the employment eligibility of all employees as allowed by law and the E-Verify procedures. CONSULTANT and subcontractors must maintain authorized documentation of the verification.

1.4 CONSULTANT shall not, either during or after the term of this Agreement, make public any reports or articles, or disclose to any third party any confidential information relative to the work of City or the operations or procedures of CITY without the prior written consent of CITY.

1.5 CONSULTANT further agrees that it shall not, during the term of this Agreement, take any action that would affect the appearance of impartiality or professionalism.

1.6 CONSULTANT, by execution of this Agreement, certifies that it does not discriminate against any person upon the basis of race, color, creed, national origin, age, sex, sexual orientation, gender identity, disability, or marital status in its employment practices.

1.7 CONSULTANT expressly acknowledges and agrees that nothing in this Agreement shall be deemed to relieve CONSULTANT from any obligation to comply with all applicable requirements of CITY during the term of this Agreement including the payment of fees and compliance with all other applicable ordinances, resolutions, regulations, policies, and procedures of CITY, except as modified or waived in this Agreement.

1.8 CONSULTANT shall comply with all applicable federal, state, and local laws, regulations, and ordinances that affect those employees or those engaged by CONSULTANT on the PROJECT, and will procure all necessary licenses, permits and insurance required.

1.9 CITY acknowledges that CONSULTANT may employ various specialized subcontractors for up to 15% of the services provided herein. CONSULTANT shall give written notice to CITY at least seven (7) days prior to CONSULTANT'S employment of the subcontractors to perform portions of the work provided for in this Agreement. It shall be solely CONSULTANT's responsibility to ensure that any of CONSULTANT'S subcontractors perform in compliance with the terms of this Agreement. Subcontractors may not be changed without ten (10) days prior written notice to CITY.

2. **PROJECT SERVICES DESCRIPTION.**

2.1 CITY makes no guarantee as to the total volume of work, if any, that will be needed under this Agreement. CONSULTANT will provide the services on an as needed basis as described in the attached Scope of Work (**"Exhibit A Scope of Services"**) which is made a part of this Agreement by this reference. As services are needed, CITY shall provide CONSULTANT with a description of the work needed which shall be known as a "Work Order" and CONSULTANT will provide CITY with a specific scope of work and cost for the Work Order, which if accepted by the CITY shall become part of this Agreement binding both parties. CITY may at any time, as the need arises, order changes within the scope of the services without invalidating the Agreement. If such changes increase or decrease the amount due under the Agreement, or in the time required for performance of the work, an equitable adjustment shall be authorized by change order.

2.2 CONSULTANT shall furnish all the material, supplies, tools, transportation, equipment, labor, subcontractor services and other services necessary for the completion of the work described in **"Exhibit A Scope of Services"** or in subsequent Work Orders.

2.3 CONSULTANT shall provide services in compliance with all applicable requirements of federal, state, and local laws, codes, rules, regulations, ordinances, and standards.

3. **TERM OF AGREEMENT.**

3.1 This Agreement shall be effective as of the date executed by all parties and shall continue for one year unless otherwise terminated as set forth in this Agreement. If a Work Order was started during this term but not completed, the terms of this Agreement shall continue through completion of the Work Order.

3.2 CONSULTANT agrees to perform services as expeditiously as is consistent with professional skill and care and the orderly progress of the PROJECT. CONSULTANT shall perform the services in a timely manner according to the schedule approved by CITY.

3.3 CONSULTANT shall perform its services upon notice from the CITY to proceed and in accordance with the schedule approved by CITY. In the event performance of its services is delayed by causes beyond the reasonable control of CONSULTANT, and without the fault or negligence of CONSULTANT, the time for the performance of the services shall be equitably adjusted by written amendment to reflect the extent of such delay. CONSULTANT shall provide CITY with written notice of delay, including a description of the delay and the steps contemplated or taken by CONSULTANT to mitigate the effect of such delay.

4. **COMPENSATION.** For the performance of the services and completion of PROJECT

set forth herein, CITY shall pay CONSULTANT as agreed in **"Exhibit A"** and each Work Order as applicable. The aggregate total of all Work Orders shall not exceed **three hundred fifty-two thousand nine hundred dollars, $352,900**.

5. **INVOICING, PAYMENT, NOTICES.**

5.1 CONSULTANT shall submit invoices, no more frequently than monthly, for the services rendered during the preceding period; invoices shall describe the services performed, list all subcontractors used and the amount owed or paid to them, list all suppliers used and the amount owed or paid to them, list the contract amount, list the current invoice amount based on percentage of task complete, list the previous invoice amount, list total invoices to date, and list the contract balance.

5.2 In executing the request for payment, CONSULTANT shall attest that payment has been made to all subcontractors involved with prior requests, unless CONSULTANT provides a detailed explanation why such payments have not occurred. CONSULTANT shall also sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status and submit them with each request for payment. CONSULTANT shall require each subcontractor to sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status at the time subcontractor is paid and shall provide a copy of both documents to CITY. CONSULTANT shall also sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status and submit them with each request for payment.

5.3 A "Waiver and Release Upon Final Payment" signed by CONSULTANT attesting that all subcontractors, laborers, and material suppliers involved with prior requests for payment have been paid, and that all subcontractors, laborers, and material suppliers upon which the final payment is based will be paid immediately unless CONSULTANT provides a detailed explanation why such payments have not occurred or will not occur. CONSULTANT shall also require each subcontractor to sign a "Waiver and Release Upon Final Payment" and a Certificate of Legal Work Status at the time subcontractor is paid its final payment and shall provide a copy of both documents to CITY.

5.4 If such liens, claims, security interests or encumbrances remain unsatisfied after payments are made, CONSULTANT shall refund to CITY all money that CITY may be compelled to pay in discharging such liens, including all costs except for attorneys' fees.

5.5 All invoices for reimbursable costs shall be taken from the books of account kept by CONSULTANT, and CONSULTANT shall maintain copies of payroll distribution, receipted bills, and other documents. CITY shall have the right to review all books and records kept by CONSULTANT and any subcontractors concerning the operation and services performed under this Agreement. CITY shall withhold payment for any expenditure not substantiated by CONSULTANT'S or subcontractor's books and records.

5.6 In the event CITY has made payment for expenditures that are not allowed, as determined by CITY'S audit, CONSULTANT shall reimburse CITY the amount of the un-allowed expenditures. If additional money is owed to CONSULTANT, the reimbursement may be deducted from the additional money owed.

5.7 CITY shall make no payment for any services not specified in this Agreement unless such additional services and the price thereof are agreed to in writing, prior to the time that such additional services are rendered.

5.8 Invoices shall be paid to CONSULTANT within thirty (30) days of presentation to CITY.

5.9 CITY may withhold 5% of billed amount as retention. Retention held shall be included in the final invoice after the contract is complete.

6. **CHARGES AND EXTRA SERVICE.**

6.1 CITY may make changes within the general scope of this Agreement. If CONSULTANT is of the opinion a proposed change causes an increase or decrease in the cost and/or the time required for performance of this Agreement, CONSULTANT shall notify CITY of that fact. An agreed-upon change will be reduced to writing signed by the parties hereto and will modify this Agreement accordingly. CONSULTANT may initiate such notification upon identifying conditions which may change the services agreed to on the effective date of this Agreement, as set forth in **Exhibit A**. However, CONSULTANT represents that to the best of its knowledge that it is not aware of any such conditions on the date hereof. Any such notification must be provided within thirty (30) days from the date of receipt by that party of the other party's written notification of a proposed change.

6.2 CITY may request CONSULTANT to perform extra services not covered by **Exhibit A**, and CONSULTANT shall perform such extra services and will be compensated for such extra services when they are reduced to a writing mutually agreed to and signed by the parties hereto amending this Agreement accordingly.

6.3 CITY shall not be liable for payment of any extra services, nor shall CONSULTANT be obligated to perform any extra services except upon such written amendment.

7. **TO BE FURNISHED BY CITY.** Resources to be furnished by CITY to CONSULTANT, at no cost to CONSULTANT, consist of CITY staff assistance for oversight and meetings to help perform the services. CONSULTANT shall verify accuracy of the information provided, unless otherwise stated in the contract documents.

8. **INSPECTIONS.** All work shall be subject to inspection and approval of CITY or its authorized representative.

9. **ACCURACY AND COMPLETENESS.**

9.1 CONSULTANT has total responsibility for the accuracy and completeness of its investigations, calculations, reports, plans and related designs, specifications and estimates prepared for the PROJECT and shall check all such material accordingly.

9.2 The plans will be reviewed by CITY for conformity with PROJECT objectives and compliance with CITY Standards.

9.3 Reviews by CITY do NOT include the detailed review or checking of major design components and related details or the accuracy with which such designs are depicted on the plans.

9.4 The responsibility for accuracy and completeness remains solely with CONSULTANT and shall be performed consistent with the standard of care.

10. **INDEPENDENT CONTRACTOR.**

10.1 CITY retains and engages CONSULTANT, as an independent contractor, to act for and represent it in all matters involved in the performance of services on the PROJECT, subject to the terms, conditions and stipulations as hereinafter stated.

10.2 It is understood and agreed that CONSULTANT will provide the services without supervision from CITY. CONSULTANT is an independent contractor and is not an employee, officer, or agent of CITY for any purposes related to the performance of this Agreement and is not an employee of CITY and is not entitled to any benefits from CITY.

10.3 Nothing in this agreement shall create nor be construed to constitute a partnership or joint venture between CONSULTANT and CITY.

10.4 CONSULTANT is advised to obtain and maintain in effect during the term of this Agreement medical insurance and disability insurance for all related work performed under this Agreement.

10.5 CONSULTANT acknowledges that CITY will not withhold any federal, state, or local taxes, including FICA, nor will CITY provide any unemployment compensation or worker's compensation coverage. As an independent contractor, CONSULTANT shall be responsible for all taxes, worker's compensation coverage and insurance coverage, and shall hold CITY harmless and indemnify CITY from and against any and all claims related to taxes, unemployment compensation, and worker's compensation.

10.6 CONSULTANT shall secure, at its own expense all personnel required in performing the services under this Agreement. The employees of CONSULTANT

shall not be considered employees of CITY nor have any contractual relationship with CITY. CONSULTANT and its employees shall not hold themselves out as, nor claim to be officers or employees of CITY by reason of this Agreement. The employees of CITY shall not be considered employees of CONSULTANT.

10.7 Neither party has the right to bind or obligate the other in any way. CONSULTANT shall not use the name, trademarks, copyrighted materials, or any information related to this Agreement in any advertising or publicity without CITY'S prior written authorization.

11. **INSURANCE.**

11.1 GENERAL: CONSULTANT shall secure and maintain insurance as required by laws and regulations and the terms of this agreement to protect against any liability, loss or expense which occurs or arises as a result of the performance of the services provided pursuant to this agreement or as changed as provided herein. CONSULTANT'S insurer must be authorized to do business in Utah and must have an A.M. Best rating of A VIII or better at the time this contract is executed.

11.2 COMMENCEMENT OF WORK: Neither CONSULTANT, its Suppliers nor any subcontractors shall enter the site of the work or commence work under this contract before CITY has received and accepted Certificate(s) of Insurance and Insurance Endorsements and has issued the Notice to Proceed, as applicable.

11.3 INSURANCE CERTIFICATES AND COVERAGE: Insurance certificates shall be issued on all policies required under this contract and shall be signed by an authorized representative of the insurance company. The insurance certificate or the coverage required shall include the following:

A. The name and address of the insured.

B. CITY shall be named as a Certificate Holder.

C. CITY shall be named as an additional primary insured on the General Liability Certificate with CITY listed as non-contributory on the General Liability certificate.

D. The location of the operations to which the insurance applies.

E. The number of the policy and the type or types of insurance in force thereunder on the date borne by the certificate.

F. The expiration date of the policy and the limit or limits of liability thereunder on the date borne by the certificate.

G. A statement that all coverage is on an occurrence basis rather than a claims basis except for the Professional Errors and Omissions Malpractice

Insurance coverage.

H. A provision that the policy or policies will not be canceled, denied renewal, or reduced in coverage until at least 30 days after written notice has been received by CITY.

I. Name, address, and telephone number of the insurance company's agent of process in Utah.

J. Other information to demonstrate compliance with additional requirements stipulated for the various types of insurance coverage.

11.4 COMPENSATION INSURANCE: CONSULTANT shall, as applicable, take out and maintain Workers' Compensation Insurance as required by the Labor Code for all its employees at the site of the work during the life of this contract. Coverage must be provided by a company authorized by the State of Utah to provide Workers' Compensation Insurance. The insurance shall include:

A. Insurance certificates shall provide a waiver of subrogation by the carrier to Certificate Holder.

B. CONSULTANT shall require each subcontractor to provide Workers' Compensation Insurance for its employees unless such employees are covered by CONSULTANT.

C. In the event any class of employees engaged in hazardous work under this contract is not protected by the Workers' Compensation Statute, CONSULTANT shall provide, and shall cause its subcontractors to provide, special insurance for the protection of such employees not otherwise protected.

11.5 COMMERCIAL GENERAL LIABILITY INSURANCE: CONSULTANT shall procure and maintain commercial general liability insurance for the duration of the contract against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the CONSULTANT, its agents, representatives, employees, or subcontractors. The insurance shall remain in effect during the term of this agreement and such that claims reported beyond the date of substantial completion of this agreement are covered and during the warranty period, to the extent that it relates to the activities covered by this Agreement, in such manner and amounts as set forth herein. The Insurance Endorsement shall evidence such provisions.

A. The minimum commercial general liability insurance shall be as follows:

i. Comprehensive general liability insurance for injuries, including accidental death, to any one person in any one occurrence in an amount not less than $1,000,000.00 Dollars.

ii. Comprehensive general liability insurance for injuries, including accidental death, to two or more persons in any one occurrence in an amount not less than $3,000,000.00 Dollars (umbrella coverage may be considered).
iii. Broad form property damage insurance in an amount not less than $300,000.00 Dollars.

B. Such policy shall include each of the following coverages (as applicable):

i. Comprehensive form.
ii. Premises - operations.
iii. Explosion and collapse hazard.
iv. Underground hazard.
v. Product/completed operations hazard.
vi. Contractual insurance.
vii. Broad form property damage, including completed operations.
viii. Independent contractors for vicarious liability.
ix. Personal injury.
x. Cross liability or severability of interest's clause shall be included unless a separate policy covering CITY is provided.

11.6 PROFESSIONAL LIABILITY ERRORS AND OMISSIONS INSURANCE:

A. CONSULTANT shall carry and maintain Professional Liability Errors and Omissions Insurance in an amount not less than $3,000,000.00 Dollars for all work performed under this Agreement.

B. CONSULTANT shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the CONSULTANT, its agents, representatives, employees, or subcontractors. With respect to General Liability, Professional liability coverage should be maintained for a minimum of five (5) years after contract completion.

C. If Professional Liability coverages are written on a claims-made form:

i. The retroactive date must be shown and must be before the date of the contract or the beginning of contract work.
ii Insurance must be maintained, and evidence of insurance must be provided, for at least five (5) years after completion of the contract of work.
iii. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, the CONSULTANT must purchase an extended period coverage for a minimum of five (5) years after completion of contract work.

iv. A copy of the policy must be submitted to CITY for review.

11.7 BUSINESS AUTOMOBILE COVERAGE: CONSULTANT shall carry and maintain business automobile insurance coverage on each vehicle used in the performance of the work in an amount not less than $1,000,000.00 Dollars for one person and $3,000,000.00 Dollars for more than one person and for property damage resulting from any one occurrence which may arise from the operations of CONSULTANT in performing the work.

Such business automobile insurance shall include each of the following types:

A. Comprehensive form, including loading and unloading.
B. Owned.
C. Hired.
D. Non-owned.

12. **INDEMNITY AND LIMITATION.**

12.1 Except as otherwise provided herein, CONSULTANT shall indemnify, defend, and hold harmless CITY, its elected officials, officers, employees, and representatives against any and all claims, suits, causes of action, demands, losses, costs, and damages and liability of every kind including but not limited to all fees and charges of professionals, except for attorney's fees, and all court or other dispute resolution costs for:

A. death or injuries to persons or for loss of or damage to property which directly or indirectly, in whole or in part are caused by, resulting from, or arising out of the intentional, reckless, negligent, or wrongful acts, errors or omissions, or other liability imposed by law of CONSULTANT, its officers, employees, agents, or representatives in the performance of services under this Agreement or any subcontractor, any supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work;

B. CONSULTANT's failure or refusal, whatever the reason, to pay subcontractors or suppliers for Work performed under the Agreement;

C. claims by any employee of the CONSULTANT, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, CONSULTANT'S indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONSULTANT or any subcontractor under workmen's compensation acts, disability benefit acts or other employee benefits acts.

12.2 CITY shall give CONSULTANT prompt written notice of any such claims or suits filed against CITY arising out of the services provided under this Agreement.

CONSULTANT agrees to defend against any claims brought or actions filed against CITY arising out of the services provided under this Agreement. If CITY'S tender of defense, based upon the indemnity provision, is rejected by CONSULTANT or CONSULTANT'S insurer, and CONSULTANT is later found by a court of competent jurisdiction to have been required to indemnify the CITY, then, in addition to any other remedies the CITY may have, CONSULTANT shall pay the CITY'S reasonable costs and expenses, except for attorney's fees, incurred in obtaining such indemnification, defending themselves or enforcing the indemnification provision.

12.3 The insurance requirements in this agreement shall not be construed as limiting CONSULTANT'S liability. Irrespective of the requirements for CONSULTANT to carry insurance as provided herein, insolvency, bankruptcy, or failure of any insurance company to pay all claims accruing shall not be held to relieve CONSULTANT of any obligations under this agreement.

12.4 This section does not apply to a design professional services contract, design professional services, and design professionals.

13. **DOCUMENTS.**

13.1 All data used in compiling CONSULTANT's work, and the results of any tests or surveys, as well as all photographs, drawings, electronically stored records of work performed, renderings, specifications, schedules, CONSULTANT's work, data processing output, computations, studies, audits, research, reports, models and other items of like kind prepared by CONSULTANT, and its employees, shall be the sole and exclusive property of CITY, and CITY shall own all intellectual property rights thereto whether the specific work project for which they are made is undertaken or not. CONSULTANT may retain reproducible copies of all the foregoing documents for information and reference and customary marketing and public relations. The originals of all the foregoing documents shall be delivered to CITY promptly upon completion thereof. This provision may be enforced by an order of specific performance and is independent of any other provision of this Agreement. Compliance by CONSULTANT with this paragraph shall be a condition precedent to CITY's obligation to make final payment to CONSULTANT. If CITY has specific requirements on the information and manner the documentation is collected, CITY shall provide those specifics to CONSULTANT in writing.

13.2 Plans, specifications, maps, and record drawings prepared or obtained under this Agreement shall be provided to CITY in a format approved by CITY which shall generally be a hard copy and an electronic copy and shall become the property of CITY whether the work for which they are prepared is executed or not.

13.3 The basic survey notes and sketches, charts, computations, and other data prepared under this Agreement shall be made available upon request to CITY without

restriction or limitation on their use.

13.4 CITY shall have the right to use reports, designs, details, or products developed as part of this Agreement for purposes of maintenance, remodeling or reconstruction of existing facilities or construction of new facilities without additional compensation to CONSULTANT or without restriction or limitation on its use even if documents are considered copyrighted material.

13.5 CITY will hold harmless CONSULTANT for any use or reuse of these reports, designs, or details for purposes other than the project associated with this Agreement unless CITY obtains validation of that use or reuse from CONSULTANT.

14. **RECORDS.**

14.1 CONSULTANT shall maintain records, books, documents, and other evidence directly pertinent to the performance of services under this Agreement in accordance with generally accepted accounting principles and practices.

14.2 CONSULTANT agrees to keep proper books of records and accounts in which complete and correct entries will be made of payroll costs, travel, subsistence, and field expenses.

14.3 Said books shall, at all times, be available for at least three (3) years after final payment for reasonable examination by CITY.

15. **TERMINATION.**

15.1 CITY may terminate this Agreement by providing fourteen (14) days written notice prior to the effective termination date to CONSULTANT.

15.2 In the event of such termination, CITY shall pay CONSULTANT for all services actually rendered up to and including the date of termination.

15.3 CONSULTANT shall deliver to CITY copies of all drawings, reports, analyses, documents, and investigations, whether completed or not, that were prepared or were being prepared under the provisions of this Agreement.

16. **CONFLICT BETWEEN DOCUMENTS.** In the event of a conflict between this Agreement and any other documents with CONSULTANT, this Agreement shall govern.

17. **CONFLICT OF INTEREST.** CONSULTANT certifies that it has disclosed to CITY any actual, apparent or potential conflicts of interest that may exist relative to the services to be provided pursuant to this Agreement.

17.1 CONSULTANT agrees to advise CITY of any actual, apparent or potential conflicts of interest that may develop after the date of execution of this Agreement.

17.2 CONSULTANT further agrees to complete any statements of economic interest required by either CITY ordinance or State law.

18. **NON-WAIVER.** No failure or waiver or successive failures or waivers on the part of either party hereto, their successors or permittee assigns, in the enforcement of any condition, covenant, or Article of this Agreement shall operate as a discharge of any such condition, covenant, or Article nor render the same invalid, nor impair the right of either party hereto, their successors or permitted assigns, to enforce the same in the event of any subsequent breaches by the other party hereto, its successors or permitted assigns.

19. **NOTIFICATION.** All notices required or permitted to be made by either party in connection with this Agreement shall be in writing, and shall be deemed to have been duly given: (a) five (5) business days after the date of mailing if sent by U.S. mail, postage prepaid, (b) when transmitted if sent by facsimile, provided a confirmation of transmission is produced by the sending machine and a copy of such facsimile is promptly sent by another means specified in this Section; or (c) when delivered if delivered personally or sent by express courier service. All notices shall be sent to the other party at its address as set forth below unless written notice is given by either party of a change of address:

CITY:	City of St. George	CONSULTANT:	Civil Science
	175 East 200 North		1453 S Dixie Dr, Suite 150
	St. George, Utah 84770		St. George, UT 84770
Attention:	City Attorney	Attention:	Tyler Turner
Copy:	legal@sgcity.org		

20. **GOVERNING LAW AND VENUE.** This Agreement shall be construed according to the laws of the State of Utah. The parties agree that venue for all legal actions, unless they involve a cause of action with mandatory federal jurisdiction, shall be the Fifth District Court for the State of Utah. The parties further agree that the Federal District Court for the District of Utah shall be the venue for any cause of action with mandatory federal jurisdiction. The parties shall have all rights and remedies provided under applicable Federal or State law for a breach or threatened breach of this Agreement. These rights and remedies shall not be mutually exclusive, and the exercise of one or more of these rights and remedies shall not preclude the exercise of any other rights and remedies. Each party agree that damages at law may be an inadequate remedy for a breach or threatened breach of any provision hereof and the respective rights and obligations of the parties hereunder shall be enforceable by specific performance, injunction, or other equitable remedy. Nothing in this Agreement shall be construed to waive the sovereign immunity of the government parties.

21. **LEGAL FEES.** Should any party default on any of the covenants or agreements contained herein, the defaulting party shall pay all costs and expenses, (excluding reasonable attorney's fees,) which may arise or accrue from enforcing this Agreement or in pursuing any remedy provided hereunder or by applicable law, whether such remedy is pursued by filing a lawsuit or otherwise. This obligation of the defaulting party to pay costs and expenses includes, without limitation, all costs, and expenses, (excluding reasonable

attorney's fees) including appeals and bankruptcy proceedings. If either party commences legal action to interpret any term of this agreement, the prevailing party shall be entitled to recover all reasonable fees (excluding attorney's fees), court costs, and any other costs incurred in connection with such action. The parties agree that they shall each pay their own attorney's fees.

22. **MODIFICATION OF AGREEMENT.** CITY specifically reserves the right to modify or amend this Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work. All modifications shall be in writing and executed by both parties. Each Work Order adopted under this Agreement shall incorporate the terms and conditions of this Agreement and shall constitute a modification to this contract. A Work Order may amend the terms and conditions of this Agreement only as they apply to that particular Work Order and shall not have any general effect on this Agreement.

23. **RESERVED LEGISLATIVE POWERS.** Nothing in this Agreement shall limit the future exercise of the police power by CITY in enacting zoning, subdivision, development, transportation, environment, open space, and related land use plans, policies, ordinances, and regulations after the date of this Agreement, but which shall not be retroactively applied to or modify this Agreement.

24. **SUCCESSORS AND ASSIGNS.** CONSULTANT shall not assign, sublet, sell, transfer, or otherwise dispose of any interest in this Agreement without assigning the rights and the responsibilities under this Agreement and without the prior written approval of CITY. This Agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and permitted assigns, but shall not inure to the benefit of any third party or other person.

25. **NO JOINT VENTURE, PARTNERSHIP OR THIRD-PARTY RIGHTS.** It is not intended by this Agreement to, and nothing contained in this Agreement shall, create any partnership, joint venture, or other arrangement between the parties. No term or provision of this Agreement is intended to or shall, be for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

26. **INTEGRATION.** This Agreement contains the entire Agreement with respect to the subject matter hereof and integrates all prior conversations, discussions or understanding of whatever kind or nature between CITY and CONSULTANT and supersedes and replaces all terms and conditions of any prior agreements, arrangements, negotiations, or representations, written or oral, with respect to this PROJECT.

27. **SEVERABILITY.** If any part or provision of this Agreement shall be determined to be unconstitutional, invalid or unenforceable by a court of competent jurisdiction, then such a decision shall not affect any other part or provision of this Agreement except that specific provision determined to be unconstitutional, invalid or unenforceable. If any condition, covenant or other provision of this Agreement shall be deemed invalid due to its scope or breadth, such provision shall be deemed valid to the extent of the scope or breadth permitted by law.

28. **CONSTRUCTION.** Each of the parties hereto has had the opportunity to review this agreement with counsel of their choosing and the rule of contracts requiring interpretation of a contract against the party drafting the same is hereby waived and shall not apply in interpreting this agreement.

29. **SURVIVAL.** It is expressly agreed that the terms, covenants, and conditions of this Agreement shall survive any legal act or conveyance required under this Agreement.

30. **HEADINGS.** The section and other headings in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

31. **COUNTERPARTS.** This Agreement may be signed in counterparts and each such counterpart shall constitute an original document. All such counterparts, taken together, shall constitute one and the same instrument. Any signature on this Agreement transmitted by facsimile, electronically in PDF format, or by other generally accepted means of conveying digital signatures (e.g. DocuSign) shall by deemed an original signature for all purposes and the exchange of copies of this Agreement and of signature pages by any such transmission, or by a combination of such means, shall constitute effective execution and delivery of this Agreement as to the Parties and may be used in lieu of the original for all purposes.

32. **AUTHORITY OF PARTIES.** The parties executing this Agreement hereby warrant and represent that they are duly authorized to do so in the capacity stated and that this Agreement constitutes a valid and binding Agreement.

IN WITNESS WHEREOF, this Agreement has been executed by the CITY and CONSULTANT effective from the day and year first written above.

CITY OF ST. GEORGE	**CONSULTANT: Civil Science**
_____	_____
Mayor Date	Tyler Turner
ATTEST:	APPROVED AS TO FORM: CITY ATTORNEY'S OFFICE
_____	_____
Christina Fernandez, City Recorder	

EXHIBIT A
SCOPE OF SERVICES

This Exhibit A Scope of Services is attached to, and fully incorporated into, the Professional Services Agreement by and between the City of St. George (the "City") and the following individual or entity ("Contractor"):

Name: Civil Science (ATTN: Tyler Turner)

Address: 1453 S Dixie Dr, Suite 150, St. George, UT 84770

Email: tturner@civilscience.com Phone Number: (435)-986-0100 x302

Scope of Services and/or Deliverables by Contractor:

- (See attached Scope of Work)
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Compensation: City shall pay Contractor the following sum:

- _____
- _____
- _____

CivilScience

3160 W. Clubhouse Drive, Ste. A
Lehi, UT 84043
P | (801) 768-7200 | F | (801) 768-7201

1453 S. Dixie Drive, Ste. 150
St. George, UT 84770
P | (435) 986-0100

405 Main Street, Ste. 975
Salt Lake City, UT 84111
P | (801) 768-7200

November 3, 2023

St. George City
Public Works Department
ATTN: Cameron Cutler
175 East 200 North
St. George, UT 847700

RE: SR-7; Active Transportation Path – Various Locations
Proposal for Professional Engineering Services – Projects 1-6, 20 and Pedestrian Trail Structures

Dear Mr. Cutler,

Civil Science is pleased to submit this revised proposal for professional services for the Project referenced above. We appreciate the time you have taken to review our previous proposals and to provide feedback on how the City would like to move forward. We have used the information resulting from our most recent conversation to modify our contract, which is further defined in the information below.

As always, we sincerely appreciate the opportunity to provide these services to the City and are focused on providing the highest quality work, in a timely manner, and are committed to developing a successful project as we continue our relationship.

PROJECT UNDERSTANDING

The City is looking to move forward with the design and construction of new active transportation improvements along the SR-7 (Southern Parkway) corridor in Washington County, Utah. The overall improvements will follow the concepts established in the "SR-7 Active Transportation Plan" which will construct a shared-use path along this 26.1-mile corridor from I-15 to SR-9. The planned improvements will promote the creation of a safe and enjoyable network of walking and bicycling facilities between the jurisdictions of St. George City, Washington City, Washington County, and Hurricane City. The mentioned study, completed in 2020, identified 21 different segments that make up the complete project, which was divided into three phases for construction. State funding was recently granted to these jurisdictions for the first phase of the shared-use path/trail. This contract includes the following segments (projects) of the first phase of shared-use path/trail improvements that will be constructed:

- **Sand Hollow Road; Dixie Springs Drive to Sand Hollow Park Entrance (Project 20)**
  - Located within Hurricane City's jurisdiction.
  - Length is approximately 1-mile.
  - The trail will be designed by the City with Civil Science offering a support role in the development of various design and construction documents.
- **SB I-15 Ramp to Desert Canyon Parkway (Projects 1-6)**
  - Located within St. George City's jurisdiction.
  - Length is approximately 6-miles.
  - The trail segments will be designed by the City with Civil Science offering a support role in the development of various design and construction documents.

- **Pedestrian Bridge Structure Over Desert Color Pkwy & Underpass Structure Under Black Mountain Road**
    - Both structures will be located within UDOT ROW.
    - Civil Science will provide a full structural design and UDOT permitting process services.

The City lead the trail design and administer the contracting and construction of these projects, thus, is seeking assistance from Civil Science to aid in the development of design, construction documents, and construction cost estimating. It is anticipated that Civil Science will offer support services for the trail design and will lead and perform the design on the pedestrian trail structures.



Figure 1: *SR-7; Projects 1-6*

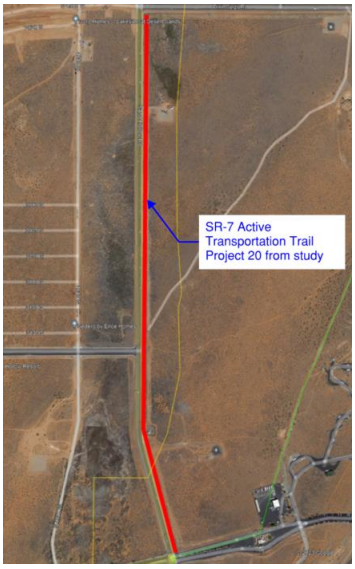

Figure 2: *Sand Hollow Road; Project 20*



Figure 3: *Bridge Structure and Underpass Structures*

SCOPE OF WORK

Based on the Project Understanding outlined above, Civil Science will provide the following design and construction administration services:

Trail Design Assistance – Sand Hollow Road & SR-7; I-15 to Desert Canyon Parkway

Due to anticipated simplicity of the trail construction, design efforts are expected to be minimal. It is assumed that the City will provide the majority of design with Civil Science providing assistance on an as-needed or On Call basis. Civil Science will be contracted for a specified budget amount and will operate within that budget on requested services as directed by the City.

Task 01 – Sand Hollow Road; Dixie Springs Drive to Sand Hollow Park Entrance

Specific tasks for which the City may request assistance include:

1. Project coordination meetings during the design process
2. Project coordination with utility owners or landowners
3. Collect topography data, utility, ROW and other survey related data
4. Coordinating with a Geotechnical Engineer for geotechnical investigations and recommendations pertinent to the design
5. Prepare existing base map with surface data, utilities and ROW
6. Drainage analysis and design
7. Develop a Civil 3D model of the trail which may include:
    a. Trail alignment and profile
    b. Trail tie-in design to existing hardscape
    c. Trail typical section and corridor based on expected use and recommendations from AASHTO Guide for the development of Bicycle Facilities, the City(ies) Active Transportation Plans, and the criteria included in the SR-7 Active Transportation Plan.
8. Prepare construction drawings for the project which may include:
    a. Project Location Map
    b. Typical Sections
    c. Horizontal Control (trail alignment) Sheet(s)
    d. Detail Sheets
9. Prepare, or assist the City with preparing, final contract documents including: bidding documents, agreement documents, general conditions, supplemental general conditions, specifications, and special provisions for reproduction.
10. Prepare quantities into a bid schedule. These quantities may be either estimated or extracted from a Civil 3D model
11. Trail signage and striping design
12. Assisting the City in obtaining final permitting and design approvals from UDOT
13. Assist the City in obtaining JUC approvals from Hurricane City

Deliverables:

1. To be determined - will vary based on requested tasks.

Assumptions:

- The City will coordinate with Civil Science on which of the tasks from the list above will be selected.
- The design assistance fee will only allow for a portion of these tasks to be completed by Civil Science
- If design efforts are greater than anticipated and exceed the original budget, Civil Science and the City will come to an agreement on how to modify the contract to accommodate additional work.

Task 02 – I-15 Ramp to Desert Canyon Parkway (Projects 1-6):

Specific tasks for which the City may request assistance include:

1. Project coordination meetings during the design process
2. Project coordination with utility owners

3. Collect topography data, utility, ROW and other survey related data
4. Coordinating with a Geotechnical Engineer for geotechnical investigations and recommendations pertinent to the design
5. Prepare existing base map with surface data, utilities and ROW.
6. Drainage analysis and design
7. Existing culvert analysis and design of culvert extensions
8. Barrier design and analysis per UDOT standards
9. Develop a Civil 3D model of the trail which may include:
    a. Trail alignment and profile
    b. Trail tie-in design to proposed structures, existing structures and existing hardscape
    c. Trail typical section and corridor based on expected use and recommendations from AASHTO Guide for the development of Bicycle Facilities, the City(ies) Active Transportation Plans, and the criteria included in the SR-7 Active Transportation Plan.
10. Prepare construction drawings for the project which may include:
    a. Project Location Map
    b. Typical Sections
    c. Horizontal Control (trail alignment) Sheet(s)
    d. Detail Sheets
11. Prepare, or assist the City with preparing, final contract documents including: bidding documents, agreement documents, general conditions, supplemental general conditions, specifications, and special provisions for reproduction.
12. Prepare quantities into a bid schedule. These quantities may be either estimated or extracted from a Civil 3D model
13. Trail signage and striping design
14. Assisting the City in obtaining final permitting and design approvals from UDOT
15. Assist the City in obtaining JUC approvals from St George City

Deliverables:

1. To be determined - will vary based on requested tasks.

Assumptions:

- The City will coordinate with Civil Science on which of the tasks from the list above will be selected.
- The design assistance fee will only allow for a portion of these tasks to be completed by Civil Science
- If design efforts are greater than anticipated and exceed the original budget, Civil Science and the City will come to an agreement on how to modify the contract to accommodate additional work.

PEDESTRIAN TRAIL STRUCTURES DESIGN

Task 01 – Project Meetings, Management, & Coordination:

1. Provide project management including accounting, internal coordination, progress reporting, informal weekly coordination via phone calls, emails, etc. with all cities, stakeholders, and key staff.
2. Provide project coordination with St. George City, utility owners, stakeholders, and UDOT Structures.
3. Coordinate and meet with City for Milestone meetings up to four (4) times during the design process.
4. Meet with UDOT Structures to coordinate structural components, milestone reviews, and comment resolutions. The following are anticipated review meetings with UDOT Structures:
    a. Plan-In-Hand Milestone Review meeting
    b. PS&E Milestone Review meeting

c. Comment Resolution Review meeting

Deliverables:

1. Up to eleven (11) meetings including the following:
   a. Project Kickoff Meeting
   b. Milestone Meetings (4)
   c. UDOT Structures Coordination Meetings (6)

Assumptions:

- Based on a conversation with UDOT Structures (Mark Daniels on 8/30/23) all structures placed within the UDOT Right-of-Way will require a typical UDOT review and delivery processes. See structures Scope of Work below for more information.

Task 02 – Survey for Structures:

1. Review, collect, and map right-of-way data pertinent to the design, including UDOT ROW.
2. Obtain existing utility information from owners and incorporate into the base map.
3. Develop a project survey control network. This includes identifying existing and setting new control points for use during this and future phases of the project according to UDOT Standards (for structures).
4. Perform topographical survey using GPS equipment in areas where high precision is required such as trail tie in locations and areas requiring structures.
5. Map existing utilities based upon as-builts and apparent points collected in the field with invert elevations with GPS equipment.
6. Locate other utilities by GIS mapping, blue stakes, or as evident in the field.
7. Prepare an existing base map to include existing aerials, topography, ROW, utilities (including known depths), and terrain surface.
8. Prepare survey control sheet for future use during the construction phase of the project.

Deliverables:

1. Project Base Mapping includes topography, existing SR-7 ROW within the structure limits, and existing utilities.
2. Survey Control Sheet.

Assumptions:

- It is assumed that all structures will be located within UDOT ROW.
- Scope of Work does not include transfer, negotiation, or acquisition of property and their pertaining survey legal documents.
- Scope of Work does not include preparation or review of environmental assessments and impact statements.
- Scope of Work does not include a subsurface investigation of utilities. Utilities will be mapped based upon information provided by utility companies and apparent points collected in the field with GPS equipment.

Task 03 – Bridge Structure Over Desert Color Pkwy:

1. Collect and review topography, geotechnical, utility, and other data pertinent to the design.
2. Coordinate with the Geotechnical Engineer on revising and finalizing the Foundation Type Memo.

3. Complete and present a Structure Type Selection Report that documents the decision-making process used in developing the design that will be carried forward to final design. The Structure Type Selection Report will likely include:
    a. State of the foundation assumptions for the preliminary bridge concepts.
    b. Identify utilities and construction impacts requiring temporary or permanent relocation/replacement.
    c. Discuss any project specific aesthetic requirements required for the structure.
    d. Narrative that describes the bridge type options considered (i.e., prefabricated box truss, precast concrete girders, etc.) and a decision matrix for selection of preferred option.
4. Complete and present a Seismic Design Criteria Memo per UDOT's Structures Design and Detailing Manual (SDDM) requirements.
5. Perform final engineering design; accomplish detail design; prepare for incorporation into the contract documents, construction drawings, and specifications to show the character and scope of work to be performed by contractors on the project.
    a. Construction drawings are anticipated to include: situation and layout sheet(s) (S&Ls), soil data sheets, foundation and utility plan, foundation details, anchorage and bearing details, deck plan, superstructure details, deck details, MSE wall plan and detail sheets, and reinforcing schedule.
    b. Structural calculations required to meet AASHTO LRFD and UDOT's SDDM requirements.
    c. Special provision specifications are anticipated to supplement City standard specifications utilizing UDOT standard specifications as needed.
6. Prepare and provide bidding documents that will include a bid schedule and quantity takeoffs.
7. Prepare and provide contract documents as required by UDOT.
8. Prepare and provide an Opinion of Probable Cost for the structure.

Deliverables

1. Submission of the following documents during the Geometry, Plan-In-Hand, and PS&E design phases:
    a. Structure Type Selection Report
    b. Seismic Design Strategy Report
2. Final Structural Construction Drawings
3. Final Project Manual
    a. Bidding Documents
    b. Agreement Documents
    c. Special Provision Specifications based on UDOT standards
4. Opinion of Probable Cost

Assumptions

- All structural design will be placed in UDOT ROW within the limits defined on figure 3 above. The trail ramps, and other methods of connections to the structure, are excluded from this work.
- Based on a conversation with UDOT Structures (Mark Daniels on 8/30/23) all structures placed within the UDOT ROW will require a typical UDOT review and delivery process.
- Assume bridge will reach grade with earth embankment and Mechanically Stabilized Earth (MSE) Walls.
- Assume the preferred alternative will be a prefabricated box truss style bridge.
- It is assumed that because this is a Pedestrian Bridge no Load Ratings will be required. The bridge will support a maintenance vehicle (H5 load) as defined by AASHTO LRFD.
- Structure is assumed to not require lighting and therefore is not included in this Scope of Work.

Task 04 – Underpass Structure Under Black Mountain Drive:

1. Collect and review topography, geotechnical, utility and other data pertinent to the design.
2. Complete and present a Structure Type Selection Report that documents the decision-making process used in developing the design that will be carried forward to final design.
3. Perform final engineering design; accomplish detail design; prepare for incorporation into the Contract Documents, construction drawings, and specifications to show the character and scope of work to be performed by contractors on the Project.
    a. Construction drawings are anticipated to include: situation and layout sheet(s) (S&Ls), soil data sheets, utility plan, barrel details, headwall details, and reinforcing schedule.
    b. Structural calculations are required to meet AASHTO LRFD and SDDM requirements.
    c. Special provision specifications are anticipated to supplement UDOT's standard specifications.
4. Prepare and provide bidding documents that will include a bid schedule and quantity takeoffs.
5. Prepare and provide contract documents as required by UDOT.
6. Prepare and provide an Opinion of Probable Cost for the structure.
7. Perform lighting electrical design for trail lighting in the proposed underpass structure.

Deliverables:

1. Submission of the following documents during the Geometry, Plan-In-Hand and PS&E design phases:
    a. Structure Type Selection Report
2. Final Structural Construction Drawings
3. Final Project Manual (to be incorporated with the Trail Project Manual)
    a. Bidding Documents
    b. Agreement Documents
    c. Special Provision Specifications based on UDOT standards
4. Opinion of Probable Cost

Assumptions:

- All structural design will be placed in UDOT ROW within the limits defined on figure 3 above. The trail ramps, and other methods of connections to the structure, are excluded from this work.
- Based on a conversation with UDOT Structures (Mark Daniels on 8/30/23) all structures placed within the UDOT ROW will require a typical UDOT review and delivery process.
- Headwalls are assumed to be identical.
- It is assumed that the Underpass Structure will span less than 20 feet; therefore, no Load Rating will be required.
- Civil Science will utilize BNA Consulting to complete the electrical design portion of this Scope of Work.

Task 05 – Geotechnical Investigation (Landmark Testing & Engineering):

1. Bridge Structure Over Desert Color Pkwy Investigation
    a. 1 boring for each abutment of the bridge for a total of 2 borings.
    b. Determine seismic site class by using the ReMi method.
2. Underpass Structure Under Black Mountain Drive Investigation
    a. 2 borings on each end of the proposed underpass structure
3. Geotechnical Laboratory Testing
    a. Mechanical gradations and Atterberg Limits to assist in soil classification for correlations with design parameters.
    b. Unit weight and moisture content.

c. Unconfined compressive strength on bedrock core specimen.
d. Water soluble sulfate content, chloride content, soil pH, and resistivity for corrosion potential.

4. Geotechnical Design and Report
   a. Site map showing the project layout with investigation locations.
   b. Investigation logs that will include sampling method, sample locations, soil descriptions
   c. and classifications in accordance with ASTM D2487, and depth to water (if encountered).
   d. Soil/bedrock classification and terminology chart for the logs.
   e. Description of surface and subsurface conditions encountered including geologic setting, and location of groundwater, if encountered.
   f. Results of laboratory tests.
   g. Site geology and geologic hazards.
   h. Seismicity and seismic coefficients for each structure site.
   i. Slope stability analysis.
   j. Liquefaction and lateral spread analysis.
   k. Geotechnical design of deep or shallow foundations for each substructure (to be coordinated with structural engineer)
      i. Drilled shaft size, est. tip elevation, and minimum tip elevation based on strength, service, and extreme event limit state analyses, including:
         1. Axial Compression Resistances
            a. Settlement and downdrag
            b. Group effects
         2. Lateral Resistance and Uplift
            a. Lpile analysis
   l. Lateral earth pressures for on-site and imported material including, active, at-rest, passive and coefficient of sliding friction. Coefficients will also be provided for seismic loading.
   m. Earthwork recommendations, including cut and fill slopes, use of on-site soils, rock excavation requirements, and compaction requirements.

Deliverables:

1. Field Investigation, Test Pits and Borings, ReMi Shear Wave
2. Lab Testing
3. Draft Geotechnical Report that addresses foundation type.
4. Final Geotechnical Report

Assumptions:

- Includes coordination with structures engineer to determine optimal deep or shallow foundation system for bridge structure.
- Includes preparation of Draft Geotechnical Report to be submitted to UDOT Structures at the Geometry, Plan-In-Hand and PS&E design phases for each structure. This report may be combined for both structures.
- Civil Science will utilize Landmark Testing and Engineering for this portion of the work.

FEE PROPOSAL

Civil Science proposes to complete the Scope of Work outlined above as follows:

	Task Description	Total Fee	Fee Type	Comments
Trail Design Assistance				
Task 01	Sand Hollow Road	$20,000	Hourly	As Requested
Task 02	SR-7; I-15 to Desert Canyon Parkway	$100,000	Hourly	As Requested
	Subtotal:	**$120,000**		
Pedestrian Structures Design				
Task 01	Project Meetings, Management, & Coordination	$14,900	Lump Sum	Includes Coordination with UDOT Structures
Task 02	Survey for Structures	$13,800	Lump Sum	
Task 03	Bridge Structure Over Desert Color Pkwy	$120,300	Lump Sum	
Task 04	Underpass Structure Under Black Mountain Drive	$54,500	Lump Sum	Includes Trail Lighting in Underpass Structure
Task 05	Structures Geotechnical Investigation	$29,400	Lump Sum	Subconsultant Landmark Testing & Engineering
	Subtotal:	**$232,900**		
	Total Contract Amount:	**$352,900**		

Fees shown are not to exceed unless upon written authorization from the City. Professional services rendered for the Hourly Fee Type will be completed by CS at the rates and fees given in attached Exhibit A.

ADDITIONAL SERVICES

The City may authorize Civil Science to furnish or obtain from others additional services of the types listed below, which are not included in the basic Scope of Work. If such additional services are authorized by the City, then Civil Science shall be entitled to an equitable increase in compensation for such additional services.

1. Preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for the project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the project.
2. Services resulting from significant changes in the scope, extent, or character of the portions of the project designed or specified by Civil Science or its design requirements including, but not limited to, changes in size, complexity, City's schedule, character of construction, or method of financing; and revising previously accepted studies, reports, drawings, specifications, or contract documents when such revisions are required by changes in laws and regulations enacted subsequent to the effective date of this agreement or are due to any other causes beyond Civil Science's control.
3. Hydraulic modeling, analysis or reporting beyond what is described in the Scope of Work.

4. Services requiring an in-depth (subsurface investigation) of utilities or utility mapping other than what is described in the Scope of Work.
5. Services attributable to more than one prime construction contract or multi-phase construction.
6. Preparing for, coordinating with, participating in and responding to structured independent review processes, including, but not limited to, construction management, cost estimating, project peer review, value engineering, and constructability review requested by City; and performing or furnishing services required to revise studies, reports, drawings, specifications, or other bidding documents as a result of such review processes.
7. Preparing additional bidding documents or contract documents for alternate bids or prices requested by Owner for the work or a portion thereof.
8. Assistance in connection with bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services, except when such assistance is required by the Scope of Work.
9. Evaluating an unreasonable claim or an excessive number of claims submitted by the contractor or others in connection with the work.
10. Searching out property owners and negotiating for easements, land, or rights-of-way, etc.
11. Completing property surveys, property plats, property descriptions, and abstracting.
12. Redesigns ordered by City after final plans have been accepted by City or after substantial design work has been completed on previously approved design concepts.
13. Materials Sampling and Testing during construction.
14. Preparation of landscape or irrigation design.
15. Preparation of wayfinding signage for the trail system.

If the City chooses to move forward, we recommend execution of a contract based on this Proposal in a format agreeable to both parties. We appreciate the opportunity to work with the City on this and other projects. Please call me at (801) 592-7864 with any questions or concerns.

Respectfully,

Tyler W. Turner, PE
Vice President

Exhibit A – CS Standard Hourly Rates and Fee Schedule (UT01/2023)

LABOR RATES – Services provided by CS personnel will be invoiced at the hourly rates identified below:

Labor Category	Hourly Labor Rate[1]
Technician I	$85.00
Technician II	$95.00
Technician III	$109.00
Technician IV	$123.00
Technician V	$136.00
Technician VI	$171.00
Engineer I	$109.00
Engineer II	$129.00
Engineer III	$146.00
Engineer IV	$160.00
Engineer V	$171.00
Engineer VI	$192.00
Sr. Engineer	$229.00
Admin I	$70.00
Admin II	$87.00
Admin III	$106.00
Admin IV	$134.00
Admin V	$156.00

Labor Category	Hourly Labor Rate[1]
Survey I	$84.00
Survey II	$99.00
Survey III	$115.00
Survey IV	$137.00
Survey V	$159.00
Survey VI	$169.00
Sr. Survey	$215.00
Survey Crew – 1-Man	$134.00
Survey Crew – 2-Man	$204.00
Landscape Architect I	$89.00
Landscape Architect II	$107.00
Landscape Architect III	$124.00
Landscape Architect IV	$141.00
Sr. Landscape Architect	$159.00
Visual Designer	$136.00
Project Manager I	$141.00
Project Manager II	$159.00
Project Manager III	$178.00

DIRECT REIMBURSABLE RATES:

Mileage	$ 0.655 /mile (IRS std.)
Full Day Per-Diem (as necessary and agreed upon)	$ 59 /person/day (IRS std.)
Partial Day Per-Diem (as necessary and agreed upon)	$ 44.25 /person/day (IRS std.)
Lodging (as necessary and agreed upon)	$ Cost/Night + 15% Mark Up
Outside Consultants / Subconsultants	$ Cost + 15% Mark Up
Other Expenses or Direct Costs Occurred	$ Cost + 15% Mark Up

TIME CHARGES: Time reporting for all office personnel is based upon actual time in office. Time reporting for all field work is based upon actual field work plus travel time to and from assigned office location. Time billed in 15 minutes increments.

AUDIT PRIVILEGES: All job audit privileges of CLIENT will extend only to review, and approval of monthly invoices submitted by CS to CLIENT. Invoices prepared and submitted by CS will include copies of source documents of all expenditures including: time, travel, subcontracts, supplies, equipment, materials, or premiums. The CLIENT may review, debate, or qualify items for payment at the time of invoice review and approval and payment of invoice. CLIENT waves post job audit privileges beyond invoice approval. CS will not retain job related support documents or any other billing documents beyond the periodic period, review period, and collection by CS of invoices submitted.

ESTIMATES: Estimates are provided to the CLIENT for budgeting purposes only and are not an agreement by CS to perform the services for a lump-sum, fixed fee, or not to exceed price unless otherwise provided for in the contract. CS reserves the right to change rates used on rate-based reimbursable contracts.

[1] *Rates change annually at beginning of year and may change on other occasions*

Agenda Date: 11/16/2023 **Agenda Item Number:** 2b

Subject:

Consider approval of an Active Transportation Cooperation Agreement with UDOT for the SR-7 Trail.

Item at-a-glance:

Staff Contact: Cameron Cutler

Applicant Name: Cameron Cutler

Reference Number: N/A

Address/Location:

SR-7 from Desert Color Pkwy to Desert Canyon Pkwy

Item History (background/project status/public process):

The City applied for an active transportation grant from UDOT for the design and construction of the SR-7 Trail Project from I-15 to heading east. The City was granted, along with Washington City and Hurricane City, an amount of $10,240,000 (80% of total) from the State for the project. With a 20% local match of $2,560,000 (St. George - $2,220,440, Washington - $160,160, and Hurricane - $179,400), the project's estimated cost amounts to $12,800,000. As outlined in the cooperation agreement, it is proposed that City of St. George receive the State grant and the local match funds from Washington and Hurricane to administer the project design and construction.

Staff Narrative (need/purpose):

The SR-7 Trail project has been planned for many years in conjunction with UDOT in order to provide a safer travel way for pedestrians and bicyclists. The funding for this project was awarded last year to the 3 cities. Since then, it has been discussed and determined that the project would save considerable amounts of money if St. George were to administer the project.

Name of Legal Dept approver: Daniel Baldwin

Budget Impact:

Cost for the agenda item: $12,800,000

Amount approved in current FY budget for item: $11,650,000

If not approved in current FY budget or exceeds the budgeted amount, please explain
funding source:

This is a multi-year project and was anticipated to begin in FY22-23 with an estimated expenditure of $1M in FY22-23 and remaining funds to be expended in FY23-24. However, the project did not commence. The original UDOT grant funds was $10,109,840. The grant amount ended up being $10,240,000, which results in local match funds being slightly higher than originally estimated.

Description of funding source:

The funding source for this project is proposed as follows: UDOT - $10,240,000, Washington - $160,160, Hurricane - $179,400, St. George - $2,220,440 (Transportation Improvement Funds).

Recommendation (Include any conditions):

Staff recommends approval of the cooperation agreement with UDOT.

State of Utah
Department of Transportation

Active Transportation Cooperative Agreement	Project Description: SR-7 Active Transportation Facility - Various Locations beginning at SR-7 MP-0 and continuing as approved by UDOT. Local Agency(ies): City of St. George; Washington City; Hurricane City; and Washington County	Estimated Local Match: $2,560,000.00 Estimated Grant Funding: $10,240,000.00
PIN: 20510 CID: 74368 Project #: S-R499(451)	Total Project Value Estimate: $12,800,000.00 (Includes Local Match)	Date Executed:

THIS AGREEMENT (the "**Agreement**"), made and entered into as of the "Date Executed" stated above, by and between the UTAH DEPARTMENT OF TRANSPORTATION, an agency of the State of Utah (hereinafter referred to as **"UDOT"**) and the following: City of St. George, Utah, a Utah municipal corporation; Washington City, a Utah municipal corporation; Hurricane City, a Utah municipal corporation; and Washington County Utah, a political subdivision of the State of Utah, (hereinafter referred to individually by their names or as a "**Local Agency**," and collectively referred to as the **"Local Agencies"**).

RECITALS

WHEREAS, the Local Agencies have obtained a grant from UDOT's Active Transportation Fund, which requires the Local Agencies to provide twenty percent in local matching funds, (collectively the "**Grant**") and the Grant will be used to construct an active transportation facility (the "**Facility**" or "**Facilities**"), as further stated herein; and

WHEREAS, UDOT owns the SR-7 "Southern Parkway" right-of-way (the "**ROW**"), and the Local Agencies received the Grant to construct the Facility within the ROW in order to promote active transportation (for walking, cycling, and other active forms of transportation) and to promote safety for all ROW users; and

WHEREAS, the Local Agencies will design and construct the Facility on UDOT's ROW, and thereafter the Local Agencies will own, maintain, and operate the Facility in the manner stated in this Agreement; and

WHEREAS, the parties desire to enter this Agreement to set forth their understanding concerning the Facilities.

AGREEMENT

THEREFORE, in consideration of the foregoing table and recitals, which by this reference are incorporated into this Agreement, and the terms and conditions set forth below, the parties agree as follows:

I. PROJECT AND REPRESENTATIVES.

A. Project. The identifying information for the project is stated in the table at the beginning of this Agreement (the "**Project**"). The Project involves design and construction work that the Local Agencies will contract for and manage. UDOT will oversee the administration of the Grant funds, but the Local Agencies are solely responsible for the Project work.

B. Project Description. The Project will begin at SR-7 Milepost 0 and will continue along SR-7 as far as can be constructed using the Grant. The completed Facilities are expected to be seven to twelve miles in length, and they will be located within UDOT's ROW in a location approved by UDOT that is adjacent to the Local Agencies' jurisdictions. The Project and Facilities are further described in the Grant Request submitted by the Local Agencies and the Washington County SR-7 Active Transportation Concept Report, and the Facilities will be consistent with that information and this Agreement (if there is a conflict between such information and this Agreement, this Agreement will govern).

C. Representatives. The following are the parties' representatives for the Project for all matters prior to Project acceptance:

1. UDOT:

Kim Manwill, Project Manager
kmanwill@utah.gov

2. Local Agencies: The following is the sole authorized representative for the Local Agencies for the design and construction of the Facilities (the "**Local Project Manager**"). All of the parties who are Local Agencies agree that the Local Project Manager is their representative and will represent them as UDOT's sole contact for all matters involving the design and construction of the Facilities:

City of St George
Cameron Cutler, Local Project Manager
Cameron.cutler@sgcity.org

II. FUNDING.

A. The Project funding is as follows:

State Wide Transportation Improvement Program STIP 2021 - 2023

Fund	Prior	2022	2023	2024	Future	Fed Aid	State	Local	Pct
ST_TIF_ACT	$0	$0	$10,240,000	$0	$0	$0	$10,240,000	$0	80 %
LOCAL_MATCH	$0	$0	$2,560,000	$0	$0	$0	$0	$2,560,000	20 %
							Total Project Value	$12,800,000.00	

B. Method of Payment. The Local Agencies agree that the Grant funds will be paid as follows:

1. UDOT will pay the state portion of the Grant funds on a reimbursement basis for Project expenses that are subject to payment from the Grant funds. The Local Agencies consist of several local government entities, but UDOT will direct payment solely to the City of St. George. The Local Project Manager is responsible to allocate money (if required) among the entities that are the Local Agencies, and the Local Agencies agree that UDOT has no responsibility of any kind to direct payment in a manner that differs from the manner specified in this section II.B.1.

2. The Local Project Manager may submit a monthly reimbursement request to the UDOT Project Manager which shows: (a) each Project expense that the Local Agencies paid in the previous month for the work needed to design or construct the Facilities, and a brief explanation of each such expense; (b) the total amount of all eligible expenses paid that month by the Local Project Manager; (c) an entry showing that the Local Agencies have removed from the reimbursement request a sum equal to twenty percent (20%) of the total amount paid toward eligible expenses for the Project for that month, and showing that such twenty percent (20%) was paid by the Local Agencies' matching funds, as required by the

Grant; and (d) a request to receive reimbursement from state Grant funds for the remaining eighty percent (80%) of the eligible expenses that the Local Agencies paid toward the Project for that month. UDOT will not make reimbursement if a request does not show that the required local matching funds portion has been removed.

3. All reimbursement requests are subject to review, verification, request for clarification, and audit by UDOT, and UDOT may reject any expense that was not incurred, or that was not a reasonable expense for the Project that is eligible under the approved Grant award. If any expense is rejected, UDOT will adjust future reimbursements to maintain the required 80/20 funding sources required by the Grant.
4. The Local Agencies will not submit reimbursement requests that exceed the amount of the state portion of the Grant funds.

C. Termination of Project or Completion of Work. The Local Agencies agree that if all or a part of this Agreement or of the Project terminates and UDOT incurs costs or penalties as a result, or if the parties agree to modify this Agreement or the Project in a way that increases UDOT's costs, the Grant funds will be used to pay the penalties or costs incurred by UDOT as a result. The Local Agencies also agree that if there are any unexpended Grant funds remaining on the Project upon any termination or completion of work, those funds will be returned to the funding source where they originated and will be reprogrammed.

D. Quarterly Statement. Upon request by the Local Project Manager, the UDOT Comptroller shall provide the Local Project Manager with a quarterly statement reflecting a cost summary for the Project.

E. Project Scope Only. This Agreement and the Grant only apply to the work approved as part of the Grant award. It does not include betterments or other work outside of that scope.

III. DESIGN AND CONSTRUCTION ROLES AND RESPONSIBILITIES.

A. UDOT. During the Local Agencies' performance of the work for the Project, UDOT will have the following roles and responsibilities:

1. Oversee compliance with state regulations relating to the Grant.
2. Provide transportation Project oversight as outlined in laws applicable to this Project.
3. Assign a UDOT Project Manager to:
    a. Assist the Local Project Manager to monitor scope, schedule, budget for funding purposes, and help track expenditures during all phases of the Project so Grant funds will not be exceeded.
    b. Perform Project risk monitoring by reviewing and discussing identified risks and mitigation efforts as the Local Agencies determine and address risks and issues.
    c. Prepare and process the necessary agreements before Project initiation and Project completion.
    d. Coordinate and participate in design review meetings to facilitate compliance with the UDOT design process, and provide UDOT's consent or rejection for the final design documents.
    e. Notify the Local Program Manager of standards, rules, policies, and other requirements that apply to the Facilities and the UDOT ROW, as implemented by UDOT from time to time, until construction is complete.
    f. Coordinate ongoing communication needs with the Local Program Manager.
    g. Review reimbursement requests, conduct further inquiry, and approve or reject requests for reimbursement.
    h. Work with the Region Utility Coordinator in preparing and executing UDOT Standard Utility Reimbursement Agreements, as required.
    i. Coordinate the UDOT project closeout process, and provide UDOT's final consent or rejection for the Project work.

j. Coordinate with UDOT Structures and assist the Local Agencies' Local Project Manager in navigating the UDOT Structural review and approval process, as required.
k. Oversee Project compliance with state transportation project processes.
l. Participate in construction management or the selection of a consultant to oversee project management for the day-to-day activities of the Project as follows:
    i. Coordination with the assigned Local Project Manager.
    ii. Project risk monitoring by reviewing and discussing identified risks and mitigation efforts.
    iii. Monitor Project schedule and progress of all Project tasks to ensure a timely delivery of the Project.
    iv. Schedule discussion should be held in all preconstruction and construction Project progress meetings.
    v. Review whether required documentation is in place before submitting the construction.
    vi. Attend Construction Coordination meetings and coordinate with the Local Project Manager.
    vii. Review whether materials comply with the current UDOT Materials Testing and Acceptance Manual and the UDOT Minimum Sampling and Testing Requirements.
    viii. Assist to provide all documentation needed for construction Project close out.
    ix. Coordinate the Project close out process by timely closing all open contracts and agreements.

B. Local Project Manager for the Local Agencies. Before final acceptance of the work for the Project, the Local Program Manager shall manage the Project in compliance with applicable laws and regulations. The Local Program Manager shall monitor the quality of work being performed on the Project and daily activities and issues with the consultants. The Local Program Manager, on behalf of the Local Agencies, will also have the following roles and responsibilities:

1. Act as the single representative of the Local Agencies and coordinate all matters among them without UDOT's involvement.
2. Research, understand, and take responsibility for requirements relating to the Local Agencies' acceptance of state funds.
3. Coordinate with the UDOT Project Manager concerning the funding.
4. Work with organizations (MPO's, etc.) concerning funding and expenditure time-frames, scope issues and delivery schedule.
5. Manage the day-to-day activities of the Project as follows:
    a. The Local Program Manager shall recommend and approve consultant pay requests.
    b. Manage Project scope, schedule, budget, and quality, including, but not limited to, ensuring compliance with all UDOT Process & Procedure Standards for Design and Construction.
    c. Coordination of details, decisions and impacts with the Local Agencies' community councils, commissions, legal counsel, department heads, political leads, engineering and public works departments, etc.
    d. Coordination with the assigned UDOT Project Manager.
    e. Project risk monitoring by reviewing and discussing identified risks and mitigation efforts, and addressing risks.
    f. Assist the UDOT Project Manager in overseeing Project compliance with state transportation project processes.
    g. Coordinate with the UDOT Project Manager and Comptroller's Office to provide information needed for reimbursement requests.
    h. Approve the final advertising package and obtain local signature approvals, advertisement, and ensure that the process complies with UDOT processes & procedures for contractor selection.
    i. Attend Construction Coordination meetings and coordinate with the Resident Engineer (RE).

j. Review and approve all construction change orders as Project oversight in compliance with UDOT process and procedures.
k. Review and approve the Project budget for changes related to change orders, quantity overruns, incentives, fuel and asphalt adjustments, etc.
l. Assist UDOT to provide all documentation needed for construction Project close out.
m. Assist UDOT in coordinating the Project close out process.

This list of roles and responsibilities is not comprehensive but describes general roles. The Local Project Manager is also responsible to coordinate all matters among the parties who are part of the Local Agencies. UDOT is not responsible for coordinating with anyone other than the Local Project Manager.

IV. WORK WITHIN THE UDOT ROW

A. Temporary License. UDOT hereby grants a temporary, nonexclusive license to the City of St. George, as the agency which is the Local Project Manager and as agent for the Local Agencies for design and construction of the Facilities, to enter the UDOT ROW for purposes of designing and constructing the Facilities. The following terms apply to this license:
   1. The City of St. George may allow its employees, consultants, contractors, and those of other Local Agencies, to use this license for purposes directly related to design and construction of the Facilities. All persons entering the UDOT ROW must comply with applicable safety and other access requirements.
   2. The scope of this license is limited to the needs of design and construction for the Facilities. Among other things, this license shall be limited to the Facilities work approved by UDOT; it shall be limited to the agreed upon schedule for the Facilities work; and it shall be limited to the agreed upon locations for the Facilities work.
   3. This license terminates upon final acceptance of the Facilities work (which requires UDOT's prior consent).

B. Work Practices. UDOT's rules, policies, procedures, and guidelines for work in the UDOT ROW shall apply to all work for the Facilities. This includes, but is not limited to, the following:
   1. The Project shall not disrupt traffic on SR-7 except as allowed in an encroachment permit obtained from UDOT.
   2. The Project shall restrict the public from entering any active worksite.
   3. The Local Project Manager will assist UDOT with any measures required to address traffic needs on SR-7.
   4. The Local Project Manager will provide for compliance with all applicable laws. Among other things, the Project shall comply with all applicable environmental requirements, including but not limited to those relating to contaminated soils, endangered species, and the discovery of historic artifacts.
   5. The Project shall not disrupt third-party installations or permitted interests, such as for utilities, that are located within the UDOT ROW, without the prior written approval of the third-party and UDOT.
   6. The Local Project Manager will implement a policy for when and how the public can access completed portions of the Facilities before the Project work receives Final Acceptance. Any such access shall be under the sole operation and management of the Local Agencies.

C. Stop Work or Termination Prior to Final Acceptance. UDOT may stop the work for the Facilities at any time to address legal requirements, safety concerns, UDOT's operational needs, violations of this Agreement, public needs, and for other reasons, in UDOT's discretion. Prior to Project completion, UDOT may terminate this Agreement or any portion hereof for the convenience of the state upon written notice to the Local Project Manager for any reason or no reason, and reasons may include, but are not limited to: if funding becomes unavailable; if there are unreasonable Project delays or costs; if environmental requirements cause delays; if needed for UDOT's transportation purposes, or if UDOT determine that there is insufficient support or acceptance of the Project by local stakeholders. Upon any such termination, UDOT may use the Grant funding to pay for incurred expenses to the extent of such funding, and

UDOT also may seek participation from the Local Agencies to pay incurred expenses if UDOT delivers a notice that explains why there is cause to seek such payment from the Local Agencies.

V. FINAL ACCEPTANCE

A. Terms of Final Acceptance. UDOT must consent in writing in advance to the Local Project Manager's final acceptance of the Project work. UDOT's consent does not waive any requirements of the Grant or this Agreement, and does not constitute an assumption of responsibility for any Project work by UDOT. Before UDOT provides its consent to final acceptance, UDOT must receive the following:
   1. As-built drawings for the completed Facility.
   2. A general release of liability from the contractor in favor of UDOT.
   3. A written acceptance of the Project work and release in favor of UDOT from each of the entities that are Local Agencies.

B. Agreement Sections for Design and Construction Responsibilities. The sections of this Agreement that specifically address only the initial design and construction of the Facilities (Sections I-IV) do not apply to any matters that occur after the final acceptance of the Facility.

C. Commitments of Local Agencies at Final Acceptance. Upon receipt of UDOT's consent for final acceptance of the Project work, the City of St. George, Washington City, Hurricane City, and Washington County each agree as follows:
   1. Each such agency agrees that it is the owner of all improvements constructed or installed for the portion of the Facilities that is adjacent to its jurisdiction (each an "**Agency Facility**"). Each such agency agrees that it shall not transfer or encumber its ownership of such improvements except as expressly stated in this Agreement.
   2. Each such agency agrees that it will operate and maintain its Agency Facility as provided in: this Agreement; UDOT's funding requirements; UDOT ROW requirements as adopted from time to time; and UDOT requirements for similarly situated Facilities as adopted from time to time.
   3. Each such agency hereby releases UDOT and its employees and agents from all claims and losses of every kind (including, but not limited to, claims, demands, damages, liabilities, liens, and suits, whether or not involving negligence or wrongful action) that are in any way connected with or arise from this Agreement, the Grant, the work for the Facilities, and the property where the Facilities are located.

VI. OPERATION AND MAINTENANCE BY LOCAL AGENCIES.

A. License by UDOT to each Local Agency.
   1. This Agreement allows each of the Local Agencies to make use of certain areas on UDOT's SR-7 ROW in connection with the Facilities. UDOT hereby grants to each of the Local Agencies a nonexclusive license to use the portion of the UDOT ROW where its Agency Facility has been constructed (adjacent to its jurisdiction), and the purpose of this license is for: owning, operating, maintaining, and repairing its Agency Facility. This license shall become effective at the time of final acceptance for the Facilities. This license shall terminate at any time when an Agency Facility is removed or is no longer in use, or when this Agreement is terminated in whole or in part. UDOT may, but is not obligated to, require additional documentation and agreements in connection with these licenses and the Local Agencies' uses within UDOT's ROW.
   2. This license includes access to the UDOT ROW to provide routine care and maintenance for the Local Facility, but all work must comply with UDOT requirements. Among other things, work must be outside the safety zone (e.g. a 14 Foot Clear Zone as Measured from Painted White Line on Mainline). All work within the UDOT ROW requires approved DOT orange clothing or outer wear. Youth volunteer groups between the ages of 16 and 18 are allowed to work within the right-of-way when adult supervision is provided. Youth under the

age of 16 are not permitted to work within the right-of-way. Any work within the safety zone will be allowed provided traffic control is implemented according to the MUTCD guidelines and a permit is obtained. If work will require that lane(s) of traffic will be impacted, the Local Agencies must obtain a permit from UDOT for approval of the traffic control plan in accordance with the MUTCD and applicable rules.

3. Nothing in connection with this Agreement affects UDOT's ownership of the SR-7 ROW or gives any form of property interest to a Local Agency.

B. Each Local Agency Responsible. The City of St. George, Washington City, Hurricane City, and Washington County, each for its own Agency Facility, agrees that it is solely responsible to own, operate, maintain, and repair its Agency Facility. This obligation includes, but is not limited to, the following:

1. Maintenance and Repair. The Local Agency shall be responsible to maintain the completed work as provided by Utah State Code Section 72-3-109 (or its successor) and applicable rules, except that the following shall also apply. From the time of UDOT's final acceptance, each of the Local Agencies is solely responsible for its Agency Facility. The term "**solely responsible**" means that for its Agency Facility, each of the Local Agencies is the only party that is responsible for the operation and care of the Agency Facility and must, at a minimum, perform the following for the Agency Facility and its immediate surroundings: safe operations; periodic inspections; maintenance and repair in a good and proper manner and in accordance with UDOT and industry standards (which includes, but is not limited to, crack sealing for asphalt); keeping areas clean; removing snow and debris; pruning, mowing and weed control for vegetation that affects the Agency Facility; fence repair for any fences installed under this Agreement; maintaining the integrity of walls installed under this Agreement; repair of Agency Facility systems; erosion control that affects the Agency Facility; placing and maintaining signage as approved by UDOT; maintaining markings on Agency Facility asphalt; maintaining Agency Facility drainage facilities in a clean, safe and repaired condition that does not allow water, debris or vegetation to accumulate; and sole responsibility for all liability associated with the Agency Facility. Each Local Agency will use reasonable care to protect the UDOT ROW from damage.
2. Graffiti and Signage. For its Agency Facility, each of the Local Agencies agrees to remove any graffiti that may be placed on the Agency Facility or adjacent UDOT property. Each also agrees that it shall not allow the placement of signs of any kind on the Agency Facility or the UDOT ROW without prior written UDOT approval, including, but not limited to, any advertising, posters, flyers, banners, flags, graffiti, or other similar materials. Each of the Local Agencies agrees to promptly remove any signs placed on or near the Agency Facility, and if UDOT requests their removal, each of the Local Agencies agrees to promptly comply.
3. Use of UDOT Property. Each of the Local Agencies agrees that it will not make any use of UDOT property without UDOT's prior written consent except as expressly allowed by this Agreement. This includes, but is not limited to, the following: each such agency agrees that it will not alter or install improvements (including signage) on UDOT's property without UDOT's prior written consent; no agency will connect the Agency Facility to SR-7 or to locations outside of the UDOT ROW without first obtaining a UDOT permit; each agency agrees that it will obtain any permits required by UDOT to perform work on the Agency Facility; each agency agrees that it will not conduct or allow special events on the Agency Facility without first obtaining a UDOT special events permit; no agency will install landscaping improvements on the UDOT ROW except as agreed in writing by UDOT. This Agreement and the matters that it contemplates are subordinate to UDOT's transportation purposes.
4. Third Parties in the ROW. Each of the Local Agencies agrees that it will cooperate with UDOT in connection with the Agency Facility and will cooperate with any third party that is present with UDOT's permission in the UDOT ROW. Each Local Agency shall avoid

impacting any utilities that may be in the vicinity of an Agency Facility. If utilities cannot be avoided and must be moved, they shall be relocated at the Local Agency's expense.

5. Operations. Each of the Local Agencies agrees to operate its Agency Facility in a manner that is safe, consistent with other uses of the UDOT ROW, and in compliance with UDOT and other applicable requirements, rules and policies.
6. Contact Information. After final acceptance of the constructed Facilities, each of the Local Agencies agrees to designate a contact person for its Agency Facility and to provide UDOT with current contact information.

VII. UDOT RIGHTS AND REMEDIES.

A. UDOT Authority to Act. The parties agree that nothing in connection with this Agreement alters UDOT's property rights or its authority to act in connection with its property.

B. Closures. UDOT, in its sole discretion, may block access to any portion of the Facilities at any time as UDOT may determine to address UDOT's needs, which may include, but are not limited to, closures for: safety or operational concerns; UDOT maintenance or construction activities; the termination of a license; and for other transportation purposes. UDOT has sole discretion to determine the length of closure, manner of closure, and other matters.

C. Performing Work. UDOT may, but is not obligated to, perform any work that this Agreement requires a Local Agency to perform, and UDOT may do so as UDOT shall determine and at the Local Agency's expense. UDOT will endeavor to first give the Local Agency reasonable written notice of the needed work so the Local Agency has the opportunity to perform the work. The Local Agency will pay an invoice for the same within thirty (30) days.

D. UDOT Service Costs. At any time under this Agreement, UDOT may provide expertise in project management, contract preparation, design plan reviews, advertising, construction materials verification/certification, technical assistance, engineering services or other services as needed. This includes costs for auditing consultant contracts that can be up to 0.5% of the contract costs. Appropriate charges for these costs will be incurred by the Project and included in the overall Project costs during the construction period for the Facilities. These charges might also apply as needed after final acceptance of the Facilities (such as in connection with significant repair work for an Agency Facility).

E. Access. UDOT is the owner of the UDOT ROW, and UDOT may access the Facilities at any time for any reason, and may perform any work, as UDOT may determine, for UDOT's own purposes. UDOT also may issue a permit or license that gives a third party (such as, for example, a utility owner) the right to access the Facilities. Each Local Agency hereby consents to this access.

F. Use. UDOT has the right to use the Facilities when required by UDOT. Among other things, UDOT can use the entire non-travelled portion of the UDOT ROW for snow storage. The parties agree that UDOT will not be held responsible for damage caused by snow removal operations.

G. Removal and Relocation. If UDOT decides to use the UDOT ROW where any portion of the Facilities is located, UDOT has the right to remove all or any portion of the Facilities, and UDOT has the right, but not the obligation, to relocate any Facilities. Alternatively, if approved by UDOT in an agreement, the affected Local Agencies may relocate the affected Facilities at their expense. Any removal or relocation will be without compensation to a Local Agency.

H. Term and Termination. This Agreement shall be for an initial term of ten (10) years. Thereafter, this Agreement shall automatically renew unless renegotiated, or unless terminated as provided in this section. UDOT may terminate this Agreement in whole or in part for the following reasons: (i) if an Agency Facility is abandoned (meaning not used or not maintained

for a period of six months or more); (ii) if a Local Agency fails to perform any obligation stated in this Agreement and fails to cure the default within one hundred twenty (120) days after receiving a written notice from UDOT requesting a remedy; (iii) at the expiration of any term of this Agreement if UDOT gives the Local Agency one hundred eighty (180) days' advance written notice and specifies the portions of the Agency Facility to be terminated; or (iv) after reasonable notice by UDOT if UDOT needs a portion of an Agency Facility for UDOT's transportation purposes. If UDOT terminates this Agreement in whole or in part, the following may apply to the terminated portion of the Facilities in addition to any other remedies that UDOT may have:

1. If terminated due to abandonment or other default by a Local Agency, UDOT may require the Local Agency to remove all or a portion of the Agency Facility at the expense of the Local Agency. If removed, the Local Agency will restore the area to the condition that existed prior to construction of the Local Facility.
2. UDOT may require a Local Agency to transfer ownership of all or a portion of an Agency Facility (without payment) to another public agency that is willing to assume the obligations of this Agreement for the transferred portion.
3. UDOT may, but is not obligated to, require a Local Agency to transfer ownership of all or a portion of an Agency Facility (without payment) to UDOT.

I. Repair and Replace. If an act or omission of a Local Agency or its employees, agents, consultants, or contractors damages UDOT property, the Local Agency will repair or replace the damaged property to UDOT's reasonable satisfaction.

J. Withholding Funds. In the event the Local Agency fails to pay UDOT for a sum that becomes due under this Agreement, UDOT may withhold from the Local Agency funding for other Local Agency projects or B&C road funds until the entire payment is made, or UDOT may deduct sum that is due from any such funds, in addition to any other rights and remedies available to UDOT.

K. Indemnity. Each Local Agency agrees to indemnify, defend, and save harmless UDOT and its commissioners, employees, and agents from and against all losses of every kind (including but not limited to any claims, suits, costs, environmental contamination damages and penalties, and loss from personal injuries and property damage) that arise from or relate to (i) the Local Agency's use of UDOT property; or (ii) any wrongful or negligent act or omission of the Local Agency or its employees, agents, contractors or consultants in connection with entering into or performing this Agreement. The Local Agency is a governmental entity subject to the Utah Governmental Immunity Act, and nothing in this paragraph is intended to waive any provision of the Utah Governmental Immunity Act provided said Act applies to the loss in question. This indemnification obligation shall survive the expiration or termination of this Agreement.

L. Insurance. Each party to this Agreement agrees to require its contractors and consultants working in connection with this Agreement to maintain insurance in amounts reasonably sufficient to pay for the contractor's or consultant's negligent acts or omissions. In addition, each Local Agency hereby represents that it is a member of the Utah Local Governments Trust or is similarly self-insured to address potential claims, and each agrees to remain so insured in connection with its interests hereunder. Each Local Agency agrees to give UDOT prompt notice of any potential claims or losses that may affect UDOT.

VIII. Miscellaneous. The following terms apply to this Agreement:

A. Notices. Any party may give a written notice under this Agreement by delivering it to the following physical address (an email may be used in addition as a courtesy), and notice is effective upon delivery when delivered by hand or by overnight delivery service with confirmation of delivery (or, if placed in the U.S. mail, notice is effective three days after such notice receives a postmark):

To UDOT:

Utah Department of Transportation
4501 South 2700 West
Box 143600
Salt Lake City, UT 84114
Attention: _____

With a copy to:

Assistant Attorney General (UDOT)
4501 South 2700 West
Box 143600
Salt Lake City, UT 84114

To City of St. George:

To Washington City:

To Hurricane City:

To Washington County:

B. Further Assurances. The parties agree to undertake and perform all further acts that are reasonably necessary (except when expressly prohibited by law) to carry out the intent and purpose of the Agreement and to assist UDOT with maintaining compliance with the legal requirements applicable to UDOT after receiving a written notice that explains the need for such action. The parties further agree to work together cooperatively and in good faith to accomplish the intent of this Agreement.

C. UDOT Actions. UDOT's action or inaction when providing a consent, review, acceptance, or approval, or when taking other action hereunder, for any conditions, inspections, plans, specifications, or work, is for purposes of administering this Agreement only, and it does not constitute an assumption by UDOT of any responsibility or liability for the same.

D. General. No part of this Agreement may be waived, whether by a party's failure to insist on strict performance of this Agreement or otherwise, except in a writing signed by an authorized representative of the party waiving. No party may assign or delegate this Agreement and actions required by it without the other parties' prior written authorization, and any purported assignment or delegation to the contrary is void. This Agreement does not create any agency, joint venture, partnership, or other relationship among the parties, and it is intended only for the parties hereto and does not create any third-party beneficiaries. This Agreement is governed by Utah law without reference to choice or conflict of law provisions. Jurisdiction for any judicial action brought in connection with this Agreement shall be brought in a court in Salt Lake County, Utah, and ALL PARTIES KNOWINGLY AND VOLUNTARILY WAIVE THEIR RIGHTS TO A JURY TRIAL. Time is of the essence. This Agreement (or, if any part hereof is invalidated by law, this Agreement's remaining provisions) shall be construed to enforce its terms to the fullest extent allowed under applicable law to give effect to the intent of the parties. This Agreement will not be construed under an assumption to interpret it against a drafter. Before taking any legal action in connection with this Agreement, each party agrees to first

advise the other of a dispute and to meet in good faith in an effort to resolve it. All rights and remedies in this Agreement are cumulative and nonexclusive and do not limit any other rights and remedies of the parties. Nothing in this Agreement shall be construed to limit UDOT's governmental powers and authority. This Agreement may only be amended in a written document that is signed by an authorized representative of each party. This is the entire agreement of the parties with respect to the subject matter hereof and it shall supersede all prior negotiations, understandings, and agreements with respect to such subject matter. Each party warrants that all of its representatives who are necessary to make this Agreement fully binding against the party (and its successors and assigns, if any) have signed below with the party's authorization, and that this Agreement's terms do not violate other contracts and commitments of the party. This Agreement may be signed in counterparts and signed electronically.

IN WITNESS WHEREOF, the parties hereto have each caused an authorized representative to execute this Agreement as of the "Date Executed" first written above.

Utah Department of Transportation, an agency of the State of Utah By: _____ Its: _____	UDOT Comptroller's Office: By: _____ Its: _____
Approval/Recommended By: By: _____ Its: _____	Approval/Recommended By: By: _____ Its: _____

ADD OTHERS

Agenda Date: 11/16/2023 **Agenda Item Number:** 2c

Subject:

Consider approval of the Seventh Amendment to the Jviation contract dated September 23, 2021 for the Terminal Reconstruction Project.

Item at-a-glance:

Staff Contact: Rich Stehmeier

Applicant Name: City of St George

Reference Number: NA

Address/Location:

4508 S Airport Pkwy #1, St George, UT 84790

Item History (background/project status/public process):

A Pass Through Funds Agreement was signed by the City of St George on October 19, 2023 between the Utah Department of Transportation Agency (UDOT) and the City of St George for the amount of $10,000,000 for key activities which include the terminal renovation/remodeling to increase the size of the terminal secure area to accommodate increasing number of passengers flying in and out of SGU.

Staff Narrative (need/purpose):

The seventh amendment is for the preparation of construction plans, contract documents, technical specifications, and engineer's design report along with bidding, design, construction administration, and post-construction coordination for the terminal renovation project.

Name of Legal Dept approver: Ryan Dooley

Budget Impact:

Cost for the agenda item: $299,130.60

Amount approved in current FY budget for item: 0

If not approved in current FY budget or exceeds the budgeted amount, please explain
funding source:

Pass Through Funds Agreement received by the City of St George for the amount of $10,000,000 .

Description of funding source:

This will be paid with State of Utah funds as part of a $10,000,000 appropriations state grant.

Recommendation (Include any conditions):

Staff recommends approval

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AMENDMENT NO. SEVEN (7) TO CONTRACT
DATED SEPTEMBER 23, 2021
BETWEEN
JVIATION, A WOOLPERT COMPANY, LLC
AND
CITY OF ST. GEORGE

The Sponsor and Jviation agree to amend their contract for improvements to the St. George Regional Airport, St. George, Utah to include fees for engineering services. The improvement item is included in the Scope of Work of the original contract. The item covered by this amendment is described as follows:

- Terminal Renovation

The Sponsor agrees to pay Jviation for the services listed under Section 2 of the original contract in the following manner, and within the time constraints outlined in the AIP development schedule.

PART A - BASIC SERVICES

DESIGN

Preliminary Design ..... Lump sum of $47,195.65
Design ..... Lump sum of $140,120.00

BIDDING

Bidding..... Lump sum of $15,772.65

TOTAL BASIC SERVICES ..... Lump sum of $203,088.30

Method of payment shall be as follows:

If work is abandoned, or terminated, after obtaining approval by the Sponsor and the FAA of the final construction plans and specifications, the Sponsor shall reimburse up to 100 percent of the total lump sum as listed under PART A, and 100 percent of the invoiced costs for soils and pavement investigations, topographic surveys, and hydrological studies, or other studies as listed under PART B.

The FAA's federal action is limited to airport layout plan (ALP) approval of only those portions of projects that meet the criteria established in 49 U.S.C. §47107(a)(16)(B), commonly referred to as Section 163(d) of the FAA Reauthorization Act of 2018. If it is determined that the FAA does not have authority over a portion of the project and associated work completed ahead of the determination is no longer FAA eligible, the Sponsor will remain responsible for this portion of the work.

PART B - SPECIAL SERVICES

The maximum estimated SPECIAL SERVICES engineering is as follows:

MEP AND FIRE PROTECTION ENGINEER

Van Boerum & Frank, Inc.... Lump sum of $11,697.80

TOTAL SUBCONSULTANT SERVICES ..... Lump sum of $11,697.80

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CONSTRUCTION ADMINISTRATION

Construction Administration ..... Lump sum of $62,621.50
Post Construction ..... Lump sum of $21,723.00

TOTAL CONSTRUCTION ADMINISTRATION ..... Lump sum of $84,344.50

TOTAL SPECIAL SERVICES..... $96,042.30

TOTAL..... $299,130.60

Method of payment shall be as follows:

For services rendered under PART B - SPECIAL SERVICES, the Sponsor agrees to make monthly payments based upon the work performed by Jviation, up to 90 percent of the total contract. The final ten percent of the fee shall be due and payable when the project final inspection and the construction report have been completed, and when reproducible Record Drawings have been submitted to the Sponsor and when the revised Airport Layout Plan has been approved by the FAA or when the construction work has terminated. The Record Drawings and Construction Report shall be submitted within a period of 90 days from end of construction period.

For the purposes of estimating the amount of expenses which will be incurred by the Engineer, the cost of mileage is calculated in accordance with the current IRS rate and per diem and lodging are calculated in accordance with applicable, current GSA rates. The actual amounts to be invoiced for mileage and per diem will be in accordance with the applicable, published IRS and GSA rates at the time of service and may vary from the rates used in the fee estimate. Lodging will be invoiced as an actual expense incurred.

All other terms and conditions of the original contract shall remain in effect.

IN WITNESS WHEREOF, the parties hereto have affixed their signatures this _____ day of _____ 2023.

SPONSOR:
City of St. George

By: _____

Name: Rich Stehmeier

Title: Airport Director

JVIATION, A WOOLPERT COMPANY, LLC:

DocuSigned by:

By: _____
E0C2F0D425854DF...

Name: Eric Risner

Title: Vice President

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SCOPE OF WORK
FOR
ST. GEORGE REGIONAL AIRPORT
St. George, UT
Terminal Renovation

This is an Appendix attached to, made a part of and incorporated by reference with the Professional Services Agreement dated October 23, 2021 between St. George Regional Airport and Woolpert, Inc., / Jviation, a Woolpert Company, for providing professional services. For the remainder of this scope the St. George Regional Airport is indicated as "Sponsor" and Woolpert, Inc., / Jviation, a Woolpert Company, is indicated as "Architect/Engineer." The construction budget for this project is approximately $1,350,000. This budget does not include administrative, legal, or professional fees.

This project shall consist of preparing Construction Plans, Contract Documents, Technical Specifications, and Engineer's Design Report, along with Bidding, Design, Construction Administration, and Post-Construction Coordination for the Terminal Renovation Project. This scope of work is for the consulting services provided by the Architect/Engineer for the Sponsor. See Exhibit No. 1 below for the project location.



EXHIBIT NO. 1

DESCRIPTION

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The existing terminal is utilized by the public more than any other building on the airport. The airport would like to provide an upper level bar and restaurant facility to serve patrons of the Airport. This project will create a floor plan that will improve passenger circulation between floors and be ADA compliant with dedicated seating and eating areas. The second floor will be renovated to include a new commercial foodservice and bar station operated by Tailwind Concessions. The plumbing, electrical, and mechanical systems will be upgraded to handle the new foodservice and bar areas. The new kitchen area will require all necessary commercial kitchen equipment including exhaust hoods, dishwashers, refrigerators, grills, and sanitary waste. The new bar area will include custom casework, drink serving equipment, dishwashers, refrigerators, and point of sale.

The secure area circulation will be revised to encourage patrons upstairs to the new bar and kitchen area. The Elevator Lobby walls will be revised by removing the north wall and providing a new west wall with a secure door. This revision will keep the Airport SIDA security measures intact, while allowing secure passengers an ADA access to the second floor.

The engineering fees for this project will be broken into two parts. **Part A-Basic Services** includes**;** 1) Preliminary Design Phase, 2) Design Phase, 3) Bidding Phase, and Reimbursable Costs During Design and Bidding and **Part B-Special Services,** which includes**;** 4) Construction Administration Phase, 5) Post-Construction Coordination Phase, and Reimbursable Costs During Construction. Additional services that will be completed by subconsultants to the Architect/Engineer, including the proposed MEP design will be included under Part B-Special Services. Parts A and B and the five phases are described in more detail below.

PART A - BASIC SERVICES consists of the Preliminary Design Phase, Design Phase, and Bidding Phase, all invoiced on a lump sum basis.

1.0 Preliminary Design Phase

1.01 Coordinate and Attend Meetings with the Sponsor. Meetings with the Sponsor will take place to determine critical project dates, establish the proposed design schedule and AIP development schedule, review environmental component(s), and determine the feasibility of the proposed project. Various meetings during the design phase will also be conducted to review the progress of the design, discuss construction details and proposed time frame of construction and identify any special requirements for the project. It is anticipated that there will be up to three meetings with the Sponsor throughout the course of the design. It is anticipated that a site visit will take place to determine feasibility of the proposed project. Assume one Architectural Project Manager making a full day site visit to evaluate feasibility.

1.02 Prepare Project Scope of Work and Contract. This task includes establishing the scope of work through meetings outlined above. Fees will be negotiated with the Sponsor and may be subject to an independent fee estimate conducted by a third party hired by the Sponsor. This task also includes drafting the contract for the work to be completed by the Architect/Engineer for the Sponsor once negotiations are complete.

1.03 Prepare Preliminary Cost Estimating. This task includes creating a preliminary construction rough order of magnitude (ROM) cost estimate, a preliminary working days estimate, a preliminary overall project schedule, and a preliminary overall project budget. The preliminary construction ROM cost estimate will be based upon the most current information available at the time of preparation. Work to refine these estimates is included under Task 2.10.

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1.04 Prepare Design Alternatives. This task includes conducting a virtual workshop with the Sponsor to develop the design alternatives which will be analyzed further for viability and cost. It is assumed five alternatives will be chosen during the workshop. This task includes the preparation of alternatives based on building shape, size, location, and interior/program options for the construction of the Terminal Renovation. Rough order of magnitude (ROM) cost estimates will be completed for each design alternative along with pros and cons. The Architect/Engineer will work with the Sponsor to select a preferred design alternative and present the preferred design alternative to the Sponsor representatives for final approval prior to moving forward to the design phase.

1.05 Coordinate Foodservice Conceptual Design. This task will include finalizing the building program elements to include in the foodservice design. This task also includes identifying the approximate square footage requirements based on the Sponsor and Foodservice Tenant's space requirements. A minimum of two conceptual designs will be proposed to the Sponsor to review and determine best use of the proposed spaces and significant items for the overall design. Each conceptual design package will include the following:

- Commercial bar station and bar seating
- Minimum requirements for kitchen equipment
- Identify minimum square foot requirements
    - To accommodate up to 50 patrons
- Identify all ADA needs
- Include preliminary cost estimates for each conceptual design

1.06 Provide Project Coordination. The Architect/Engineer shall provide project management and coordination services to ensure the completion of the design. These duties include:

- Time the Architect/Engineer spends planning, organizing, securing and scheduling resources, and providing instruction to staff to meet project objectives as defined in the approved scope of work.
- The Architect/Engineer will analyze the budget semi-monthly to ensure budget and staffing needs are on track to meet design schedules within budget.
- Additional items to be accomplished include compiling and sending additional information requested from the office to related parties, maintaining project files as necessary and other items necessary in day-to-day project coordination.
- The Architect/Engineer will prepare and submit monthly invoicing.

The Architect/Engineer will complete the following tasks:

- Provide the Sponsor with a monthly Project Status Report (PSR), in writing, reporting on Architect/Engineer's progress and any problems that may arise while performing the work. The PSR must include an update of the project schedule, as described in this section, when schedule changes are expected.
- Submit for acceptance and maintain, a design schedule detailing the scheduled performance of the work.

1.07 Review Existing Documents. The Architect/Engineer will gather and review existing available documentation that may be relevant to the project, including, but not limited to, record drawings (as-builts), design reports, final reports, and utility reports/maps.

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1.08 Evaluate Existing Mechanical, Electrical, Plumbing, and Fire Suppression Systems. This task includes evaluating the current systems for its efficiency, performance, and scalability, and changes necessary for this renovation. Assume one Project Manager, one Architectural Project Manager and three MEP Engineers making a full day site visit to evaluate system.

1.09 Coordinate MEP Systems. This task includes preparing the requirements for the MEP scope of the project. Negotiating with the mechanical, electrical, and plumbing engineering subconsultant firm for a cost to perform the work and executing the subcontract is also included in this task.

TASK 1 DELIVERABLES	TO SPONSOR
1.01 Meeting Agendas, AIP Development Schedule and Meeting Minutes from Pre-Design Meeting	✓
1.02 Scope of Work and Draft Contract for the Sponsor	✓
1.03 Preliminary Cost Estimate	✓
1.04 Prepare Design Alternatives	✓
1.06 Design Schedule, PSR, and Monthly Invoicing	✓

TASK 1 MEETINGS/SITE VISITS	LOCATION/ATTENDEES/DURATION
1.01 Pre-Design and Coordination Meetings with Sponsor	• St. George, UT - One (1) Project Manager and one Architectural Project Manager - Assume One (1) hour via teleconference (3 meetings) – Assume One (1) Architectural Project Manager - Assume full day site visit - Assume travel to/from Denver, CO to St. George, UT
1.08 Evaluate Existing Systems	• St. George, UT - One (1) Project Manager, one Architectural Project Manager and three (3) MEP Engineers - Assume one (1) overnight stay for the Architectural Project Manager for each site visit

2.0 Design Phase

2.01 Develop HVAC Design Features. Upon completion of the existing HVAC investigation, the Mechanical, Electrical, and Plumbing Engineer(s) will analyze the data to provide design for the following tasks:

- Design of HVAC controls for the Terminal renovation.
- Design of Improvements to existing HVAC system including Mechanical Controls system.
- Determine appropriate modifications or replacement of VAV(s) and other equipment.

The Architect/Engineer will hold discussions with the Mechanical, Electrical, and Plumbing Engineer(s) to assure that all design elements are thoroughly considered and implemented.

2.02 Prepare Existing Utility Inventory. This task includes reviewing record drawings and consulting with the Sponsor and local utility companies to identify all utilities within the project site.

2.03 Prepare Preliminary Contract Documents. This task includes preparing the Preliminary Contract Documents, including Contract Proposal, Bid Bond, Contractor Information Sheet, Subcontractor/Material

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Supplier List, Certification Statement Regarding Undocumented Individuals, Bid Proposal, Contract, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, General Conditions, FAA AC 150/5370-2 (Current Edition), and *Operational Safety on Airports During Construction*. Preparation will include establishing the location for the bid opening, dates for advertisement and description of the work schedule. Also included in the Preliminary Contract Documents, and covered under separate tasks below, Technical Specifications, and Special Provisions. Preliminary Contract Documents will be prepared as early as possible during the design phase and submitted to the Sponsor for review, additionally preliminary documents will be prepared and reviewed with city of St. George.

2.04 Prepare Preliminary Construction Plans. This task includes preparing the following list of construction plans for the project. Additional plans may be added during the design phase as needed:

Plan Name/Description	Number of Sheets
Cover Sheet	1
Index of Drawings and General Notes	2
Life Safety Plan and Code Summary	1
Construction Layout Plan	1
Construction Phasing Plan	2
Demolition Plan	2
Drainage Details	1
Architectural Floor Plans	4
Architectural Elevations	4
Architectural Sections	4
Architectural Details	4
Interior Design Plan and Schedule	2
Kitchen Design Plan and Schedule	1
Mechanical Plans and Details	8
Electrical Plans and Details	8
Plumbing Plans and Details	8
Utility Plans and Details	8
Fire Alarm Plans and Details	2
FF&E Plan and Schedule	2
Total Sheet Count	**63**

2.05 Prepare Preliminary Technical Specifications. This task includes assembling the technical specifications necessary for the project. The standard specifications to be utilized shall include, but are not limited to, the following:

- 05 00 00 Metal Framing Items
- 06 10 53 Misc. Rough Carpentry
- 06 40 23 Interior Architectural Woodwork
- 07 90 05 Joint Sealers
- 08 11 13 Hollow Metal Doors and Frames
- 08 71 00 Door Hardware
- 09 90 00 Painting and Coating
- 10 44 00 Fire Protection Specialties
- 11 40 00 Foodservice Equipment
- 12 30 00 Casework
- 12 36 00 Countertops
- 12 52 00 Seating

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- 21 00 00 Fire Suppression Items
- 22 00 00 Plumbing Items
- 23 00 00 HVAC Items
- 26 00 00 Building Electrical Items
- 26 51 00 Interior Lighting
- 28 20 00 Video Surveillance

2.06 Prepare Preliminary Special Provisions. This task includes preparing the preliminary Special Provisions to address, or expound on, site conditions that require additional clarification. These include, but are not limited to: Haul Roads, Airport Security, Radio Communications, Work Schedule, Contractor's Quality Control Program, Sequencing of the Work, Closure of Air Operations Areas, Accident Prevention, Underground Cables/Utilities, Insurance, Indemnification, Sales and Use Taxes, Permits and Compliance with Laws, Executed Contracts, Subletting or Assigning of Contracts, Qualification of Disadvantaged Business Enterprises, Liquidated Damages, Acceptance Testing, Grade Control and Surface Tolerance, Construction Management Plan, and Instruction Manuals.

2.07 Compile/Submit Permits. This task includes identifying potential federal, state and local permits needed for the project. Permits are anticipated to be required for, but are not limited to, demolition activities, various building systems, and stormwater management construction plans and associated permits (SWMP). When applicable, the Architect/Engineer will assist the Sponsor to compile information and submit permits that are required to be obtained by the Sponsor.

2.08 Prepare Estimate of Probable Construction Cost. Using the final quantities calculated following the completion of the construction plans and specifications, the Architect/Engineer will prepare the construction cost estimate. The estimate will be based on information obtained from previous projects, contractors, material suppliers and other available databases.

2.09 Review Plans at 60%, and 90% Complete. During various stages of completion of the design, the Architect/Engineer will submit a set of Construction Plans, Specifications, and Contract Documents to the Sponsor for their review. Meetings will be scheduled for periodic reviews, including a 90% plans-in-hand review.

2.10 Provide In-House Quality Control. The Architect/Engineer has an established quality control program that will provide both experienced and thorough reviews of all project submittals and will also provide engineering guidance to the Architectural and MEP team throughout plan development from an experienced, senior-level Professional Architect/Engineer.

Prior to each review set of Construction Plans, Specifications, Contract Documents, and Engineer's Design Report being submitted to the Sponsor, a thorough, in-house quality control review of the documents will be conducted. This process will include an independent review of the Construction Plans, Specifications, Contract Documents, and Engineer's Design Report being submitted by a licensed Professional Architect/Engineer other than the Engineer who performed the design of the project. Comments will be offered by the Architect/Engineer that performed the review, and revisions to the Construction Plans, Specifications, Contract Documents, and Engineer's Design Report will be made accordingly.

2.11 Prepare and Submit Construction Plans, Engineering/Architectural Specifications, Contract Documents, and Engineer's Design Report. A final set of Construction Plans (30" x 42"), Specifications, Contract Documents, and the Engineer's Design Report will be prepared and submitted to the Sponsor.

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These documents will incorporate all revisions, modifications, and corrections identified during the final review. Paper and electronic copies will be provided.

TASK 2 DELIVERABLES	TO SPONSOR
2.03 Preliminary Contract Documents for Sponsor's Review	✓
2.09 60% and 90% Construction Plans, Specifications, Contract Documents, and Engineer's Design Report	✓
2.11 Final Construction Plans, Specifications and Contract Documents, and Engineer's Design Report	✓

TASK 2 MEETINGS/SITE VISITS	LOCATION/ATTENDEES/DURATION
2.11 Plan Review at 60% Complete. Plan Review at 90% Complete.	• St. George, UT - One (1) Project Manager and One (1) Architectural Project Manager - Assume One (1) hour via teleconference (2 meetings)

3.0 Bidding Phase

3.01 Provide Bid Assistance. The Architect/Engineer will assist the Sponsor, as needed, with the preparation of any required bidding documents. Included as part of this task, the Architect/Engineer will prepare a legal advertisement for publication in two (2) newspapers (or other form of regularly published print media) as a solicitation for bids. Additionally, the Architect/Engineer will advertise the project Invitation for Bids on their website and directly notify potential contractors and plan rooms in order to maximize project exposure and generate interest in the project. The Architect/Engineer will coordinate payment for the project advertisement(s) and request reimbursement from the Sponsor as a pass-through cost during invoicing.

3.02 Prepare/Conduct Pre-Bid Meeting. The Architect/Engineer will conduct the pre-bid meeting and pre-bid site visit in sequence with the Sponsor and contract document requirements.

3.03 Prepare Addenda. Any necessary addenda will be issued to clarify and modify the project, as required, and based on questions or comments that may arise from potential contractors during the bidding process. Any necessary addenda will be reviewed with the Sponsor prior to being issued. The addenda will meet all design and construction standards, as required.

3.04 Consult with Prospective Bidders. During the bidding process, the Architect/Engineer shall be available to clarify bidding issues with contractors and suppliers and for consultation with the various entities associated with the project.

3.05 Attend Bid Opening. The Architect/Engineer shall attend the bid opening for the project, which will be conducted by the Sponsor.

3.06 Review Bid Proposals. Upon the opening of submitted bid proposals by the Sponsor, the Architect/Engineer shall review all the bid proposals submitted. A cost analysis of the bid prices will be completed and tabulated; the contractor's qualifications to perform the work will be included, including review of suspension and debarment rules on the www.Sam.gov website, verification of proposed DBE subcontractors, Buy American compliance analysis/review, and project funding review. Inclusion of bid guarantee, acknowledgement of addenda, and in-state licensure verification shall be completed.

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3.07 Prepare Recommendation of Award. The Architect/Engineer shall prepare a Recommendation of Award for the Sponsor to accept or reject the bids received with a summary of the items listed in Task 3.6. If rejection is recommended, the Architect/Engineer will supply an explanation for their recommendation and possible alternative actions the Sponsor can pursue to complete the project.

TASK 3 DELIVERABLES	TO SPONSOR
3.01 Required Bidding Documents	✓
3.02 Pre-Bid Meeting Agenda and Pre-Bid Meeting Minutes	✓
3.03 Addenda	✓
3.06 Bid Tabulations	✓
3.07 Recommendation of Award	✓

TASK 3 MEETINGS/SITE VISITS	LOCATION/ATTENDEES/DURATION
3.02 Prepare/Conduct Pre-Bid Meeting	• St. George, Utah - One (1) Architectural Project Manager and one (1) Project Manager - Assume full day site visit - Assume travel to/from Denver, CO to St. George, UT and one overnight stay for the Architectural Project Manager
3.05 Attend Bid Opening	• St. George, Utah - One (1) Project Manager

EX Reimbursable Costs During Design and Bidding. This section includes reimbursable items such as auto rental, mileage, lodging, per diem, and other miscellaneous expenses incurred in order to complete **Part A – Basic Services**.

PART B - SPECIAL SERVICES consists of the Construction Administration Phase, Post-Construction Coordination Phase (invoiced on a lump sum basis). Also included are direct subcontract costs for the proposed quality assurance during construction.

4.0 Construction Administration Phase

4.01 Prepare Construction Contract and Documents. The Architect/Engineer shall prepare the Notice of Award, Notice to Proceed, and Contract Agreements, including bonds and insurance documents, which will be updated to include all addenda items issued during bidding, for the Sponsor's approval and signatures. Approximately five copies will be submitted to the successful Contractor for their signatures.

The Architect/Engineer will ensure the construction contracts are in order, the bonds have been completed, and the Contractor has been provided with adequate copies of the Construction Plans, Specifications, and Contract Documents, which will be updated to include all addenda items issued during bidding.

4.02 Provide Project Coordination. The Architect/Engineer shall provide project management and coordination services to ensure the completion of all construction management tasks required of the Architect/Engineer. These duties include:

- Time the Architect/Engineer spends planning, organizing, securing and scheduling resources, and providing instruction to staff to meet project objectives as defined in the approved scope of work.

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- Additional items to be accomplished include compiling and sending additional information requested from the office to related parties, maintaining project files as necessary and other items necessary in day-to-day project coordination.
- Review construction submittals, including shop drawings and materials proposed for use on the project, submitted by the Contractor for conformance with the project's Contract Documents. Submittals will either be approved, conditionally approved, or rejected and returned to the Contractor for their records and/or to make changes or revisions. The Architect/Engineer will prepare and maintain a submittal register to log the submittals received. The submittal register will include information on the submitted items including date received, date returned, and action taken, and will be made available to the Sponsor and Contractor upon request.
- Coordinate, review, and provide a response to construction and general project Requests for Information (RFIs).
- The Project Manager will review progress reports weekly and monthly.
- Assist with change orders and supplemental agreements as necessary. All change orders and supplemental agreements will be coordinated with the Sponsor prior to execution.
- Clerical staff shall prepare the quantity sheets, testing sheets, construction report format, etc.
- Office engineering staff, CAD personnel and clerical staff shall be required to assist the Field Personnel as necessary during construction. Specific tasks to be accomplished include providing secondary architectural/engineering opinions on issues arising during construction, maintaining project files as necessary and various other tasks necessary in the day-to-day operations.
- The Architect/Engineer will prepare and submit monthly invoicing.

The Engineer will complete the following tasks:

- Prepare quarterly performance reports.

4.03 Prepare/Conduct Pre-Construction Meeting. The Architect/Engineer will conduct a pre-construction meeting prior to the commencement of construction. The meeting will be held at the airport and will include the Sponsor, Contractor, subcontractors, and airport tenants affected by the project.

4.04 Perform Site Visits During Construction. The Project Manager shall make on-site visits, as required, throughout the duration of the project. At this time, it is estimated that the Project Manager will make up to ten (10) site visits to the project. with an Architectural Project Manager visiting the site once per month including overnight stays (estimated five site visits).

TASK 4 DELIVERABLES	TO SPONSOR
4.01 Notice of Award, Notice to Proceed, and Contract Agreement	✓
4.02 Monthly Invoice	✓
4.02 Weekly/Monthly Reports	✓
4.02 Quarterly Performance Reports	✓
4.02 Change Orders/Supplemental Agreements	✓
4.03 Pre-Construction Agenda and Meeting Minutes	✓

TASK 4 MEETINGS/SITE VISITS	LOCATION/ATTENDEES/DURATION
4.03 Conduct Pre-Construction Meeting	• St. George, UT - One (1) Project Manager Teleconference / TEAMS meeting

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4.04 Perform Site Visits During Construction	• St. George, UT - One (1) Project Manager - Assume full day site visit (10 site visits) travel to/from St. George, Utah office to SGU for the Project Manager • St. George, Utah - One (1) Architectural Project Manager - Assume full day site visit (5 site visits) - Assume travel to/from Denver, CO to St. George, UT and one (1) overnight stay for the Architectural Project Manager for each visit.

5.0 *Post-Construction Coordination Phase*

5.01 Prepare Final Testing Report. The Architect/Engineer will submit the quality assurance testing summary report, which will include a narrative of tests taken, verification for minimum number of tests, discussion of problems and tests necessary to the Sponsor for review and approval.

5.02 Prepare Clean-up Item List. The Architect/Engineer will ensure the Contractor has removed all construction equipment and construction debris from the airport, that all access points have been re-secured (fences repaired, gates closed and locked, keys returned, etc.), and the site is clean.

5.03 Conduct Final Inspection. The Architect/Engineer, along with the Sponsor shall conduct the final inspection.

5.04 Prepare Engineering Record Drawings. The Architect/Engineer will prepare the record drawings indicating modifications made during construction.

5.05 Summarize Project Costs. The Architect/Engineer will be required to obtain all administrative expenses, engineering fees and costs, testing costs, and construction costs associated with the project and assemble a total project summary. The summary will be analyzed with the associated project funding.

5.06 Prepare Final Construction Report. The Architect/Engineer will prepare the final construction report to document the project completion, compile the testing summaries, change orders, and project inspection reports for the Sponsor's records. The project cost summary will include engineering fees and costs, testing costs and construction costs associated with the project and assemble a total project summary.

TASK 5 DELIVERABLES	TO SPONSOR
5.01 Final Testing Report	✓
5.02 Clean-up List	✓
5.03 Punchlists	✓
5.04 Record Drawings	✓
5.05 Project Cost Summary	✓
5.06 Final Construction Report	✓

TASK 5 MEETINGS/SITE VISITS	LOCATION/ATTENDEES/DURATION
5.03 Conduct Final Inspection	• St. George, UT One (1) Architectural Project Manager Assume one full day site visit (1)

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	• Assume travel to/from Denver, CO to St. George, UT with one (1) overnight stay for Architectural Project Manager for each site visit

EX Reimbursable Costs During Construction. This section includes reimbursable items such as auto rental, mileage, lodging, per diem, travel and other miscellaneous costs incurred in order to complete **Part B – Special Services**. Sections 4 and 5 Reimbursables are invoiced on a lump sum basis.

Special Considerations

The following special considerations are required for this project, but will be completed by subconsultants to the Architect/Engineer. The cost for this work will be included in the engineering contract agreement with the Sponsor and the costs are in addition to the engineering fees outlined above.

Mechanical, Electrical and Plumbing Engineering. This include utilizing a licensed MEP engineer to design the required mechanical, HVAC, Lighting, Power, IT, and Plumbing elements inside of the project area. This includes the following:

- Domestic Water design
- Sanitary Sewer design
- Heating, Ventilating, Air Conditioning (HVAC) design
- Lighting design
- Electrical Power design
- Engineering Calculations
- Drawings and Details
- Technical Specifications
- Bid Evaluation Assistance
- Reimbursables for travel – assume Two (2) site visits for Two (2) Engineers.

Assumptions

The scope of services described previously, and the associated fees, are based on the following rates and assumed responsibilities of the Architect/Engineer and Sponsor.

1. It is anticipated there will be a minimum number of trips and site visits to the airport to facilitate the completion of the various phases listed in this scope. The number of trips, as well as the anticipated lengths and details of the trips, are included at the end of each phase above.

2. The Sponsor will provide existing mapping data including as-builts available for the project areas and other available information in the possession of the Sponsor.

3. Updating the ALP will not be required at the completion of the project.

4. The Sponsor will coordinate with tenants as required to facilitate the design review process.

5. The Architect/Engineer will utilize the following plan standards for the project:

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- ✈ Plan will be prepared using the Architect/Engineer's standards, unless the Sponsor provides its own standards upon Notice to Proceed.
- ✈ All plans will be stamped and signed by a registered Utah Architect, or Professional Architect/Engineer, as required.
- ✈ Plans prepared by subconsultants will be prepared using the same base maps, the same coordinate systems and the same plan layout and format as plans prepared by the Architect/Engineer.

6. The Architect/Engineer will utilize the following assumptions when preparing the project manual for bidding and construction of the project:

   - ✈ The project manual Contract Documents will be developed jointly by the Sponsor and the Architect/Engineer.
   - ✈ The Architect/Engineer is responsible for developing the contents of the document and including the Front-End documents which will be supplied by the Sponsor.
   - ✈ General Conditions and required contract language will be used.

7. The Architect/Engineer must maintain records of design analyses and calculations consistent with typical industry standards for a period of three years after the project is closed.

8. Because the Architect/Engineer has no control over the cost of construction-related labor, materials, or equipment, the Architect/Engineer's opinions of probable construction costs will be made on the basis of experience and qualifications as a practitioner of his/her profession. The Architect/Engineer does not guarantee that proposals for construction, construction bids, or actual project construction costs will not vary from Architect/Engineer's estimates of construction cost.

Additional Services

The following items are not included under this agreement but will be considered as extra work:

- ✈ Redesign for the Sponsor's convenience or due to changed conditions after previous alternate direction and/or approval.
- ✈ Submittals or deliverables in addition to those listed herein.
- ✈ If a project audit occurs, the Engineer is prepared to assist the Sponsor in gathering and preparing the required materials for the audit.
- ✈ Serving as an expert witness for the Owner in any litigation, surety claim, contractor bond activation, or other proceeding involving the project.
- ✈ Additional or extended services during construction made necessary by extension of contract time, non-concurrent work, or changes in the work.
- ✈ Legal, surety, or insurance support, coordination, and representation.

Extra Work will be as directed by the Sponsor in writing for an additional fee as agreed upon by the Sponsor and the Engineer.

AIRPORT: St. George Regional Airport
PROJ. NO.: 10016873
PROJECT NAME: Terminal Renovation
DATE: October 11, 2023

WOOLPERT

FEE BREAKDOWN

Labor Category	Total Hours		Billing Rate		Total Cost
1.0 Preliminary Design Phase (Lump Sum)					
Practice Operations Leader	4 hrs.	x	$ 305.00 /hr	= $	1,220.00
Engineer Project Mgr IV	25 hrs.	x	$ 275.00 /hr	= $	6,875.00
Arch Project Mgr IV	4 hrs.	x	$ 285.00 /hr	= $	1,140.00
Arch Project Mgr III	94 hrs.	x	$ 230.00 /hr	= $	21,620.00
Architect II	24 hrs.	x	$ 200.00 /hr	= $	4,800.00
Architectural Designer II	32 hrs.	x	$ 180.00 /hr	= $	5,760.00
Project Coordinator II	24 hrs.	x	$ 135.00 /hr	= $	3,240.00
SUBTOTAL	**207** hrs.		**SUBTOTAL**	**$**	**44,655.00**
Reimbursables					
Auto Rental	2 Day	x	$ 85.00 /Day=	$	170.00
Mileage	30 Mi	x	$ 0.655 /Mi=	$	19.65
Lodging + Tax & Fees	1 Day	x	$ 115.00 /Day=	$	115.00
Per Diem	4 Day	x	$ 59.00 /Day=	$	236.00
Travel & Airline Costs	4 Trip	x	$ 500.00 /Trip=	$	2,000.00
			SUBTOTAL	**$**	**2,540.65**
			PHASE SUBTOTAL	**$**	**47,195.65**

LABOR HOUR BREAKDOWN

TASK		LABOR CATEGORY								
		Practice Operations Leader	Engineer Project Mgr IV	Arch Project Mgr IV	Arch Project Mgr III	Architect II	Architectural Designer II	Project Coordinator II		Phase Item Costs
1.0	**Preliminary Design Phase (Lump Sum)**									
1.01	Coordinate and Attend Meetings with the Sponsor		3		12					$ 3,585.00
1.02	Prepare Project Scope of Work and Contract	4	2		8			8		$ 4,690.00
1.03	Prepare Preliminary Cost Estimating				8	8	4			$ 4,160.00
1.04	Prepare Design Alternatives			4	10	8	16			$ 7,920.00
1.05	Coordinate Foodservice Conceptual Design				12	4	8			$ 5,000.00
1.06	Provide Project Coordination		16		20			12		$ 10,620.00
1.07	Review Existing Documents				4	4	4			$ 2,440.00
1.08	Evaluate Existing MEP and Fire Suppression Systems		4		16					$ 4,780.00
1.09	Coordinate MEP Systems				4			4		$ 1,460.00
	TOTALS	**4**	**25**	**4**	**94**	**24**	**32**	**24**	**0**	$ 44,655.00

Labor Category	Total Hours		Billing Rate		Total Cost
2.0 Design Phase (Lump Sum)					
Practice Operations Leader	8 hrs.	x	$ 305.00 /hr	= $	2,440.00
Engineer Project Mgr IV	76 hrs.	x	$ 275.00 /hr	= $	20,900.00
Arch Project Mgr IV	28 hrs.	x	$ 285.00 /hr	= $	7,980.00
Arch Project Mgr III	138 hrs.	x	$ 230.00 /hr	= $	31,740.00
Architect II	160 hrs.	x	$ 200.00 /hr	= $	32,000.00
Architectural Designer II	166 hrs.	x	$ 180.00 /hr	= $	29,880.00
Project Coordinator II	48 hrs.	x	$ 135.00 /hr	= $	6,480.00
Engineering Techn III	60 hrs.	x	$ 145.00 /hr	= $	8,700.00
SUBTOTAL	**684** hrs.		**SUBTOTAL**	**$**	**140,120.00**
Reimbursables					
Auto Rental	0 Day	x	$ 85.00 /Day=		
Mileage	0 Mi	x	$ 0.655 /Mi=		
Lodging + Tax & Fees	0 Day	x	$ 115.00 /Day=		
Per Diem	0 Day	x	$ 59.00 /Day=		
Travel & Airline Costs	0 Trip	x	$ 500.00 /Trip=		
			SUBTOTAL	**$**	**-**
			PHASE SUBTOTAL	**$**	**140,120.00**

TASK		LABOR CATEGORY								
		Practice Operations Leader	Engineer Project Mgr IV	Arch Project Mgr IV	Arch Project Mgr III	Architect II	Architectural Designer II	Project Coordinator II	Engineering Techn III	Phase Item Costs
2.0	**Design Phase (Lump Sum)**									
2.01	Develop HVAC Design Features				4	4				$ 1,720.00
2.02	Prepare Existing Utility Inventory		2		4	4				$ 2,270.00
2.03	Prepare Preliminary Contract Documents		4		4	8		20		$ 6,320.00
2.04	Prepare Preliminary Construction Plans		4			8	12			$ 4,860.00
2.05	Cover Sheet					2	4			$ 1,120.00
	Index of Drawings and General Notes		4			4	8			$ 3,340.00
	Life Safety Plan and Code Summary			4	4	4	4			$ 3,580.00
	Construction Layout Plan		4						4	$ 1,680.00
	Construction Phasing Plan		2		2				4	$ 1,590.00
	Demolition Plan		2		2		4			$ 1,730.00
	Drainage Details		2		2				4	$ 1,590.00
	Architectural Floor Plans				12	8	8			$ 5,800.00
	Architectural Elevations				4	4	8			$ 3,160.00
	Architectural Sections				4	4	8			$ 3,160.00
	Architectural Details				4	4	8			$ 3,160.00
	Interior Design Plan and Schedule				12	8	12			$ 6,520.00
	Kitchen Design Plan and Schedule				4		8			$ 2,360.00
	Mechanical Plans and Details				4					$ 920.00
	Electrical Plans and Details				4					$ 920.00
	Plumbing Plans and Details				4					$ 920.00
	Utility Plans and Details		4		4		4		12	$ 4,480.00
	Fire Alarm Plans and Details				4	4				$ 1,720.00
	FF&E Plan and Schedule		4		8	12	12			$ 7,500.00
2.05	Prepare Preliminary Technical Specifications		8		4	40		24	8	$ 15,520.00
2.06	Prepare Preliminary Special Provisions		4		4			4	4	$ 3,140.00
2.07	Compile/Submit Permits		4		8	12	20		8	$ 10,100.00
2.08	Prepare Estimate of Probable Construction Cost					4	12			$ 2,960.00
2.09	Review Plans at 60% and 90% Complete		8	8	8					$ 6,320.00
2.10	Provide In-House Quality Control	8	8	16						$ 9,200.00
2.11	Prepare and Submit Const. Plans, Specs., Cont. Docs., and Design Report		8		8	8	8		8	$ 8,240.00
	TOTALS	**8**	**76**	**28**	**138**	**160**	**166**	**48**	**60**	$ 140,120.00

Labor Category	Total Hours		Billing Rate		Total Cost
3.0 Bidding Phase (Lump Sum)					
Engineer Project Mgr IV	12 hrs.	x	$ 275.00 /hr	= $	3,300.00
Arch Project Mgr III	28 hrs.	x	$ 230.00 /hr	= $	6,440.00
Architect II	10 hrs.	x	$ 200.00 /hr	= $	2,000.00
Architectural Designer II	4 hrs.	x	$ 180.00 /hr	= $	720.00
Project Coordinator II	14 hrs.	x	$ 135.00 /hr	= $	1,890.00
SUBTOTAL	**68** hrs.		**SUBTOTAL**	**$**	**14,350.00**
Reimbursables					
Auto Rental	2 Day	x	$ 85.00 /Day=	$	170.00
Mileage	30 Mi	x	$ 0.655 /Mi=	$	19.65
Lodging + Tax & Fees	1 Day	x	$ 115.00 /Day=	$	115.00
Per Diem	2 Day	x	$ 59.00 /Day=	$	118.00
Travel & Airline Costs	2 Trip	x	$ 500.00 /Trip=	$	1,000.00
			SUBTOTAL	**$**	**1,422.65**
			PHASE SUBTOTAL	**$**	**15,772.65**

TASK		LABOR CATEGORY								
		Engineer Project Mgr IV	Arch Project Mgr III	Architect II	Architectural Designer II	Project Coordinator II				Phase Item Costs
3.0	**Bidding Phase (Lump Sum)**									
3.01	Provide Bid Assistance	4	4	4		8				$ 3,900.00
3.02	Prepare/Conduct Pre-Bid Meeting	4	12							$ 3,860.00
3.03	Prepare Addenda		4	4	4	4				$ 2,980.00
3.04	Consult with Prospective Bidders		4							$ 920.00
3.05	Attend Bid Opening	4								$ 1,100.00
3.06	Review Bid Proposals		2	2						$ 860.00
3.07	Prepare Recommendation of Award		2			2				$ 730.00
	TOTALS	**12**	**28**	**10**	**4**	**14**	**0**	**0**	**0**	$ 14,350.00

Labor Category	Total Hours		Billing Rate		Total Cost
4.0 Construction Administration Phase (Lump Sum)					
Practice Operations Leader	8 hrs.	x	$ 305.00 /hr	= $	2,440.00
Engineer Project Mgr IV	12 hrs.	x	$ 275.00 /hr	= $	3,300.00
Arch Project Mgr III	28 hrs.	x	$ 230.00 /hr	= $	6,440.00
Architect II	140 hrs.	x	$ 200.00 /hr	= $	28,000.00
Architectural Designer II	24 hrs.	x	$ 180.00 /hr	= $	4,320.00
Engineering Techn III	8 hrs.	x	$ 145.00 /hr	= $	1,160.00
Project Coordinator II	16 hrs.	x	$ 135.00 /hr	= $	2,160.00
Construction Manager II	40 hrs.	x	$ 170.00 /hr	= $	6,800.00
SUBTOTAL	**276** hrs.		**SUBTOTAL**	**$**	**54,620.00**
Reimbursables					
Auto Rental	10 Day	x	$ 85.00 /Day=	$	850.00
Mileage	300 Mi	x	$ 0.655 /Mi=	$	196.50
Lodging + Tax & Fees	5 Day	x	$ 155.00 /Day=	$	775.00
Per Diem	20 Day	x	$ 59.00 /Day=	$	1,180.00
Travel & Airline Costs	10 Trip	x	$ 500.00 /Trip=	$	5,000.00
			SUBTOTAL	**$**	**8,001.50**
			PHASE SUBTOTAL	**$**	**62,621.50**

TASK		LABOR CATEGORY								
		Practice Operations Leader	Engineer Project Mgr IV	Arch Project Mgr III	Architect II	Architectural Designer II	Engineering Techn III	Project Coordinator II	Construction Manager II	Phase Item Costs
4.0	**Construction Administration Phase (Lump Sum)**									
4.01	Prepare Construction Contract and Documents			4				4		$ 1,460.00
4.02	Provide Project Coordination	8	8	20	60	24	8	12		$ 28,340.00
4.03	Prepare/Conduct Pre-Construction Meeting		4	4						$ 2,020.00
4.04	Perform Site Visits During Construction				80				40	$ 22,800.00
	TOTALS	**8**	**12**	**28**	**140**	**24**	**8**	**16**	**40**	$ 54,620.00

Labor Category	Total Hours		Billing Rate		Total Cost
5.0 Post Construction Coordination Phase (Lump Sum)					
Engineer Project Mgr IV	20 hrs.	x	$ 275.00 /hr	= $	5,500.00
Arch Project Mgr III	38 hrs.	x	$ 230.00 /hr	= $	8,740.00
Architect II	8 hrs.	x	$ 200.00 /hr	= $	1,600.00
Architectural Designer II	12 hrs.	x	$ 180.00 /hr	= $	2,160.00
Engineering Techn III	16 hrs.	x	$ 145.00 /hr	= $	2,320.00
SUBTOTAL	**94** hrs.		**SUBTOTAL**	**$**	**20,320.00**
Reimbursables					
Auto Rental	2 Day	x	$ 85.00 /Day=	$	170.00
Mileage	0 Mi	x	$ 0.655 /Mi=		
Lodging + Tax & Fees	1 Day	x	$ 115.00 /Day=	$	115.00
Per Diem	2 Day	x	$ 59.00 /Day=	$	118.00
Travel & Airline Costs	2 Trip	x	$ 500.00 /Trip=	$	1,000.00
			SUBTOTAL	**$**	**1,403.00**
			PHASE SUBTOTAL	**$**	**21,723.00**

TASK		LABOR CATEGORY								
		Engineer Project Mgr IV	Arch Project Mgr III	Architect II	Architectural Designer II	Engineering Techn III				Phase Item Costs
5.0	**Post Construction Coordination Phase (Lump Sum)**									
5.01	Prepare Final Testing Report	10	10							$ 5,050.00
5.02	Prepare Clean-up Item List			4						$ 800.00
5.03	Conduct Final Inspection		16							$ 3,680.00
5.04	Prepare Engineering Record Drawings	2		4	4	4				$ 2,650.00
5.05	Summarize Project Costs	4	4							$ 2,020.00
5.06	Prepare Final Construction Report	4	8		8	12				$ 6,120.00
	TOTALS	**20**	**38**	**8**	**12**	**16**	**0**	**0**	**0**	$ 20,320.00

		Contract Hours		Phase Fee	Reimbursable Costs	Total Cost
PART A - BASIC SERVICES (LUMP SUM)						
1.0	Preliminary Design Phase (Lump Sum)	207		$ 44,655.00	$ 2,540.65	$ 47,195.65
2.0	Design Phase (Lump Sum)	684		$ 140,120.00		$ 140,120.00
3.0	Bidding Phase (Lump Sum)	68		$ 14,350.00	$ 1,422.65	$ 15,772.65
		959	**SUBTOTAL**	**$ 199,125.00**	**$ 3,963.30**	**$ 203,088.30**
PART B - SPECIAL SERVICES (LUMP SUM)						
4.0	Construction Administration Phase (Lump Sum)	276		$ 54,620.00	$ 8,001.50	$ 62,621.50
5.0	Post Construction Coordination Phase (Lump Sum)	94		$ 20,320.00	$ 1,403.00	$ 21,723.00
		370	**SUBTOTAL**	**$ 74,940.00**	**$ 9,404.50**	**$ 84,344.50**

	Contract Hours		Phase Fee	Fixed Fee	Reimbursable Costs	Total Cost
	0	**SUBTOTAL**	$ -	$ -	$ -	$ -
SUBCONSULTANT 1						
MEP and Fire Protection Engineer - Van Boerum & Frank, Inc.						$ 11,697.80
					SUBTOTAL	**$ 11,697.80**
TOTAL			**$ 274,065.00**	**$ -**	**$ 13,367.80**	**$ 299,130.60**

*For the purposes of estimating the cost of mileage, per diem, and lodging are calculated in accordance with applicable IRS and GSA guidelines. At the time of invoicing mileage will be invoiced in accordance with published IRS rates at the time of service and per diem will be invoiced in accordance with published GSA rates at the time of service. Lodging will be invoiced as actual expense incurred except in the cases where specific client requirements exist that limit lodging to GSA standards.

PASS THROUGH FUNDS AGREEMENT

THIS PASS THROUGH FUNDS AGREEMENT ("**Agreement**") is entered into as of 19th day of October, 2023 between the Utah Department of Transportation, an agency of the State of Utah ("**UDOT**"), and St. George City, a Utah municipal corporation ("**Local Government**").

RECITALS

WHEREAS, under 2023 S.B. 2, Item 59, as further detailed in the Minutes of the Infrastructure and General Government Appropriations Subcommittee, dated January 24, 2023, (the "**Funding Item**") the Utah State Legislature allocated (for UDOT's administration) a one-time total of ten million dollars ($10,000,000) (the "**Funds**") from the General Fund, One-Time Schedule of Programs to the Transportation Investment Fund for fiscal year 2023-2024 (the "**Fiscal Year**"), intending that the Funds be used for the following purpose: to improve and expand the St. George Utah Airport ("SGU Airport") and the SGU Airport parkway for future needs and safety, including the remodel and expansion of the Secure Area in the SGU Airport terminal, land purchase(s) for future SGU Airport expansion, a control tower siting study as per the Contract Tower Program, and SGU Airport parkway improvements for airport expansion; and

WHEREAS, the Local Government desires to perform the work to fulfill the legislative intent for the Funds, and UDOT is willing to pass through the Funds to the Local Government for that purpose; and

WHEREAS, Utah Code Section 63J-1-220(2) mandates that UDOT may not provide the Local Government with state pass through funding unless an agreement is executed. In addition, such agreement must require the Local Government to provide a written description and itemized report at least annually detailing the expenditure of the Funds, or the intended expenditure of any Funds that have not been spent, and a final written itemized report when all the Funds are spent; and

WHEREAS, Utah Code Sections 63J-1-902 and 63J-1-903 require the Local Government to establish and meet performance measures in connection with the Funds to address UDOT's reporting obligations to the Governor's Office of Management and Budget and the Office of Legislative Fiscal Analyst.

AGREEMENT

THEREFORE, in consideration of the foregoing recitals (which by this reference are incorporated herein) and the mutual promises set forth herein, the parties hereto agree as follows:

1. Objective and Payment Schedule. The Local Government agrees to use the transferred Funds for the purposes stated in the Funding Item. UDOT will transfer the Funds to the Local Government in the following manner: UDOT will pay the Funds to the Local Government in four quarterly installments during the Fiscal Year. Each installment will total

two million five hundred thousand dollars ($ 2,500,000). UDOT will pay the four installments to the Local Government by making a payment within thirty (30) days of each of the following dates: October 1st, December 1st, March 1st, and June 1st. The total amount of all Funds will be ten million dollars ($10,000,000).

2. Key Activities. The Local Government will use the Funds as described in this Agreement to meet the following performance measures:

a. The Local Government will spend 100% of the Funds by no later than January 30, 2025.

b. The scope of work that the Funds will construct includes:

The remodel of the St. George Regional Airport (SGU) terminal building is desperately needed to handle the air passenger growth of Southern Utah. The state funds appropriated this past session will be used at SGU to complete four projects:

1. Complete a control tower siting study including the associated NEPA study as well as a 30 percent design of the Air Traffic Control Tower.

2. Remodel the current terminal building to increase the size of the secure area to accommodate the increased number of passengers flying in and out of SGU.

3. Design and construct roadway improvements to Airport Parkway roadway to meet the needs of the increased vehicular and pedestrian traffic. The Airport Parkway project will include a pedestrian/bike trail that will give access to increased pedestrian and bike traffic.

4. Complete strategic land purchases identified in the Airport Master Plan for future parking and airport expansion and safety requirements. These purchases are needed to protect the areas surrounding the airport from encroachment from incompatible uses and development that would impact the operations of the airport.

c. The following project objectives are also performance measures for the use of the Funds:

Completing these projects will enable the City of St George and the Greater Zion area to meet the demand of the current needs of the airport and prepare for the continued growth of the area over the next couple of years in the following ways:

1. The Terminal portion of this project will increase the capacity of the secure area in the airport terminal by over a hundred additional passengers, relieving the current congestion in the passenger seating area when more than one flight is scheduled to depart.

2. The Tower portion of the project will move us forward in our pursuit of an FAA

Contract Control Tower by completing the preliminary requirements needed to request the funds to construct the tower at SGU. Currently, air traffic control is handled out of Los Angeles creating delays for commercial flights as well as conflicts between commercial flights and general aviation aircraft. The construction and staffing of a control tower will increase the safety and efficiency of SGU.

3. The Roadway project will complete Airport Parkway, allowing for additional access to develop over 60 additional hangars and will allow pedestrians to safely walk or ride bikes to the airport or from the Terminal to the Fixed Based Operators or other locations of business on the airport. Additionally, this project will prepare for a future secondary route into and out of the airport area.

4. The land purchase will allow for the expansion of the airport and rental car parking that will be needed in the future and add additional land for the development of future hangars and business at the airport. This land purchase will also protect the airport from incompatible land uses near the airport.

d. The Local Government will provide to UDOT a written report of the status of the project named in the Funding Item by no later than April 1, 2014, and will provide other reports as stated in this Agreement.

3. Budget and Deliverables. The Local Government will maintain documents that show all projected and actual spending for the activities described herein, including all funding sources and itemized project costs. The Local Government agrees that from time-to-time the Local Government (and UDOT) may be responsible to submit reports or respond to inquiries for the Utah State Legislature and the Utah Governor's Office, and to comply with other reporting rules or audit requirements in connection with the Funds. The Local Government will promptly respond to UDOT's reasonable requests for information concerning the Funds. Upon spending all of the Funds, the Local Government will provide UDOT with a final written itemized report detailing where the Funds have been spent and also showing all funding sources and total project costs. For all Funds that are not spent during the Fiscal Year, the Local Government will provide a written description and an itemized report at least annually detailing the expenditure of the Funds, or the intended expenditure of any Funds that have not been spent and will provide the final written itemized report described above upon exhausting the Funds. Reporting requirements are further described in Exhibit A attached hereto and made a part hereof.

4. Limitation. The Local Government agrees that it will only spend the Funds for the purposes and activities that are expressly described this Agreement, and that no additional monies will be provided by UDOT. If the Local Government misapplies any Funds, it shall promptly notify UDOT and remove such expenditure from the budget so such expenditure is not paid by the Funds. If the Local Government fails to correct any misapplication of the Funds within thirty (30) days of discovering such misapplication, the Local Government agrees that it shall no longer have the right to possess the Funds and that all unspent and misapplied Funds shall at that time be immediately due and payable to UDOT so UDOT can direct them in a manner authorized by law.

5. UDOT's Role. The Local Government agrees that UDOT is a pass-through administrator only for the Funds and that UDOT does not have any role in the use of the Funds. The Local Government agrees that UDOT shall not be liable for any claim or cost, of any kind whatsoever, in connection with the Funds, and the Local Government hereby releases UDOT from all of the same (including, but not limited to, matters involving negligence), regardless of when the same may arise. The Local Government further agrees to indemnify, hold harmless and defend UDOT from any claim or cost, of any kind whatsoever (including, but not limited to, matters involving negligence), in connection with the Funds, except when caused by UDOT's sole negligence or malfeasance. This indemnity obligation shall not be construed to violate Utah's Governmental Immunity Act to the extent that such Act is applicable to a claim or cost. UDOT has all remedies available by law in addition to those stated in this Agreement, and UDOT's remedies are not limited by the terms of this Agreement.

6. Further Assurances. Each party to this Agreement agrees to undertake and perform all further acts that are reasonably necessary to carry out the intent and purposes of this Agreement, and to provide for a party's compliance with the laws or federal obligations that apply to it if an obligation under this Agreement makes such compliance impossible, and either party may notify the other party of a need for such further acts.

7. Modifications. The failure of either party to insist upon strict compliance with any of the terms and conditions of this Agreement, or failure or delay by either party to exercise any rights or remedies provided in this Agreement or by law, will not release either party from any obligations arising under this Agreement. This Agreement may not be modified except by a written document signed by an authorized individual representing each of the respective parties.

8. Miscellaneous. This Agreement is binding upon and inures to the benefit of the parties and it does not inure to the benefit of any third party. No party shall assign or transfer any rights, or delegate any duties hereunder, without the other party's prior written consent, and any such attempted assignment, transfer or delegation is void. The parties agree to work cooperatively and in good faith. Before taking any legal action in connection with this Agreement, each party agrees to first advise the other of a dispute and to meet in good faith in an effort to resolve it. If any notice is required in connection with this Agreement, each party shall send a written notice to the other party's chief financial officer using a manner that can reasonably assure a timely and accurate delivery. This Agreement does not create any partnership, joint venture, agency or other relationship.

9. Entire Agreement. This Agreement constitutes the entire agreement between the parties and supersedes any prior understandings, agreements, or representations, verbal or written.

10. Signatures. Each party represents that it has the authority to enter into this Agreement and has signed below by an authorized representative. This Agreement may be signed electronically and in counterparts.

11. Captions. The paragraph headings or captions appearing in this Agreement are for convenience only and are not to be considered in interpreting this Agreement.

mailed, postage prepaid, and addressed to other party's principal office. The designations of the name and the addresses to which any such notice or demand, as provided below, may be changed from time to time by any party by giving written notice as provided herein:

City:	City of St. George 175 East 200 North St. George City, UT 84770	Utah Department of Transportation:	UDOT 4501 South 2700 West Box 141510 Salt Lake Local Government, UT 84114
Attention: Copy:	City Attorney legal@sgcity.org	Attention: Copy:	Comptroller Assistant Attorney General (UDOT) 4501 South 2700 West Box 148455 Salt Lake Local Government, UT 84114

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

St. George City, a Utah municipal corporation

Michelle Randall, Mayor

UTAH DEPARTMENT OF TRANSPORTATION

By: _____

Title: Executive Director

Date: 10/23/2023

ATTEST:

Christina Fernandez, City Recorder

OFFICIAL SEAL City of St. George EST. 1862 STATE OF UTAH

APPROVED AS TO FORM:
Tani Pack Downing, City Attorney

Ryan N. Dooley, Assistant City Attorney

EXHIBIT A

1. **Performance Measures**. The Parties agree that Funds will be applied to an approved scope of work for the project described in this Agreement and that the work will meet the performance measures provided by the recipient of the Funds.

2. **Public Funds Compliance**. The recipient of the Funds shall comply with applicable state statutes on the reporting and expenditure of public funds. In particular, Utah Code § 63J-1-220(2)(b) requires recipients to provide UDOT with reports as provided therein and in this Agreement. The recipient of the Funds shall provide regular update reports to UDOT as frequently as UDOT may reasonably direct (but not more frequently than once each quarter). Each year, on the Friday at the end of the last full week of April, the recipient of the Funds will provide an annual report to UDOT that includes, at a minimum, the following (in the order specified):
    a. An itemized account of amounts spent and the dates when spent (noting any items outside the approved scope of work, if any). The account will include all sources of funding and a statement of all remaining unspent Funds and the intended expenditure of such unspent Funds. This information is used to assess accuracy.
    b. The projected spending that will be incurred before the applicable fiscal year's end (June 30 of each year).
    c. The difference between the appropriated amount of Funds and the actual amount used.
    d. A brief explanation of why the Funds were requested or granted, and how Fund expenditures solved or were expected to solve or ameliorate an issue.
    e. An assessment of implementation which includes: (i) what month and year the project, program, or bill was fully implemented; (ii) whether the project or program encountered any factors that caused a delay in implementation and an explanation of those factors; and (iii) whether the project or program encountered any factors that caused a change in scope and an explanation of those factors.
    f. An assessment of performance which includes: (i) how the success of the project or program is being measured, and (ii) how successful the project or program has been according to those metrics.
    g. Upcoming project milestone dates and the anticipated date of project completion.

3. **Final Report.** Within thirty (30) days after all Funds have been expended, the recipient of the Funds shall submit a Final Report to UDOT. The Final Report must address the following:

    a. Each topic outlined in the scope of work.
    b. The information required under Exhibit A, paragraph 2.
    c. The date when the project or program was completed.

4. **Certification**. For all information submitted, the recipient of the Funds must certify that it has provided accurate information and used the funds as required by this Agreement.

Agenda Date: 11/16/2023 **Agenda Item Number:** 2d

Subject:

Consider approval of an agreement with Lion Energy, LLC to provide a Battery Energy Storage System at Millcreek Generation Facility not to exceed $1,553,943.36.

Item at-a-glance:

Staff Contact: Bryan Dial

Applicant Name: Bryan Dial

Reference Number: N/A

Address/Location:

811 E Red Hills Pkwy

Item History (background/project status/public process):

The battery energy storage system will have the capability to sync and provide power to the grid when needed and start the generators during a catastrophic event.

Staff Narrative (need/purpose):

In the event of a transmission failure, St. George Energy Services currently uses diesel-powered generators to energize the Millcreek Generation Facility. The diesel generators are aging and inefficient. The installation of this battery would allow for the initiation of Millcreek in the event of loss of electric transmission to the area.

Name of Legal Dept approver: Alicia Carlton

Budget Impact:

Cost for the agenda item: $1,553,943.36

Amount approved in current FY budget for item: $2,250,000

If not approved in current FY budget or exceeds the budgeted amount, please explain

funding source:

This is budgeted in the current FY.

Description of funding source:

The amount of this agreement is for the battery and installation. The budgeted reflects also includes construction and other electrical equipment needed for this project. We have obtained DOE cost sharing for this project and expect the project to come in under budget.

Recommendation (Include any conditions):

Staff recommends approval.

AGREEMENT WITH LION ENERGY, LLC
FOR GENERATION FACILITY BESS MICROGRID

This Supplier Agreement ("Agreement") is made and entered into on _____ by and between the City of St. George, a municipal corporation, with offices at 175 East 200 North, St. George, Utah 84770 ("CITY"), and Lion Energy, LLC, a Utah limited liability company, with offices at 735 South Auto Mall Drive, American Fork, Utah 84003 ("Supplier").

WITNESSETH THAT:

WHEREAS, CITY desires a Battery Energy Storage System ("BESS") and desires for Supplier to provide a BESS and its onsite delivery and integration at City's Generation Facility ("Project"); and

WHEREAS, Supplier has submitted a scope of work and associated fees for the Project, attached hereto as Exhibit A and incorporated fully herein for all purposes.

NOW, THEREFORE, for the consideration hereinafter set forth, the parties hereto do mutually agree as follows:

1. **ENGAGEMENT OF SUPPLIER.**

1.1 SUPPLIER is a Utah LLC and has all licenses, permits, and approvals that are legally required for BESS installation and integration and shall keep them in effect at all times during the term of this Agreement.

1.2 SUPPLIER states that it has the necessary knowledge, experience, abilities, skills, and resources to perform its obligations under this Agreement and agrees to perform its obligations under this Agreement in a professional manner, consistent with prevailing industry standards and practices as observed by competent practitioners of the profession in which SUPPLIER and its subcontractors or agents are engaged.

1.3 SUPPLIER certifies that it does not and will not during the performance of this contract knowingly employ, or subcontract with any entity which employs workers in violation of 8 USC §1324(a). SUPPLIER agrees to require all subcontractors at the time they are hired for this project to sign a Certification of Legal Work Status and submit the Certification to CITY prior to any work being performed by the subcontractors. SUPPLIER agrees to produce, at CITY'S request, documents to verify compliance with applicable State and Federal laws. If SUPPLIER knowingly employs workers or subcontractors in violation of 8 USC § 1324(a), such violation shall be cause for unilateral cancellation of the contract between SUPPLIER and

CITY. In addition, SUPPLIER may be suspended from participating in future projects with CITY for a period of one (1) year. In the event this contract is terminated due to a violation of 8 USC § 1324(a) by SUPPLIER or a subcontractor of SUPPLIER, SUPPLIER shall be liable for any and all costs associated with such termination, including, but not limited to, any damages incurred by CITY excluding attorney fees. For purposes of compliance, CITY requires SUPPLIER and subcontractors to use E-Verify or other federally accepted forms of verification to verify the employment eligibility of all employees as allowed by law and the E-Verify procedures. SUPPLIER and subcontractors must maintain authorized documentation of the verification.

1.4 SUPPLIER shall not, either during or after the term of this Agreement, make public any reports or articles, or disclose to any third party any confidential information relative to the work of CITY or the operations or procedures of CITY without the prior written consent of CITY.

1.5 SUPPLIER further agrees that it shall not, during the term of this Agreement, take any action that would affect the appearance of impartiality or professionalism.

1.6 SUPPLIER, by execution of this Agreement, certifies that it does not discriminate against any person upon the basis of race, color, creed, national origin, age, sex, sexual orientation, gender identity, disability, or marital status in its employment practices.

1.7 SUPPLIER expressly acknowledges and agrees that nothing in this Agreement shall be deemed to relieve SUPPLIER from any obligation to comply with all applicable requirements of CITY during the term of this Agreement including the payment of fees and compliance with all other applicable ordinances, resolutions, regulations, policies, and procedures of CITY, except as modified or waived in this Agreement.

1.8 SUPPLIER shall comply with all applicable federal, state, and local laws, regulations, and ordinances that affect those employees or those engaged by SUPPLIER on the PROJECT, and will procure all necessary licenses, permits and insurance required.

1.9 CITY acknowledges that SUPPLIER may employ various specialized subcontractors for up to 15% of the services provided herein. SUPPLIER shall give written notice to CITY at least seven (7) days prior to SUPPLIER'S employment of the subcontractors to perform portions of the work provided for in this Agreement. It shall be solely SUPPLIER's responsibility to ensure that any of SUPPLIER'S subcontractors perform in compliance with the terms of this Agreement. Subcontractors may not be changed without ten (10) days prior written notice to CITY.

2. **PROJECT SERVICES DESCRIPTION.**

2.1 SUPPLIER will provide the services as described in Exhibit A. As services are needed, CITY shall provide SUPPLIER with a description of the work needed which shall be known as a "Work Order" and SUPPLIER will provide CITY with a specific scope of work and cost for the Work Order, which if accepted by the CITY shall become part of this Agreement binding both parties. CITY may at any time, as the need arises, order changes within the scope of the services without invalidating the Agreement. If such changes increase or decrease the amount due under the Agreement, or in the time required for performance of the work, an equitable adjustment shall be authorized by change order.

2.2 SUPPLIER shall furnish all the material, supplies, tools, transportation, equipment, labor, subcontractor services and other services necessary for the completion of the work described in Exhibit A or in subsequent Work Orders.

2.3 SUPPLIER shall provide services in compliance with all applicable requirements of federal, state, and local laws, codes, rules, regulations, ordinances, and standards.

3. **TERM OF AGREEMENT.**

3.1 This Agreement shall be effective as of the date executed by all parties and shall continue for one year unless otherwise terminated as set forth in this Agreement. If a Work Order was started during this term but not completed, the terms of this Agreement shall continue through completion of the Work Order.

3.2 SUPPLIER agrees to perform services as expeditiously as is consistent with professional skill and care and the orderly progress of the PROJECT. SUPPLIER shall perform the services in a timely manner according to the schedule approved by CITY.

3.3 SUPPLIER shall perform its services upon notice from the CITY to proceed and in accordance with the schedule approved by CITY. In the event performance of its services is delayed by causes beyond the reasonable control of SUPPLIER, and without the fault or negligence of SUPPLIER, the time for the performance of the services shall be equitably adjusted by written amendment to reflect the extent of such delay. SUPPLIER shall provide CITY with written notice of delay, including a description of the delay and the steps contemplated or taken by SUPPLIER to mitigate the effect of such delay.

4. **COMPENSATION.** For the performance of the services and completion of PROJECT set forth herein, CITY shall pay SUPPLIER as agreed in Exhibit A and each Work Order as applicable. The aggregate total of all Work Orders shall not exceed **one million five-hundred fifty-three thousand nine-hundred forty-three dollars and thirty-six cents ($1,553,943.36.)**

5. **INVOICING, PAYMENT, NOTICES.**

5.1 SUPPLIER shall submit invoices, no more frequently than monthly, for the services rendered during the preceding period; invoices shall describe the services performed, list all subcontractors used and the amount owed or paid to them, list all suppliers used and the amount owed or paid to them, list the contract amount, list the current invoice amount based on percentage of task complete, list the previous invoice amount, list total invoices to date, and list the contract balance. Invoices shall be emailed to: invoices@sgcity.org

5.2 In executing the request for payment, SUPPLIER shall attest that payment has been made to all subcontractors involved with prior requests, unless SUPPLIER provides a detailed explanation why such payments have not occurred. SUPPLIER shall also sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status and submit them with each request for payment. SUPPLIER shall require each subcontractor to sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status at the time subcontractor is paid and shall provide a copy of both documents to CITY. SUPPLIER shall also sign a "Conditional Waiver and Release Upon Progress Payment" and a Certificate of Legal Work Status and submit them with each request for payment.

5.3 A "Waiver and Release Upon Final Payment" signed by SUPPLIER attesting that all subcontractors, laborers, and material suppliers involved with prior requests for payment have been paid, and that all subcontractors, laborers, and material suppliers upon which the final payment is based will be paid immediately unless SUPPLIER provides a detailed explanation why such payments have not occurred or will not occur. SUPPLIER shall also require each subcontractor to sign a "Waiver and Release Upon Final Payment" and a Certificate of Legal Work Status at the time subcontractor is paid its final payment and shall provide a copy of both documents to CITY.

5.4 If such liens, claims, security interests or encumbrances remain unsatisfied after payments are made, SUPPLIER shall refund to CITY all money that CITY may be compelled to pay in discharging such liens, including all costs except for attorneys' fees.

5.5 All invoices for reimbursable costs shall be taken from the books of account kept by SUPPLIER, and SUPPLIER shall maintain copies of payroll distribution, receipted bills, and other documents. CITY shall have the right to review all books and records kept by SUPPLIER and any subcontractors concerning the operation and services performed under this Agreement. CITY shall withhold payment for any expenditure not substantiated by SUPPLIER'S or subcontractor's books and records.

5.6 In the event CITY has made payment for expenditures that are not allowed, as determined by CITY'S audit, SUPPLIER shall reimburse CITY the amount of the un-allowed expenditures. If additional money is owed to SUPPLIER, the reimbursement may be deducted from the additional money owed.

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5.7 CITY shall make no payment for any services not specified in this Agreement unless such additional services and the price thereof are agreed to in writing, prior to the time that such additional services are rendered.

5.8 Invoices shall be paid to SUPPLIER within thirty (30) days of presentation to CITY.

5.9 CITY may withhold 5% of billed amount as retention. Retention held shall be included in the final invoice after the contract is complete.

6. **CHARGES AND EXTRA SERVICE.**

6.1 CITY may make changes within the general scope of this Agreement. If SUPPLIER is of the opinion a proposed change causes an increase or decrease in the cost and/or the time required for performance of this Agreement, SUPPLIER shall notify CITY of that fact. An agreed-upon change will be reduced to writing signed by the parties hereto and will modify this Agreement accordingly. SUPPLIER may initiate such notification upon identifying conditions which may change the services agreed to on the effective date of this Agreement, as set forth in Exhibit A. However, SUPPLIER represents that to the best of its knowledge that it is not aware of any such conditions on the date hereof. Any such notification must be provided within thirty (30) days from the date of receipt by that party of the other party's written notification of a proposed change.

6.2 CITY may request SUPPLIER to perform extra services not covered by Exhibit A, and SUPPLIER shall perform such extra services and will be compensated for such extra services when they are reduced to a writing mutually agreed to and signed by the parties hereto amending this Agreement accordingly.

6.3 CITY shall not be liable for payment of any extra services, nor shall SUPPLIER be obligated to perform any extra services except upon such written amendment.

7. **TO BE FURNISHED BY CITY.** Resources to be furnished by CITY to SUPPLIER, at no cost to SUPPLIER, consist of CITY staff assistance for oversight and meetings to help perform the services. SUPPLIER shall verify accuracy of the information provided, unless otherwise stated in the contract documents.

8. **INSPECTIONS.** All work shall be subject to inspection and approval of CITY or its authorized representative.

9. **ACCURACY AND COMPLETENESS.**

9.1 SUPPLIER has total responsibility for the accuracy and completeness of its investigations, calculations, reports, plans and related designs, specifications and estimates prepared for the PROJECT and shall check all such material accordingly.

9.2 The plans will be reviewed by CITY for conformity with PROJECT objectives and compliance with CITY Standards.

9.3 Reviews by CITY do NOT include the detailed review or checking of major design components and related details or the accuracy with which such designs are depicted on the plans.

9.4 The responsibility for accuracy and completeness remains solely with SUPPLIER and shall be performed consistent with the standard of care.

10. **INDEPENDENT CONTRACTOR.**

10.1 CITY retains and engages SUPPLIER, as an independent contractor, to act for and represent it in all matters involved in the performance of services on the PROJECT, subject to the terms, conditions and stipulations as hereinafter stated.

10.2 It is understood and agreed that SUPPLIER will provide the services without supervision from CITY. SUPPLIER is an independent contractor and is not an employee, officer, or agent of CITY for any purposes related to the performance of this Agreement and is not an employee of CITY and is not entitled to any benefits from CITY.

10.3 Nothing in this agreement shall create nor be construed to constitute a partnership or joint venture between SUPPLIER and CITY.

10.4 SUPPLIER is advised to obtain and maintain in effect during the term of this Agreement medical insurance and disability insurance for all related work performed under this Agreement.

10.5 SUPPLIER acknowledges that CITY will not withhold any federal, state, or local taxes, including FICA, nor will CITY provide any unemployment compensation or worker's compensation coverage. As an independent contractor, SUPPLIER shall be responsible for all taxes, worker's compensation coverage and insurance coverage, and shall hold CITY harmless and indemnify CITY from and against any and all claims related to taxes, unemployment compensation, and worker's compensation.

10.6 SUPPLIER shall secure, at its own expense all personnel required in performing the services under this Agreement. The employees of SUPPLIER shall not be considered employees of CITY nor have any contractual relationship with CITY. SUPPLIER and its employees shall not hold themselves out as, nor claim to be officers or employees of CITY by reason of this Agreement. The employees of CITY shall not be considered employees of SUPPLIER.

10.7 Neither party has the right to bind or obligate the other in any way. SUPPLIER shall not use the name, trademarks, copyrighted materials, or any information related to this Agreement in any advertising or publicity without CITY'S prior

written authorization.

11. **INSURANCE.**

11.1 GENERAL: SUPPLIER shall secure and maintain insurance as required by laws and regulations and the terms of this agreement to protect against any liability, loss or expense which occurs or arises as a result of the performance of the services provided pursuant to this agreement or as changed as provided herein. SUPPLIER'S insurer must be authorized to do business in Utah and must have an A.M. Best rating of A VIII or better at the time this contract is executed.

11.2 COMMENCEMENT OF WORK: Neither SUPPLIER, its Suppliers nor any subcontractors shall enter the site of the work or commence work under this contract before CITY has received and accepted Certificate(s) of Insurance and Insurance Endorsements and has issued the Notice to Proceed, as applicable.

11.3 INSURANCE CERTIFICATES AND COVERAGE: Insurance certificates shall be issued on all policies required under this contract and shall be signed by an authorized representative of the insurance company. The insurance certificate or the coverage required shall include the following:

A. The name and address of the insured.

B. CITY shall be named as a Certificate Holder.

C. CITY shall be named as an additional primary insured on the General Liability Certificate with CITY listed as non-contributory on the General Liability certificate.

D. The location of the operations to which the insurance applies.

E. The number of the policy and the type or types of insurance in force thereunder on the date borne by the certificate.

F. The expiration date of the policy and the limit or limits of liability thereunder on the date borne by the certificate.

G. A statement that all coverage is on an occurrence basis rather than a claims basis except for the Professional Errors and Omissions Malpractice Insurance coverage.

H. A provision that the policy or policies will not be canceled, denied renewal, or reduced in coverage until at least 30 days after written notice has been received by CITY.

I. Name, address, and telephone number of the insurance company's agent of process in Utah.

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J. Other information to demonstrate compliance with additional requirements stipulated for the various types of insurance coverage.

11.4 COMPENSATION INSURANCE: SUPPLIER shall, as applicable, take out and maintain Workers' Compensation Insurance as required by the Labor Code for all its employees at the site of the work during the life of this contract. Coverage must be provided by a company authorized by the State of Utah to provide Workers' Compensation Insurance. The insurance shall include:

A. Insurance certificates shall provide a waiver of subrogation by the carrier to Certificate Holder.

B. SUPPLIER shall require each subcontractor to provide Workers' Compensation Insurance for its employees unless such employees are covered by Supplier.

C. In the event any class of employees engaged in hazardous work under this contract is not protected by the Workers' Compensation Statute, SUPPLIER shall provide, and shall cause its subcontractors to provide, special insurance for the protection of such employees not otherwise protected.

11.5 COMMERCIAL GENERAL LIABILITY INSURANCE: SUPPLIER shall procure and maintain commercial general liability insurance for the duration of the contract against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the SUPPLIER, its agents, representatives, employees, or subcontractors. The insurance shall remain in effect during the term of this agreement and such that claims reported beyond the date of substantial completion of this agreement are covered and during the warranty period, to the extent that it relates to the activities covered by this Agreement, in such manner and amounts as set forth herein. The Insurance Endorsement shall evidence such provisions.

A. The minimum commercial general liability insurance shall be as follows:

i. Comprehensive general liability insurance for injuries, including accidental death, to any one person in any one occurrence in an amount not less than $1,000,000.00 Dollars.
ii. Comprehensive general liability insurance for injuries, including accidental death, to two or more persons in any one occurrence in an amount not less than $3,000,000.00 Dollars (umbrella coverage may be considered).
iii. Broad form property damage insurance in an amount not less than $300,000.00 Dollars.

B. Such policy shall include each of the following coverages (as applicable):

i. Comprehensive form.

ii. Premises - operations.
iii. Explosion and collapse hazard.
iv. Underground hazard.
v. Product/completed operations hazard.
vi. Contractual insurance.
vii. Broad form property damage, including completed operations.
viii. Independent contractors for vicarious liability.
ix. Personal injury.
x. Cross liability or severability of interest's clause shall be included unless a separate policy covering CITY is provided.

C. Insurance certificates shall provide a waiver of subrogation by the carrier to Certificate Holder and shall name City as an additional insured.

11.6 PROFESSIONAL LIABILITY ERRORS AND OMISSIONS INSURANCE:

A. SUPPLIER shall carry and maintain Professional Liability Errors and Omissions Insurance in an amount not less than $3,000,000.00 Dollars for all work performed under this Agreement.

B. SUPPLIER shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the SUPPLIER, its agents, representatives, employees, or subcontractors. With respect to General Liability, Professional liability coverage should be maintained for a minimum of five (5) years after contract completion.

C. If Professional Liability coverages are written on a claims-made form:

i. The retroactive date must be shown and must be before the date of the contract or the beginning of contract work.
ii Insurance must be maintained, and evidence of insurance must be provided, for at least five (5) years after completion of the contract of work.
iii. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, the SUPPLIER must purchase an extended period coverage for a minimum of five (5) years after completion of contract work.
iv. A copy of the policy must be submitted to CITY for review.

11.7 BUSINESS AUTOMOBILE COVERAGE: SUPPLIER shall carry and maintain business automobile insurance coverage on each vehicle used in the performance of the work in an amount not less than $1,000,000.00 Dollars for one person and $3,000,000.00 Dollars for more than one person and for property damage resulting from any one occurrence which may arise from the operations of SUPPLIER in

performing the work.

Such business automobile insurance shall include each of the following types:

A. Comprehensive form, including loading and unloading.
B. Owned.
C. Hired.
D. Non-owned.

12. **INDEMNITY AND LIMITATION.**

12.1 SUPPLIER shall indemnify and hold the City and each of the City's employees, agents, representatives, attorneys, administrators, and elected officials, harmless from any claims, demands, causes of action, liabilities and obligations asserted by any Party arising out of or in any way connected with (a) SUPPLIER's alleged or actual breach of this Agreement, (b) the inaccuracy of any warranty or representation made by SUPPLIER, (c) any actual or alleged failure by SUPPLIER to conform to or comply with any laws or regulations applicable to its obligations herein, (d) any act or omission by SUPPLIER in the performance of this Agreement. The City may select, in the City's sole and absolute discretion but at the sole expense of SUPPLIER, attorneys to defend against any action brought against the City for which SUPPLIER is bound to indemnify the City.

12.2 CITY shall give SUPPLIER prompt written notice of any such claims or suits filed against CITY arising out of the services provided under this Agreement. SUPPLIER agrees to defend against any claims brought or actions filed against CITY arising out of the services provided under this Agreement. If CITY'S tender of defense, based upon the indemnity provision, is rejected by SUPPLIER or SUPPLIER'S insurer, and SUPPLIER is later found by a court of competent jurisdiction to have been required to indemnify the CITY, then, in addition to any other remedies the CITY may have, SUPPLIER shall pay the CITY'S reasonable costs and expenses, except for attorney's fees, incurred in obtaining such indemnification, defending themselves or enforcing the indemnification provision.

12.3 The insurance requirements in this agreement shall not be construed as limiting SUPPLIER'S liability. Irrespective of the requirements for SUPPLIER to carry insurance as provided herein, insolvency, bankruptcy, or failure of any insurance company to pay all claims accruing shall not be held to relieve SUPPLIER of any obligations under this agreement.

13. **DOCUMENTS.**

13.1 All data used in compiling SUPPLIER's work, and the results of any tests or surveys, as well as all photographs, drawings, electronically stored records of work performed, renderings, specifications, schedules, SUPPLIER's work, data processing output, computations, studies, audits, research, reports, models and

other items of like kind prepared by SUPPLIER, and its employees, shall be the sole and exclusive property of CITY, and CITY shall own all intellectual property rights thereto whether the specific work project for which they are made is undertaken or not. SUPPLIER may retain reproducible copies of all the foregoing documents for information and reference and customary marketing and public relations. The originals of all the foregoing documents shall be delivered to CITY promptly upon completion thereof. This provision may be enforced by an order of specific performance and is independent of any other provision of this Agreement. Compliance by SUPPLIER with this paragraph shall be a condition precedent to CITY's obligation to make final payment to SUPPLIER. If CITY has specific requirements on the information and manner the documentation is collected, CITY shall provide those specifics to SUPPLIER in writing.

13.2 Plans, specifications, maps, and record drawings prepared or obtained under this Agreement shall be provided to CITY in a format approved by CITY which shall generally be a hard copy and an electronic copy and shall become the property of CITY whether the work for which they are prepared is executed or not.

13.3 The basic survey notes and sketches, charts, computations, and other data prepared under this Agreement shall be made available upon request to CITY without restriction or limitation on their use.

13.4 CITY shall have the right to use reports, designs, details, or products developed as part of this Agreement for purposes of maintenance, remodeling or reconstruction of existing facilities or construction of new facilities without additional compensation to SUPPLIER or without restriction or limitation on its use even if documents are considered copyrighted material.

13.5 CITY will hold harmless SUPPLIER for any use or reuse of these reports, designs, or details for purposes other than the project associated with this Agreement unless CITY obtains validation of that use or reuse from SUPPLIER.

14. **RECORDS.**

14.1 SUPPLIER shall maintain records, books, documents, and other evidence directly pertinent to the performance of services under this Agreement in accordance with generally accepted accounting principles and practices.

14.2 SUPPLIER agrees to keep proper books of records and accounts in which complete and correct entries will be made of payroll costs, travel, subsistence, and field expenses.

14.3 Said books shall, at all times, be available for at least three (3) years after final payment for reasonable examination by CITY.

15. **TERMINATION.**

15.1 CITY may terminate this Agreement by providing fourteen (14) days written notice prior to the effective termination date to SUPPLIER. Provided City will still be obligated to follow through with any pending Work Orders that have been accepted by the Supplier.

15.2 In the event of such termination, CITY shall pay SUPPLIER for all services actually rendered up to and including the date of termination.

15.3 SUPPLIER shall deliver to CITY copies of all drawings, reports, analyses, documents, and investigations, whether completed or not, that were prepared or were being prepared under the provisions of this Agreement.

16. **CONFLICT BETWEEN DOCUMENTS.** In the event of a conflict between this Agreement and any other documents with SUPPLIER, this Agreement shall govern.

17. **CONFLICT OF INTEREST.** SUPPLIER certifies that it has disclosed to CITY any actual, apparent or potential conflicts of interest that may exist relative to the services to be provided pursuant to this Agreement.

17.1 SUPPLIER agrees to advise CITY of any actual, apparent or potential conflicts of interest that may develop after the date of execution of this Agreement.

17.2 SUPPLIER further agrees to complete any statements of economic interest required by either CITY ordinance or State law.

18. **NON-WAIVER.** No failure or waiver or successive failures or waivers on the part of either party hereto, their successors or permittee assigns, in the enforcement of any condition, covenant, or Article of this Agreement shall operate as a discharge of any such condition, covenant, or Article nor render the same invalid, nor impair the right of either party hereto, their successors or permitted assigns, to enforce the same in the event of any subsequent breaches by the other party hereto, its successors or permitted assigns.

19. **NOTIFICATION.** All notices required or permitted to be made by either party in connection with this Agreement shall be in writing, and shall be deemed to have been duly given: (a) five (5) business days after the date of mailing if sent by U.S. mail, postage prepaid, (b) when transmitted if sent by facsimile, provided a confirmation of transmission is produced by the sending machine and a copy of such facsimile is promptly sent by another means specified in this Section; or (c) when delivered if delivered personally or sent by express courier service. All notices shall be sent to the other party at its address as set forth below unless written notice is given by either party of a change of address:

CITY:	City of St. George 175 East 200 North St. George, Utah 84770	SUPPLIER:	Lion Energy, LLC 735 South Auto Mall Dr. American Fork, UT 84003
Attention:	City Attorney	Attention:	Tyler Hortin
Copy:	legal@sgcity.org	Copy:	tyler.hortin@lionenergy.com

20. **GOVERNING LAW AND VENUE.** This Agreement shall be construed according to the laws of the State of Utah. The parties agree that venue for all legal actions, unless they involve a cause of action with mandatory federal jurisdiction, shall be the Fifth District Court for the State of Utah. The parties further agree that the Federal District Court for the District of Utah shall be the venue for any cause of action with mandatory federal jurisdiction. The parties shall have all rights and remedies provided under applicable Federal or State law for a breach or threatened breach of this Agreement. These rights and remedies shall not be mutually exclusive, and the exercise of one or more of these rights and remedies shall not preclude the exercise of any other rights and remedies. Each party agree that damages at law may be an inadequate remedy for a breach or threatened breach of any provision hereof and the respective rights and obligations of the parties hereunder shall be enforceable by specific performance, injunction, or other equitable remedy. Nothing in this Agreement shall be construed to waive the sovereign immunity of the government parties.

21. **LEGAL FEES.** Should any party default on any of the covenants or agreements contained herein, the defaulting party shall pay all costs and expenses, (excluding reasonable attorney's fees,) which may arise or accrue from enforcing this Agreement or in pursuing any remedy provided hereunder or by applicable law, whether such remedy is pursued by filing a lawsuit or otherwise. This obligation of the defaulting party to pay costs and expenses includes, without limitation, all costs, and expenses, (excluding reasonable attorney's fees) including appeals and bankruptcy proceedings. If either party commences legal action to interpret any term of this agreement, the prevailing party shall be entitled to recover all reasonable fees (excluding attorney's fees), court costs, and any other costs incurred in connection with such action. The parties agree that they shall each pay their own attorney's fees.

22. **MODIFICATION OF AGREEMENT.** CITY specifically reserves the right to modify or amend this Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work. All modifications shall be in writing and executed by both parties. Each Work Order adopted under this Agreement shall incorporate the terms and conditions of this Agreement and shall constitute a modification to this contract. A Work Order may amend the terms and conditions of this Agreement only as they apply to that particular Work Order and shall not have any general effect on this Agreement.

23. **RESERVED LEGISLATIVE POWERS.** Nothing in this Agreement shall limit the future exercise of the police power by CITY in enacting zoning, subdivision, development, transportation, environment, open space, and related land use plans, policies, ordinances, and regulations after the date of this Agreement, but which shall not be retroactively applied to or modify this Agreement.

24. **SUCCESSORS AND ASSIGNS.** SUPPLIER shall not assign, sublet, sell, transfer, or otherwise dispose of any interest in this Agreement without assigning the rights and the responsibilities under this Agreement and without the prior written approval of CITY. This Agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and permitted assigns, but shall not inure to the benefit of any third party or other person.

DRAFT

25. **NO JOINT VENTURE, PARTNERSHIP OR THIRD-PARTY RIGHTS.** It is not intended by this Agreement to, and nothing contained in this Agreement shall, create any partnership, joint venture, or other arrangement between the parties. No term or provision of this Agreement is intended to or shall, be for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

26. **INTEGRATION.** This Agreement contains the entire Agreement with respect to the subject matter hereof and integrates all prior conversations, discussions or understanding of whatever kind or nature between CITY and SUPPLIER and supersedes and replaces all terms and conditions of any prior agreements, arrangements, negotiations, or representations, written or oral, with respect to this PROJECT.

27. **SEVERABILITY.** If any part or provision of this Agreement shall be determined to be unconstitutional, invalid or unenforceable by a court of competent jurisdiction, then such a decision shall not affect any other part or provision of this Agreement except that specific provision determined to be unconstitutional, invalid or unenforceable. If any condition, covenant or other provision of this Agreement shall be deemed invalid due to its scope or breadth, such provision shall be deemed valid to the extent of the scope or breadth permitted by law.

28. **CONSTRUCTION.** Each of the parties hereto has had the opportunity to review this agreement with counsel of their choosing and the rule of contracts requiring interpretation of a contract against the party drafting the same is hereby waived and shall not apply in interpreting this agreement.

29. **SURVIVAL.** It is expressly agreed that the terms, covenants, and conditions of this Agreement shall survive any legal act or conveyance required under this Agreement.

30. **HEADINGS.** The section and other headings in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

31. **COUNTERPARTS.** This Agreement may be signed in counterparts and each such counterpart shall constitute an original document. All such counterparts, taken together, shall constitute one and the same instrument. Any signature on this Agreement transmitted by facsimile, electronically in PDF format, or by other generally accepted means of conveying digital signatures (e.g. DocuSign) shall by deemed an original signature for all purposes and the exchange of copies of this Agreement and of signature pages by any such transmission, or by a combination of such means, shall constitute effective execution and delivery of this Agreement as to the Parties and may be used in lieu of the original for all purposes.

32. **AUTHORITY OF PARTIES.** The parties executing this Agreement hereby warrant and represent that they are duly authorized to do so in the capacity stated and that this Agreement constitutes a valid and binding Agreement.

DRAFT

IN WITNESS WHEREOF, this Agreement has been executed by the CITY and SUPPLIER effective from the day and year first written above.

CITY OF ST. GEORGE	**LION ENERGY, LLC**
_____	_____
Michele Randall, Mayor	Tyler Hortin, President

ATTEST:

_____
Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____
Alicia Carlton, Assistant City Attorney

REVIEWED BY:

_____
Bryan Dial, Energy Services Director

DRAFT

LIONENERGY™

EXHIBIT A:

TECHNICAL DETAILS

1.1: **Company Profile:** Please see Lion Energy Utility Power Point and Power Save Container Series Technical Data sheet Info.
1.2: **Offering Specs:** Qty-1, 20 foot container. PCS 1.2 MW Power, Battery 1228.8 Vdc 3.44 MWh combined, 100% DOD, EOL DC 3.263 MWh, EOL AC 3.006 MWh.
1.3: **Proposed BESS system power/capacity and number of units (complete individual BESS systems)**
1.4: **Proposed site plan example:** To be provided by ICPE and will be delivered when received from ICPE
1.5: **Alternate Site(s) Layout Plan for Purpose of Sellers proposed BESS system:** Not applicable.
1.6: **Detailed description of the Warranty provided for Equipment. Available Pass-Through Warranties from 3rd party suppliers:** These complete BESS systems proposed and outlined in this Tech Proposal include the standard Warranty Program. This includes 10 Years for Inverter/PCS, Transformers, Fire System, Misc Electrical and Electronics. The Batteries include standard 10 year or 6000 cycles at 90%DOD/80% retention. Based on the proposed BESS system cycling at 2 hr./once per day cycling this would be 20 years at 7 days/week. There are no existing pass-through 3rd party supplier warranties that extend past our standard warranty offered.
1.7: **Description of Long-Term Service Agreements offered:** Please refer to the LTSA
1.8: **Description of the available Capacity Maintenance/Capacity Augmentation:**

(1) Reference Price List and Price Summary

- Standard Inverter/PCS warranty is 10 Years.
- Standard Battery Warranty 10 year or 6000 cycles at 90% DOD/80% Retention.
- Included capacity performance guarantee is 80% capacity retention at 15 years.
    - Contingent on max DOD never greater than 66% of BOL capacity as indicated in offering spec above.

(2) Spare Parts are covered in warranty period by manufacture.

1.9: **Battery Chemistry:** LFP (Lithium Iron Phosphate)
1.10: **Battery Stack Architecture:** Series-Parallel configuration into cell pack modules.
1.11: **Battery Enclosure design and # of enclosures:** 20ft. 1 MWh NEMA3R outdoor single system main battery enclosure. Total number of enclosures will meet the total system or other requirements.
1.12: **Power Conversion System (PCS):** 1 MW Bi- Directional Inverter/PCS Main System.
1.13: **PCS Enclosure Design:** Built into 20 ft enclosure..
1.14: **Thermal Management /Liquid Cooling/HVAC System Description:** Built In thermal energy equipment and management system. Each 20ft. Battery Container includes 40KW Liquid Cooling system with each independent battery pack incorporating liquid cooling surface transfer plate. Set up for both cooling and heating as each system requires. For the separate PCS Enclosures, they incorporate HVAC system cooling and heating control.
1.15: **Fire Detection and Fire Detection System Description:** Built in Clean Agent 3M Novec Fire Suppression System. Built in cross zoned Gas and Smoke Detection. Information and Specs can be provided upon request. Fast fill fire hose connection.
1.16: **Control System Description (BMS, EMS & SCADA):** The BESS systems proposed include a complete built-in BMS and PMS control system for each individual battery packs/racks that include charge/discharge control, overcharge, undercharge & over temperature safety circuits and automatic shutdown integration with HV power and alarms when applicable. The EMS is a complex cloud-based software and firmware system that interfaces with the BMS, line loads and preset system monitoring and actionable energy functions. Performs

Energy Shift, Demand Management including Peak Shaving, UPS Back Up Power and Renewables Integration charge and dispatch to specific application requirements. These include interface with Utility and other SCADA systems as required.
1.17: **Project Safety:** Lion Energy BESS systems are constructed using highest level of safety systems and workmanship.

Scope of Work:

2.1: **BESS Control:** Voltage output control, Frequency output control and Power output control via DNP 3. Open transition break synch and make with generator or grid architecture.

2.2: **Function:** Charge from the grid and dispatch to the grid. 1 MW 3 MWh 1MWh reserve black start one or both. At least one. Vary frequency to match the generator and or the grid.

2.3: **Telemetry:** Utility POI (voltage, frequency, charge power, dispatch power, VARS) BESS (voltage, frequency, charge power, dispatch power, VARS). Status (SOC, SOP, over discharge, short circuit, battery fault, over voltage, under voltage, over temp, under temp, ambient temp and battery temp) All Telemetry is transmitted DNP3

2.4: **Accessories:** Revenue grade +-0.3% revenue grade transformer, Differential relay, auxiliary CT for St. George power protection. Bus protection battery storage 480 vac. bus switch gear. PT's and CT's

2.5: **Automation:** TBD by ICPE

2.6: **Construction:** Designed by ICPE, Constructed by TBD

Terms:

3.1: **Mile-Stones/Pay Schedule:**

Mile-Stone	Pay Schedule
Approval Drawings	10%
Order of Equipment	25%
Time of shipment	30%
Energization	30%
Commissioning and Sign of Project Completion	5%

3.2: **Total Cost :** 1,553,943.36

www.lionenergy.com | 385.375.8191
735 S. Auto Mall Drive, Suite 200 | American Fork, UT 84003


LIONENERGY™
BECOMING ENERGY INDEPENDENT



We Change the World by Helping Individuals, Families and Organizations Become Energy Independent

Lion Energy is dedicated to providing safe, silent, renewable power to customers who want to become ***energy independent***.

We do this by engineering, creating, manufacturing, testing and delivering high-quality energy storage products for your home, work and play.

We use advance technology called LionESS™ to help you easily ***control*** how you store and ***use*** energy, where and when you want it.

This is our mission. This is our passion!



The Journey

We believe our customers are on a journey to become energy independent and this journey affects every aspect of their lives – how they live and interact with others – at home, at work, or at play.


LIONENERGY™
Safe. Silent. Renewable. Power.





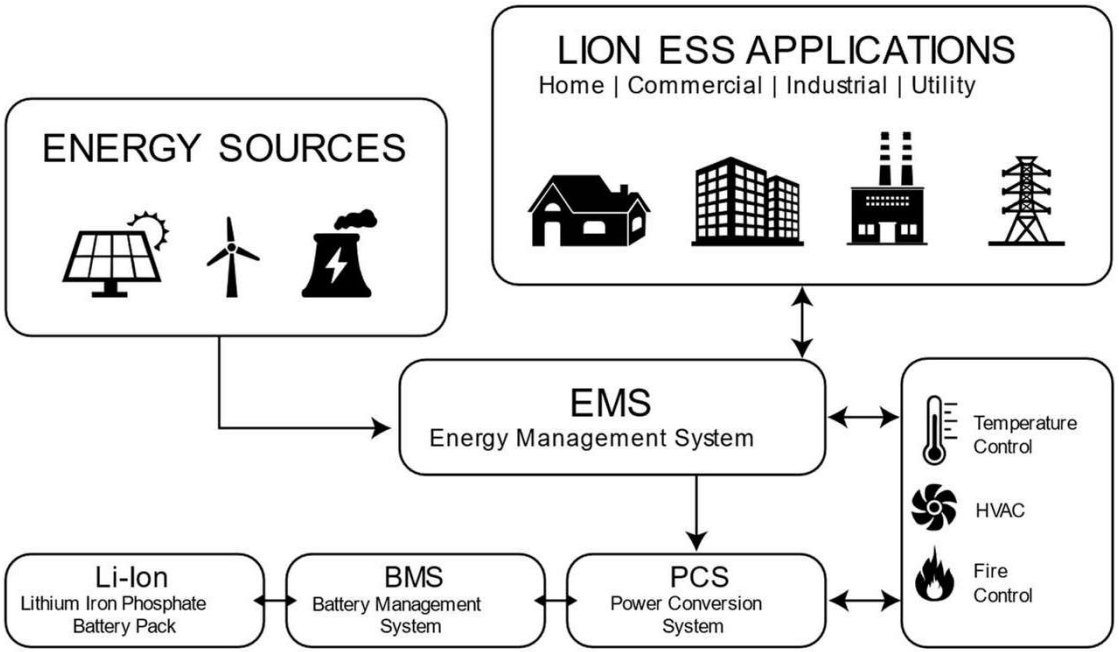


POWER
AT YOUR FINGERTIPS

Lion solutions range from:

- Hand-held devices
- Portable solar generators
- LFP batteries for RV & Marine
- Home and large custom applications

Using advanced technology called **LionESS™**, Lion Energy is leading the way with Lithium energy storage technologies that give you power where you need it, when you need it, and how you need it.



COMPONENTS OF THE LIONESS

- Lithium Iron Phosphate Battery System
  - Safest
  - Long Lasting
- Energy Management System (EMS)
  - Complete Smart Approach
- Battery Management System (BMS)
  - Proprietary cell protection
- Power Conversion System (PCS)
  - Efficient and full featured bidirectional Power conversion
- Lion Energy App
  - Telemetry and Control



Large Custom Solutions

SANCTUARY – Inverter/battery | POWERsave – Series of Large Custom Solutions

HOME and LARGE CUSTOM
LITHIUM ENERGY STORAGE





Lion Sanctuary™

Solar Energy Storage System for Home and Office

- 8K Inverter / Charger
- 13.5kWh Energy Storage
- Expandable to 27kWh and 40.5kWh



Lion POWERsave™

Energy Storage System for Power Optimization and Backup*

- Cabinet, Container, Control Building
- LionESS inside
- Ranges from 30kW/50kWh to 90kW/190kWh
- Parallelable to fit your requirements

SOLUTION

Lion Energy has proprietary **USA based Engineering, testing and Assembly** to ensure high-quality Lithium energy storage solutions for Commercial, Industrial, and Utility



Commercial Energy Storage

- Become energy independent
- Energy when you need it
- Uninterrupted Power Supply (UPS) through blackouts
- Sell excess to the Grid

Large Custom Energy Storage

- Help stabilize the grid
- Eliminate Power Demand Spikes
- Flatten your overall Power *Curve*
- *Reduce your Monthly Energy Bill*
- Scalable Commercial to Utility

CUSTOM DESIGN

Flexible Modular Solutions For Your Specific Energy Needs



Cabinet Series

The Cabinet Series for indoor and outdoor commercial/industrial energy storage systems help reduce peak energy costs from equipment and operations. Power and capacity range from 30kW/50kWh to 90kW/190kWh. These solutions are modular and are expandable to meet larger energy storage requirements.



Container Series

The Container Series are outdoor containerized energy storage systems for utility grid tie or commercial/industrial behind the meter applications. They are available in 20ft +10ft configurations. Power and capacity range from 250kW/400kWh up to 1MW/1.7MWh. You can combine multiple units for even more capacity

Containers are Liquid Cooled



Control Building Series

The Control Building Series are stationary outdoor custom energy storage enclosure and buildings for utility grid tie or commercial/industrial behind the meter applications. They are designed to meet larger power and capacity requirements where container systems are not feasible

Used in a Variety of Settings

Utility







Utility and Industrial Applications

- Peak Shaving
- Substation Resilience
- Renewable Energy storage TOU
- Generation Startup
- Heavy Industrial
- Telecom
- Data Center

BENEFITS OF LIONESS INSIDE
HOME AND CUSTOM SOLUTIONS

LOAD MANAGEMENT
Accumulate Energy when the demand is low and discharge stored energy during peak times, saving money.

BACKUP POWER / UPS
Supply backup power in case of an electrical grid failure until complete power restoration. Save time and money by eliminating downtime.



RENEWABLE ENERGY INTEGRATION
Open the door to inexpensive electricity continuously available to on-grid, off-grid, and hybrid systems.



POWER SYSTEM RECOVERY CAPABILITY
Based on battery storage, a POWERsave solution can restart after a total shutdown without using external electricity networks. Recover in the shortest time possible.



ENERGY TIME-SHIFT
In areas where electricity prices fluctuate, energy is purchased at a low price during off-peak periods and sold or used when the price increases.

POWER CONDITIONING
Immediately react with current into and out of your power system to protect sensitive equipment correcting Voltage sags and power factor.

CUSTOM ENGAGEMENT PROCESS

Primary Goal: Provide Exact Energy Storage System for Your Needs



1. Gather Requirements

- Data
- Design Life
- Site Analysis
- Resilience
- Timing

2. Analyze & Size

- Energy Storage to Power Ratio
- Determine Reserve Ratio

3. Design

- Engineer Entire System
  - ✓ Specs
  - ✓ Hardware
  - ✓ One Line

4. Engineering Estimate

- Production Timeline
- System Components
- Financial Estimate

5. Approval & Revision

- Secure approval from all parties
- Make adjustments as needed

6. Interface with Integrators

- Engineering
- Procurement
- Construction



WHY PARTNER WITH LION ENERGY

Do business with a trusted leader who values customers and partners, safety and innovation

- Experienced thought leaders in energy storage and usage
- Produce high-quality, extremely safe product solutions
- Educate the marketplace and create demand
- Establish key partnerships – e.g. American Battery Factory (1st **USA** lithium iron phosphate production and manufacturing)
- Partner support – marketing assets, social media, training, pricing
- Exceptional value for customers – safety, longevity, customer service, dependability, convenience, flexibility, warranty, trust

LIONESS™
ENERGY STORAGE SYSTEM

POWERsave™ Container Series

PRODUCT TECHNICAL DATA SHEET

At Lion Energy, our entire focus is on safe, silent, renewable power that gives you energy independence through energy storage systems. Offered in 2 enclosure model configurations (PS20, PS30) configured to meet each customer's specific power(kW) and capacity storage(kWh) requirements from 675kw/1032 to 1.7MW/3.44MWh per container. Multiple containers can be combined for increased capacity applications.

Components of the LionESS



Lithium Iron Phosphate Battery System: Lithium Iron Phosphate is the safest lithium ion the market absent of potentially volatile chemicals that are found in other lithium cells. It will not explode or catch on fire. Our batteries are encapsulated in strong welded aluminum housing with built-in safety relief. The cells are arranged in modules that form battery packs.

Battery Management System (BMS): An advanced BMS ensures the safety of the battery system. It monitors the condition of the battery cells, measures their parameters and states such as state-of-charge (SOC) and state-of-health (SOH), and protects batteries from fires and other hazards.

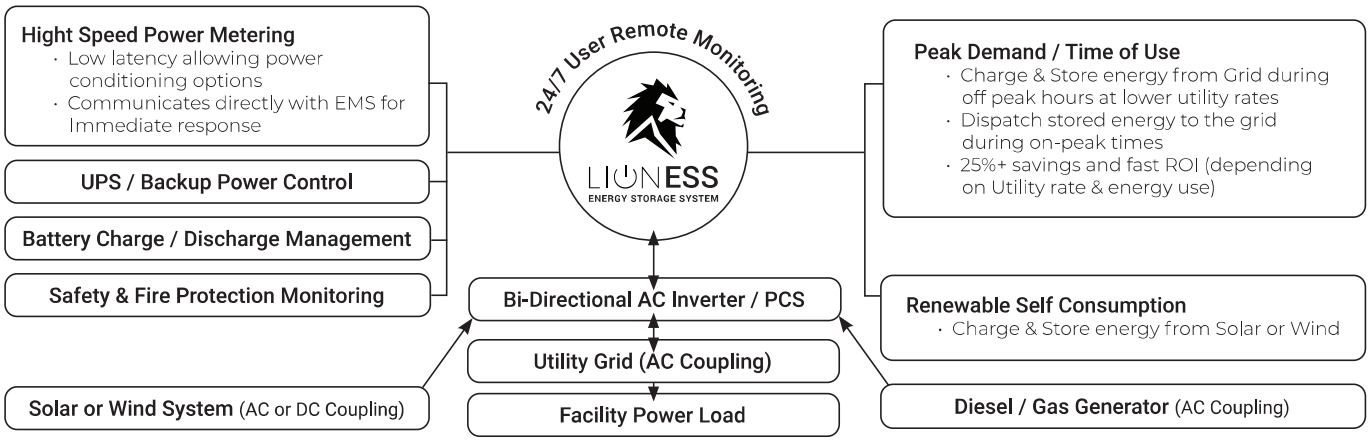
Inverter and Power Conversion System (PCS): The inverter converts direct current (DC) produced by the batteries into alternating current (AC) supplied to the to facilities and it also converts AC current from the Utility or on-site generator to DC current to charge the batteries.

HOW IT WORKS: The LionESS uses hybrid controls and collects energy from an electricity grid or renewable power sources, such as solar and wind, and stores it using high-grade, extremely safe lithium iron phosphate battery storage technology (see below diagrams). Then, batteries discharge and release the energy through high efficiency power inverters and control systems when necessary. The system is optimal for Grid back-up, SCADA dispatch-able and Black-Start capabilities.

SAFETY/CERTIFICATIONS: Each system includes built-in safety systems for Battery Charge Protection, Fire & Heat Detection/Protection and Climate HVAC System Control. All systems meet or exceed UL1741 SB, UL9540A and IEEEP2800, IEEE1547, ISO9001, NEMA 3R.

ENERGY MANAGEMENT SYSTEM (EMS)

The Lioness EMS is responsible for monitoring and control of the energy flow into and out of the system. It coordinates the work of a BMS, a PCS, and other components of an energy storage system. By collecting and analyzing energy data, an EMS can efficiently manage the power resources of the system. Each system offers complete energy control and modes of operations programmable by electrical contractor or EPC. All our systems include a remote monitoring system that leverages modern cloud infrastructure to enable easy and effective remote telemetry data access.



POWERsave™ Container Series

TECHNICAL SPECIFICATIONS (General Specs subject to change for each system)

TYPE	MODEL PS20	MODEL PS30
POWER CAPACITY		
Power	430kW-675kW	675kW-1.7MW
Capacity	1032kWh- 2064kWh	2.064MWh-3.440MWh
BATTERIES / BATTERY MODULE RACK (2 standard sizes depending on system)		
Dimensions (L x W x H)	L: 238.5" (605.79cm) W: 96.0" (243.8cm) H: 114.0" (289.57cm)	L: 298.5" (758.19cm) W: 96.0" (243.8cm) H: 114.0" (289.57cm)
Weight (lbs)	47,000 lbs	67,000 lbs
Rating: NEMA3R/IP54 OUTDOOR	x	x
Operating Temperature: -30°F-122°F (-34°C-50°C)	x	x
Corrosion Protection	x	x
BATTERIES / BATTERY MODULE RACK (2 standard sizes depending on system)		
Type: LFP (Lithium Iron Phosphate)	x	x
Cell/Module/Pack (Example depending on system)	**M:** 280Ah/153.6VDC/1P48S/43kWh **R:** 1P8S/1228.8VDC/344KWh **S:** 3-6P1S/1228.8VDC	**M:** 280Ah/153.6VDC/1P48S/43kWh **R:** 1P8S/1228.8VDC/344KWh **S:** 6-10P1S/1228.8VDC
Charge / Discharge Current	**RATED** ≤0.5C **MAX:** ≤1C (90% DOD)	**RATED** ≤0.5C **MAX:** ≤1C (90% DOD)
Operating Temperature Charge / Discharge	32-122°F (0-50°C) / -4-122°F (-20°C-50°C)	32-122°F (0-50°C) / -4-122°F (-20°C-50°C)
BMS (Battery Management System) includes Charge, Discharge Control and Protection. Individual Cell/Pack monitoring and balance	x	x
Cycle Life: 6,000 (based on 80% depth of discharge)	x	x
INVERTER/POWER CONTROL UNIT		
General Specifications (based on 215kW Module) *Bi-directional Power Conversion System/Built-in transformer for direct grid connection *Battery voltage range: 1070-1500V *DC Max Current: 1608A Max *AC voltage: 480V 3 Phase 4-wire *AC current: 2050A *AC frequency: 60Hz(59.5Hz~60.5Hz) *AC PF: Listed: 0.8~1 leading or lagging (Controllable) Actual: 0.1~1 leading or lagging (Controllable)	450kW-675kW (depending on system requirements)	675kW-1.7MW (depending on system requirements)
EMS (Energy Management System)		
LionESS / APP platform offering energy management, safety system interface, PEAK SHAVING, PEAK DEMAND TOU, ARBITRAGE energy control	x	x
COMMUNICATION		
RS485, CAN, Ethernet, DNP3, Modbus TCP/IP	x	x
SOLAR DC to DC CONTROLLER (Optional)		
Type / Rating High voltage DC solar to High Voltage DC Battery	100-750kW	100-750kW
SAFETY SYSTEMS		
FIRE PROTECTION (FM200 or 3M NOVEC 1230) Internal for batteries and system. Pressurized auto detection & distinguish	x	x
HVAC (Interior Climate Control) AIR FORCED Thermal Management	x	x

LTSA

Year	Maintenance Services (Preventive and Corrective Maintenance)	Extended Warranty	Spare Parts Replenishment or Supply	Total LTSA (USD)
1		Inlcuded		
2		included		
3		included		
4		included		
5		included		
6		included		
7		included		
8		included		
9		included		
10		included		
Total LTSA		**$ -**	**$ -**	

LTSA Summary Price

Item	Scope: Long Term Services Agreement - LTSA (10 Yrs)	Price ($ USD)	Remarks
1	Maintenance Services for 10 yrs		
2	Batteries Augmentation	N/A	There will be no augmentation, oversize the meet the requirement
3	Extended Warranty		Preference for offering part of CAPEX
4	Spare Parts		
	Total Price LTSA for 10years (USD)	$ -	

Scope	Description
Maintenance Services	Maintenance includes both preventive and corrective maintenance. There is no T&M cost. Maintenance wil be scheduled at citie's convenience annually.
Corrective Maintenance	The vendor has the capability to offer corrective maintenance services with quick response to the system.
Spare Parts	The vendor will supply spare parts.

CITY OF ST. GEORGE PURCHASE REQUISITION

175 East 200 North, St. George, UT 84770

REQUISITION DATE: 10/25/23

REQUESTING DEPARTMENT: Energy Services

REQUESTING DIVISION:

(●) PO REQUEST

( ) REQUEST FOR PAYMENT (invoice attached)

VENDOR NAME:	Lion Energy, LLC
VENDOR #	(If this is a new vendor, please attach W-9)
VENDOR ADDRESS:	735 S Auto Mall Dr. American Fork, UT 84003
SHIP TO LOCATION:	3232 E 170 N Saint George, UT 84770
SPECIAL INSTRUCTIONS:	

PROCUREMENT TYPE:

- ( ) 3 QUOTES (ATTACHED)
- ( ) FORMAL BID # _____
- ( ) STATE CONTRACT # _____
- ( ) EMERGENCY PURCHASE (FORM ATTACHED)
- ( ) SOLE SOURCE / O.E.M. ITEM (FORM ATTACHED)
- ( ) CONTRACTED SOFTWARE SUPPORT FEE
- ( ) REQUIRED TRAVEL / TRAINING
- ( ) CITY-SPONSORED EVENT
- (●) PROFESSIONAL SERVICE (PSA ATTACHED)
- ( ) OTHER (MUST EXPLAIN): _____

CONTRACT REQUIREMENTS:

- ( ) This does NOT require a contract
- (●) Contract drafted by City's Legal Department
- ( ) Contract drafted by Vendor; reviewed & approved by City's Legal Department

BUDGET INFORMATION (Only required for Capital outlay items)

PROJECT TITLE OR LOCATION: MillCreek Battery

IS THE TOTAL AMOUNT APPROVED IN THE BUDGET? (●) YES ( ) NO

BUDGETED AMOUNT: $ 2,250,000.00

WILL THIS ITEM / SERVICE BE RECEIVED / COMPLETED BEFORE THE FISCAL YEAR END? (●) YES ( ) NO

QUANTITY	DESCRIPTION OF ITEM OR SERVICE	ACCOUNT NUMBER	UNIT PRICE	ESTIMATED COST
1	Battery Energy Storage System and installation per agreement	5310-7484	1,553,943.36	$ 1,553,943.36
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00

If purchase exceeds $2,500 it is expected that a minimum of 3 bids/quotes be obtained and attached. If 3 bids/quotes were not obtained, an appropriate procurement type must be selected above.

VENDOR	QUOTE

SUBTOTAL	$ 1,553,943.36
FREIGHT / SHIPPING CHARGES	0.00
OTHER CHARGES (must specify)	0.00
TOTAL	$ 1,553,943.36

REQUESTED BY: _____ (printed name) Date: _____ Signature: _____

AUTHORIZED SIGNER: _____ (printed name) Refer to Authorized Signers List (up to $25,000) Date: _____ Signature: _____

DEPARTMENT HEAD: Bryan Dial (printed name) Date: 10/25/23 Signature: Bry Dial

CITY MANAGER: _____ (printed name) (required when any procurement policies are waived) Date: _____ Signature: _____

LEGAL DEPARTMENT: _____ (printed name) (required when any procurement policies are waived) Date: _____ Signature: _____

PURCHASING: _____ (printed name) Date: _____ Signature: _____

City Council Approval Date (if applicable): _____

rev20220719

Agenda Date: 11/16/2023 **Agenda Item Number:** 2e

Subject:

Consider approval to waive the fees of the St. George Sunrise Market event that is taking place each Saturday at Hela Seegmiller Historic Park located at 2592 South 3000 East, for a six (6) month trial period from March 2, 2024 - September 2024.

Item at-a-glance:

Staff Contact: Sarah Reber

Applicant Name: Kimberly Lee

Reference Number: N/A

Address/Location:

Hela Seegmiller Farm, 2592 South 3000 East

Item History (background/project status/public process):

St George Sunrise Market is a new market wanting to start up for local entrepreneurs and to bring the community together. They are asking for 1) The permit fee to be waived ($150), 2) Hela Seegmiller fee to be waived every week ($480/week), 3) any vendor fees ($5 per vendor per week), and 4) Non construction encroachment permit fee ($150/week) if needed.

Staff Narrative (need/purpose):

The fee waiver includes 1) The permit fee to be waived ($150), 2) Hela Seegmiller Historic Park fee to be waived ($480/week), and 3) any associated vendor fees ($5 per vendor per week), and 4) Nonconstruction encroachment permit fee ($150/week) if needed.

Name of Legal Dept approver: N/A

Budget Impact: No Impact

Recommendation (Include any conditions):

Staff recommends the fee waiver request for the St. George Sunrise Market for the trial period of six (6) months.

ST. GEORGE SUNRISE MARKET™

FEE WAIVER REQUEST

November 7, 2023

Hello City of Saint George Council Members:

Rather than seeking a *City Sponsorship*, *The Saint George Sunrise Market* respectfully asks for a "*Fee Waiver"* for our Saturday Market held at the ***Historic Seegmiller Farm***, during its six-month trial. Having the applicable fees waived would better allow the success of the Market's launching in getting it off the ground, which will in turn benefit the community, both household family entrepreneurship as well as in providing value to household families and/or individuals in such following areas:

1. A positive and upbeat environment for the community to gather.

2. Financial fortification for families/individuals needing an extra income.

3. Value given to the local community and families.

4. An audience will be attracted to the Farm, where Park and Community Service may hold a booth, (complimentary provided), where architectural diagrams to cast the City's vision for the expansion of the Historic Seegmiller Farm, and wherein donations could be collected from the attendees the Market pulls in.

Our desired projected date to launch the St. George Sunrise Market is March 2, 2024. We would like to work with the City of Saint George to foster community entrepreneurial strength, while creating a positive and upbeat atmosphere.

Please feel free to visit the St. George Sunrise Market site at: www.stgsunrisemarket.com and we look forward to working with you!

Yours in Success,

Kimberly Lee

Agenda Date: 11/16/2023 **Agenda Item Number:** 03

Subject:

Public hearing to take comments and consider approval of Resolution No. 2023-014R adopting the updated Water Conservation Plan.

Item at-a-glance:

Staff Contact: Scott Taylor

Applicant Name: City of St. George

Reference Number: NA

Address/Location:

811 East Red Hills Parkway

Item History (background/project status/public process):

The State of Utah requires all public water providers with more than 500 connections to file a Water Conservation Plan. It has to be updated every 5 years. The plan was last updated in 2018 and is due to the State by Dec 31, 2023. Staff made a presentation to the council earlier this year regarding a general update to the plan. The first draft was submitted to the State and this draft incorporates the comments from the Division of Water Resources.

Staff Narrative (need/purpose):

Per the Water Conservation Act, the Division of Water Resources reviews plans and works with water suppliers to improve conservation. The plan is required to include conservation measures that will result in measurable per capita consumption to assure adequate water supplies are available for future needs. The Water Conservation Act also requires a public hearing be conducted as part of the approval process.

Name of Legal Dept approver: NA

Budget Impact: No Impact

Recommendation (Include any conditions):

Staff recommends council approve the plan.

RESOLUTION NO: _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ST. GEORGE, UTAH ADOPTING THE UPDATED WATER CONSERVATION PLAN

WHEREAS, the goal of the City of St. George (City), a municipal water supply utility, is to efficiently manage and conserve the use of available water resources in the City; and

WHEREAS, a primary role of the City is to ensure that an adequate water supply is available throughout the City; and

WHEREAS, the City last updated its water conservation plan when it adopted Resolution No. 2019-01-001R on January 3, 2019; and

WHEREAS, the City Council finds that in order to promote the safety, health, and welfare of City residents that the water conservation plan should be updated;

NOW, THEREFORE, BE IT RESOLVED, that the City of St. George hereby adopts the updated water conservation plan, attached hereto as Exhibit A.

CITY OF ST. GEORGE:

_____
Michele Randall, Mayor

ATTEST:

_____
Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____
Ryan N. Dooley, Assistant City Attorney

VOTING OF CITY COUNCIL:

Councilmember Hughes _____
Councilmember McArthur _____
Councilmember Larkin _____
Councilmember Larsen _____
Councilmember Tanner _____

Exhibit A

City of St. George Water Conservation Plan Update

November 2023

St.George

THE BRIGHTER SIDE

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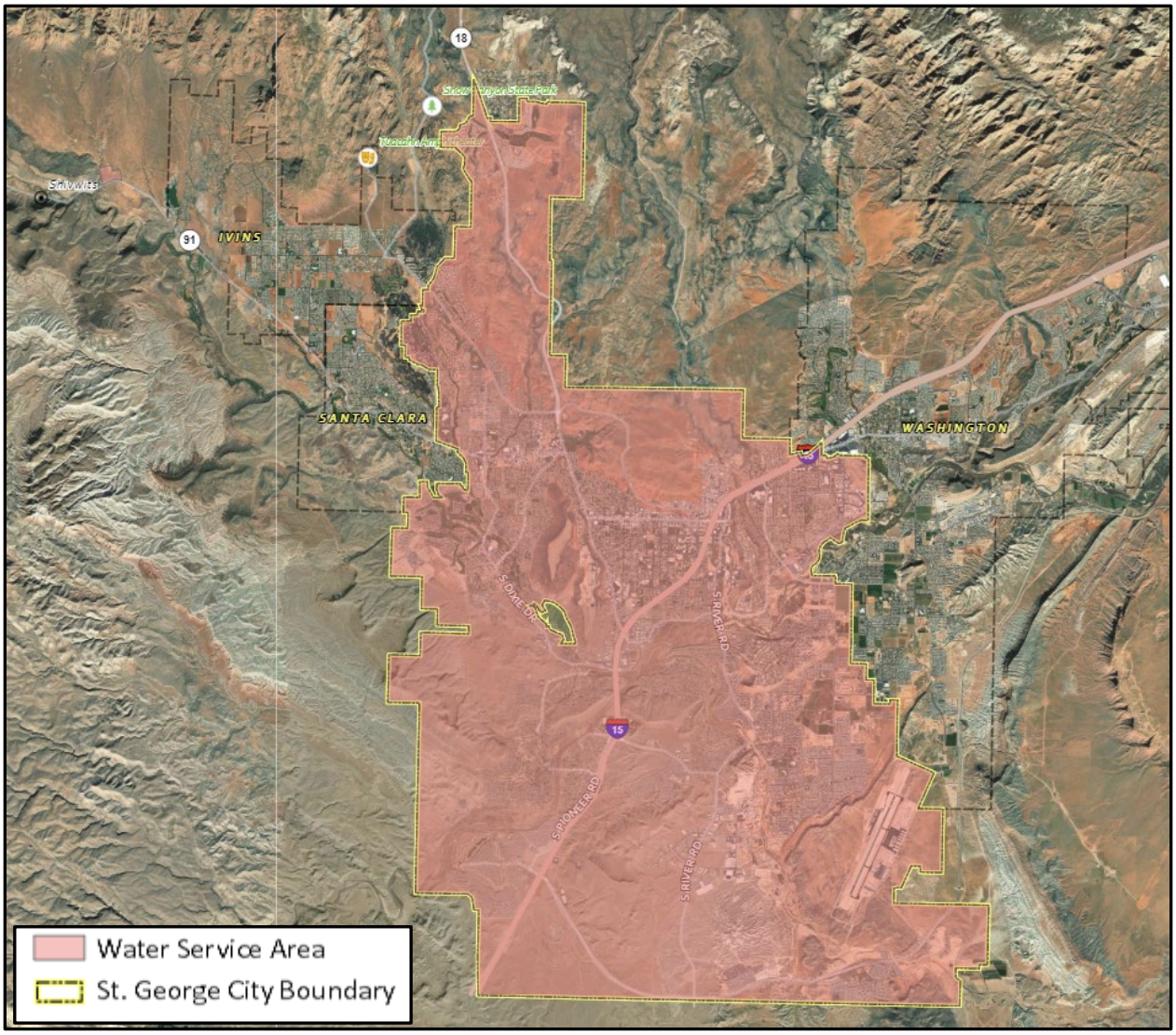
Water System Overview

The City of St. George serves a population of approximately 105,240 based on 2022 Census data (census.gov/quickfacts/stgeorgecityutah). In addition to providing water services to the City, our service territory includes the Shivwits Band of Paiutes. The City of St. George culinary water service area is shown in red in the following figure.



As of 2022 reporting year, there are 33,633 culinary connections in the water system. All connections to the culinary water distribution system are metered connections, with meter sizes ranging from the standards 5/8”x3/4” up to 6 inches in diameter. The following table summarizes the number of metered connections based on the customer type.

Customer Class	Number of Meters
Residential	31,046
Commercial	2,022
Industrial	38
Institutional	527
Total Connections	33,633

The total number of metered connections has increased approximately 20% over the past five years.

In addition to metered connections to the culinary water distribution system, the City has started providing metered pressurized irrigation water to customers. Various sources of untreated secondary irrigation water are used to provide water to City customers. Currently there are 1,026 metered secondary/irrigation connections.

Customer Class	Number of Meters
Residential	905
Commercial	26
Institutional	92
Agricultural	3
Total Connections	1,026

All culinary and secondary irrigation water meters are read and billed monthly, utilizing a combination of Automated Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) technologies. AMR metering consists of collecting water meter consumption data through radio frequency as a data collector drives by each water meter. AMR meter data is collected on a monthly basis. AMI metering consists of an integrated system of water meters and communication networks, which automatically transmits water use data directly to the utility on four-hour intervals.

Current Water Use

The city delivers both culinary and untreated pressurized irrigation water to its customers. During calendar year 2022, the City delivered 25,405 acre-feet (AF) of culinary water to its customers. In addition, the city also delivered 5,582 AF of secondary irrigation water to customers, to be used on residential and commercial outdoor landscaping, parks, schools, cemeteries, and other outdoor uses.

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When evaluating overall water use within the City, the Utah Division of Water Resources method of calculating per capita water use (often referred to a gallons per capita per day, or gpcpd) is used by the City. This method accounts for all water (both culinary and secondary irrigation water) delivered to all of the City's residents. The City sums the potable and non-potable water delivered to City customers and divides by the full-time population within the water system service area boundary. All water delivered to customers in a year is averaged over population and divided by the number of days in a year to establish the overall per capita water use in gpcpd.

In considering the per capita water use, it is important to note that approximately 8,343 of the dwelling units in the City of St. George are non-primary residences, based on information from Washington County closed 2023 Tax Roll. This is an increase of 2,043 non-primary homes over the past five years. While these homes will typically use the same amount of water as a primary resident's home does, the population associated with these homes is generally not included in the census population and is therefore not included in the per capita water use calculations.

In addition to the non-primary dwelling units, the student population of Utah Tech University in 2022 was 12,556 which is an increase of roughly 29% from 2015. Some of these students are St. George residents. However, a large portion of students only live in St. George for part of the year. Therefore, they are not included in the per capita water use calculations, as these students are not included in the population identified in the latest Census data.

The total amount of culinary water delivered to City customers in the year 2022 was 25,405 acre-feet or 8,278,270,060 gallons. This amount of culinary water divided by the 2022 population estimate of 105,240 results in a per capita use of 216 gallons per capita per day (GPCPD).

The total amount of water, both culinary and irrigation water delivered to customers is 10,097,019,515 gallons. Combined culinary and irrigation water delivered to customers calculates to a per capita use of 263 GPCPD. This is roughly a 35% reduction from 2000 per capita use.

The City of St. George serves two industrial parks, numerous businesses associated with the hospitality industry, a hospital that serves the surrounding area, as well as a university. St. George also hosts several national events such as the St. George Marathon, Iron Man, and Huntsman World Senior Games. Much of the water included in the per capita calculation is used by people that travel to St. George for various events and are not included in the population census data. Water used for tourism, healthcare, education, and special events are included in the overall per capita use, but not included in the population data.

The figures below illustrate the overall culinary per capita water use over the past 22 years, as well as the combined culinary and secondary irrigation water use over the past four years.

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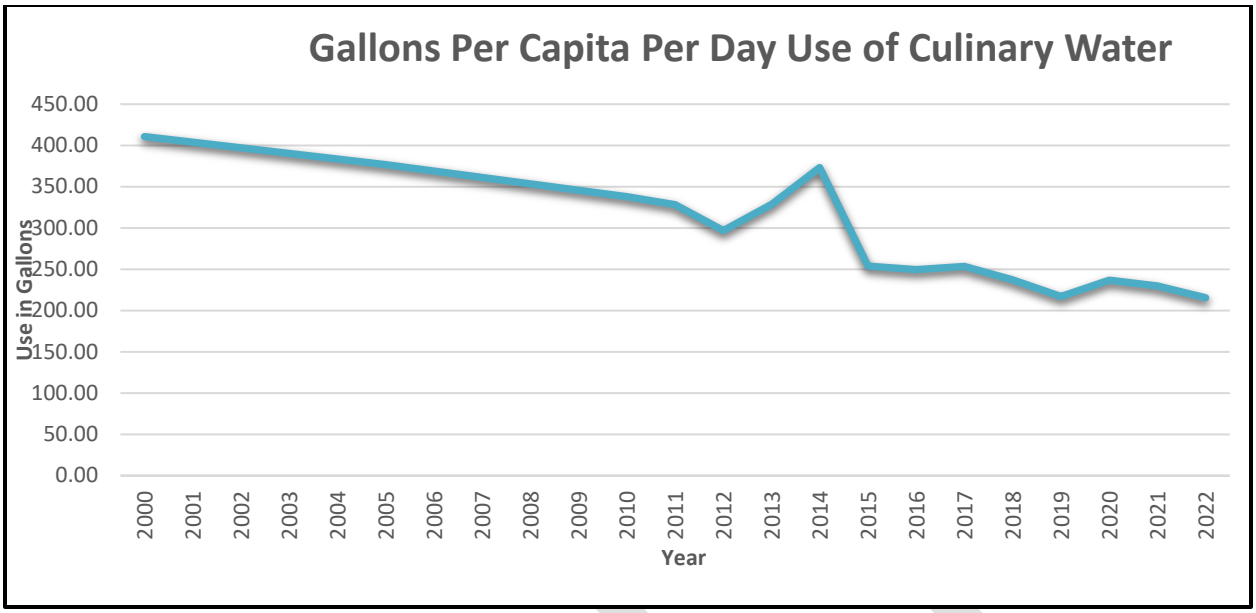

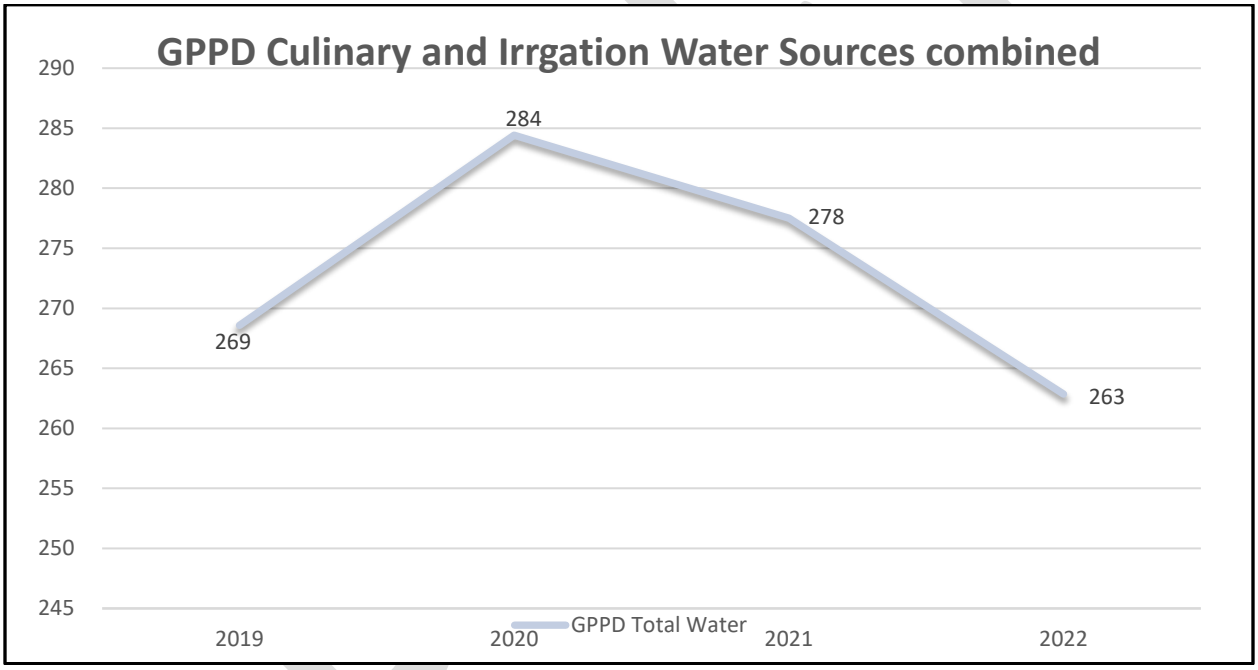

Existing Water Sources

The culinary water used by the City of St. George comes from a variety of water sources, including surface water, ground water, and natural spring sources. These sources include:

- Gunlock Well Field- consisting of 11 groundwater wells
- Ledges Well Field- consisting of three groundwater wells
- Millcreek Well Field- consisting of two groundwater wells

- Snow Canyon Well Field, consisting of five groundwater wells are jointly owned by the cities of St. George, Ivins and Santa Clara, with the City of St. George owning 64% of the capacity.
- City Creek groundwater well
- Mountain Springs- consisting of 9 springs
- West City Springs
- Water purchased from the Washington County Water Conservancy District (WCWCD) from its Quail Creek Water Treatment Facility or Sand Hollow groundwater wells

In addition to the culinary water sources, the City also has various non-potable secondary irrigation water sources. Secondary irrigation water is water that does not meet current culinary water quality standards and is generally used for outdoor landscape irrigation. These secondary irrigation sources include:

- Shares in several privately owned irrigation companies, which divert water from the Virgin River or Santa Clara River.
- Sunbrook, Mathis, and Moore groundwater wells.
- East City Springs
- Temple Springs
- Type I Reuse water

The City owns and operates the St. George Regional Wastewater Reclamation Facility (SGRWRF). In 2006, the City equipped the SGRWRF with a tertiary treatment process consisting of sand filters and chlorination injection to be able to produce Type I reuse water. Water produced from the reuse treatment plant is discharged into the secondary irrigation transmission system and is used to supply irrigation water to various golf courses, parks, cemeteries, and schools. Currently the plant can produce about 7 million gallons a day (MGD). It is operated primarily during the irrigation season as there is not enough storage on the irrigation system to allow for year-round operation. The city is planning on developing a reservoir that can store reuse water near the Graveyard Wash, west of Santa Clara, along Old Highway 91. The Graveyard Wash Reservoir is designed to impound 2,000 AF of water, enabling the reuse plant to produce water year-round.

The service area of the secondary irrigation system continues to expand. New developments are required to construct secondary irrigation distribution lines throughout the development, and the City is providing the secondary irrigation water through its various water sources.

Projected Water Needs

Currently, approximately 70% of the water used within the City of St. George is water that purchased from the Washington County Water Conservancy District (WCWCD). This amount of water represents approximately 18,000 acre-feet. The majority of this

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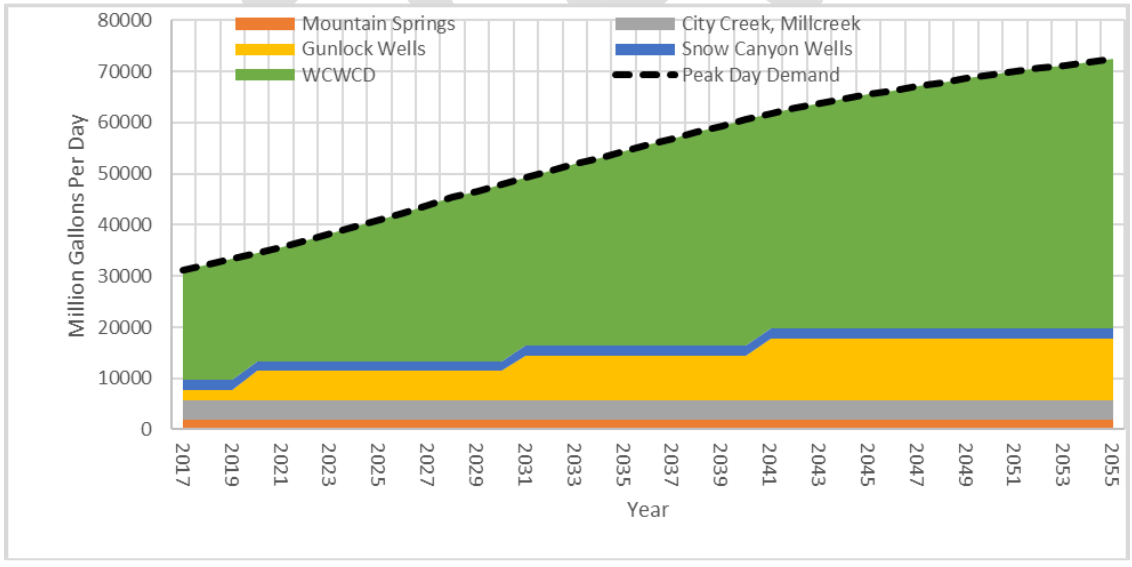
water is surface water from the Virgin River that is treated at the Quail Creek Water Treatment Plant to meet potable water standards. Additionally, the City produces from its groundwater and springs an additional 7,000-acre feet of water for potable use.

In 2006, the City of St. George joined the Washington County Water Conservancy District (WCWCD) and several surrounding communities in the Regional Water Supply Agreement. The Regional Water Supply Agreement stipulates that securing additional water sources is the responsibility of the WCWCD. As such, the City is not pursuing additional water resources on its own. However, the City of St. George has coordinated and collaborated with the WCWCD in the recently published 20 Year Water Supply Plan for Washington County.

In 2021 the City completed construction of the Gunlock Water Treatment Plant. This plant treats groundwater from the Gunlock wellfield to reduce the amount of arsenic to meet drinking water standards. The plant can treat 6 million gallons a day (MGD) and can be expanded to treat another 6 MGD to meet future demand.

Currently the population of St. George is approximately 105,240, based on the latest Census data. Based on population projections from a recent Kem C. Gardner Institute, it is anticipated that the population will increase to about 138,000 by 2028 and about 161,000 by over the next ten years, by 2033.

The exhibit below depicts the anticipated amount of water that will be required to sustain the anticipated growth over the next several years.



The City supports the recent adoption of *the WCWCD 20-Year Plan to Secure New Water Supplies for Washington County*, published July 2023. The plan provides a roadmap for the supply of water to support the anticipated growth of the County over the next 20 years. These water sources will come from the development of new water sources, water conservation, reuse water, groundwater optimization, and agricultural

conversion. It is expected that these efforts will supply an additional 46,615 AF of water annually by the year 2042.

Current Conservation Efforts

Current and future water conservation efforts by the City of St. George are varied. The City works closely with the WCWCD with respect to many water issues, including water conservation. The City supports the WCWCD's water conservation efforts and works closely to implement its water conservation plan. The City is working closely with the WCWCD to develop a WCWCD Regional Water Conservation Plan. The development of this regional conservation plan will ensure that each of the regional municipalities are consistent with their water conservation efforts.

The City will continue to offer various water conservation programs. Funding and operations of these water conservation programs will be a combination of City and joint partnering with the WCWCD.

The State of Utah has also started offering water conservation programs which the City has advertised using social media resources. Through the website, utahwatersavers.com, customers can take advantage of rebate programs. Currently the program for Smart Irrigation Controllers is open to residents of St. George.

The City of St. George will continue to focus primarily on water conservation education. The City believes that customers who better understand how they use water are better able to implement efficiency in water use. The City will continue its water conservation educations efforts with the following:

- Classroom presentations to K-12 students. Along with the presentations, the students are provided with Water Wise activity books.
- Material distributed through the utility office and in booths at various community events.
- Conservation tips, brochures, links available through the City's web page.
- The department has a social media presence on Facebook. Facebook posts advertise upcoming workshops; remind citizens when it's time adjust sprinkler clocks to match the seasons and/or the weather, promote general conservation messages.
- Periodic articles in the local newspaper and local publications regarding conservation efforts and promotions.
- Messaging on utility bills to promote conservation and available programs.
- WaterSense promotional partner, making customers aware of water saving devices and programs that are labeled through this EPA program.
- Support and assist in advertising programs offered by the WCWCD.

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- Participate in the annual Water Fair offered to all 4th grade students in the county. Many issues are covered at the Water Fair including conservation, wastewater treatment, culinary water treatment, source water protection and more.
- Celebration of Water Week annually with events such as a Garden Fair hosted in partnership with the WCWCD.
- Promote Monthly Garden workshops offered by the WCWCD.
- Financial and in-kind support for the WCWCD Demonstration Gardens at Tonaquint Park and the development of the Red Hills Desert Garden. The city provides irrigation water for the gardens as well as landscape design and planting assistance.

Another effort to promote conservation involves the cars driven by the Data Collection Specialists (meter reading). The meter reading car has been wrapped to promote water conservation.





In addition to the efforts made by the city, the city supports and promotes WCWCD educational and rebate programs that are offered to assist customers in reducing their per capita use.

- Free residential lawn water audits – which includes educational material provided to the customer and a suggested irrigation schedule for their irrigation system design, landscape style, and soil type.

- Residential Landscape Efficiency Upgrades – Customers are provided rebates to replace their sprinkler spray zones with high efficiency spray heads, a micro drip system, or to install Smart Irrigation controllers.

- Multi-Family High Efficiency washer rebate program

- Equipment for commercial, industrial, institutional (CII) customers that is air-cooled rather than water cooled, WaterSense labeled plumbing fixtures, and pre-rinse spray valves.

- Turf Rebate Program: The WCWCD is managing this program which began in 2023. Customers that replace turf with water efficient landscape may be eligible for a rebate based on the square footage of turf removed. As of Oct 1,2023, City of St. George customers have eliminated 470,000 square feet of turf at an estimated 11 million gallons per year of water savings. To date, over $900,000 have been rebated to City of St. George customers for turf removal projects that have costs over $2.2 million. While the rebates have only covered about 40% of the project costs, it is apparent that residents are willing to cover out of pocket expenses in order to help conserve water.

City Rebate Programs:

The City has offered rebates for the replacement of older high flow toilets since 2007. With the creation of the EPA's WaterSense program, rebates are offered to retrofit existing toilets with WaterSense labeled models. WaterSense labeled models use 1.28 gallons per flush (gpf) or less and are shown to flush an adequate amount of waste on the first flush. Grant funding from the EPA's WaterSense program for toilet rebates is no longer available. Although there aren't many requests for this particular rebate, the City continues to provide a budget for this program as it continues to result in water savings. In 2021, rebates were provided for 40 toilets, in 2022 rebates were issued for the replacement of 75 toilets.

In order to evaluate the effectiveness of this program, the customers' water data is collected on a monthly basis. During the winter months, post-retrofit monthly water use is compared to pre-retrofit water use to determine the reduction in water use. The

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latest water use data suggest that replacing inefficient toilets with WaterSense labeled toilets can reduce water consumption by up to 10 gallons of water per day per toilet.

System Improvements

Over the last several years the city has continued to improve the automated controls of the system. Actions such as installing SCADA controls on wells, tanks, pump stations, control valves to improve water and energy efficiencies. These actions have reduced water loss due to tank overflows and increased overall efficiency of pumping systems.

The City of St. George was recently awarded a WaterSmart Grant from the Bureau of Reclamations for the implementation of an Automated Meter Infrastructure (AMI) system. The City has recently begun to replace existing AMR water meters with the new AMI technology, and currently has approximately 4,200 AMI meters in the system. It is anticipated that the complete implementation of AMI meters will take approximately three years. The new AMI system provides customers and City utility billing staff access to near-real time water use data and alert staff when any perceived water leaks are detected.

The AMI system provides access to a customer's portal that provides real time water use data to the customer. The portal provides daily water consumption, water use trend information, and a water savings calculator. Customers can set up customized leak alert notifications and perimeters on their computer or mobile devices.

It is estimated that through the implementation of an AMI system, approximately 2,700 acre-feet of water will be saved annually due to early leak detection and changes in customer behavior.

In addition to the AMI metering the city in conjunction with the WCWCD is implementing Yoppify, a customer engagement platform. The platform is designed to better communicate with our customers the amount of water they are using in comparison with the average water user on our system.

Conservation Goals

To meet the City's water conservation goal, the City will continue all of its existing conservation programs. The City will continue focusing on water conservation education and will continue to look for effective rebate and incentive programs to offer its customers.

The WCWCD has recently implemented an Excess Water Surcharge on customers who use more than an allowable amount of water in any given month. It is anticipated that the funds generated by the Excess Water Surcharge will be used for various water conservation efforts and incentives. The City will work closely with the WCWCD to develop a conservation plant to optimize the funding that is available on a regional level.

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The State of Utah has also started offering rebates for WaterSense labeled irrigation controllers through the utahwatersavers.com website. Rebate programs through both these organizations will continue to be marketed by the city.

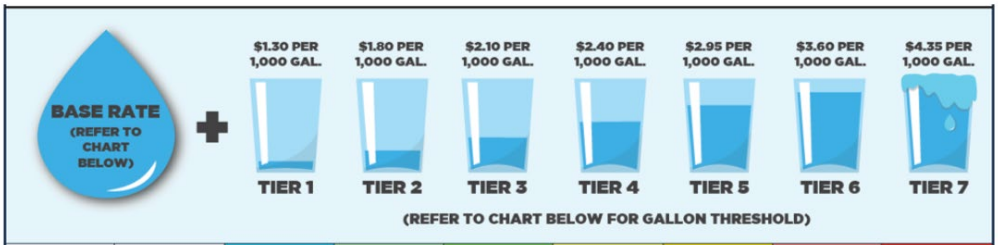
The City of St. George will continue to allocate funds from the Water Services budget for water conservation efforts. In addition, the City will continue to pursue water conservation grants for state and federal programs.

The water conservation goal established by the State of Utah in the Utah Regional M&I Water Conservation Goals is to reduce the average per capita water use an additional 23% by the year 2070. The goal for the City of St. George is to decrease the current per capita water use by 10% by the year 2030. This goal will result in more water conserved than would be conserved under the State regional water conservation goal of 266 GPPD by 2028. The effectiveness of conservation measures will be evaluated on an annual basis.

Pricing Structure

Water rates charged by the City are comprised of a fixed base rate and a separate consumptive water use rate. The consumptive water use rate is based on an inclining tiered rate, where the unit cost of water increases as the consumptive use increases. In the past, the fixed base rate included 5,000 gallons of water. In July of 2020, a new rate structure was implemented that eliminated any water consumption included in the base rate. Additionally, in an effort to promote greater water conservation, the new rate included a larger price jump between the upper tiers and reduced the overall number of tiers. At tier 7, culinary water is billed at $4.35 per 1,000 gallons compared with $1.30 per 1,000 gallons in tier 1.

The current culinary water rates are listed below.



METER SIZE	BASE RATE	TIER 1 THRESHOLD	TIER 2 THRESHOLD	TIER 3 THRESHOLD	TIER 4 THRESHOLD	TIER 5 THRESHOLD	TIER 6 THRESHOLD	TIER 7 THRESHOLD
3/4"	$22.75	Up to 7,500 gal.	7,501 - 15,000 gal.	15,001 - 22,500 gal.	22,501 - 30,000 gal.	30,001 - 37,500 gal.	37,501 - 45,000 gal.	45,001 gal. +
1"	$56.88	Up to 15,000 gal.	15,001 - 30,000 gal.	30,001 - 45,000 gal.	45,001 - 60,000 gal.	60,001 - 75,000 gal.	75,001 - 90,000 gal.	90,001 gal. +
1 1/2"	$91.37	Up to 30,000 gal.	30,001 - 60,000 gal.	60,001 - 90,000 gal.	90,001 - 120,000 gal.	120,001 - 150,000 gal.	150,001 - 180,000 gal.	180,001 gal. +
2"	$162.43	Up to 50,000 gal.	50,001 - 100,000 gal.	100,001 - 150,000 gal.	150,001 - 200,00 gal.	200,001 250,000 gal.	250,001 - 300,000 gal.	300,001 gal. +
3"	$365.48	Up to 100,000 gal.	100,001 - 200,000 gal.	200,001 - 300,000 gal.	300,001 - 400,000 gal.	400,001 - 500,000 gal.	500,001 - 600,000 gal.	600,001 gal. +
4"	$649.74	Up to 200,000 gal.	200,001 - 400,000 gal.	400,001 - 600,000 gal.	600,001 - 800,000 gal.	800,001 - 1,000,000 gal.	1,000,001 - 1,200,000 gal.	1,200,001 gal. +
6"	$1,461.92	Up to: 300,000 gal.	300,001 - 600,000 gal.	600,001 - 900,000 gal.	900,001 - 1,200,000 gal.	1,200,001 - 1,500,000 gal.	1,500,001 - 1,800,000 gal.	1,800,001 gal. +

DRAFT

Secondary irrigation service is billed at 60% of the culinary water rates.

Water Conservation Policies/Ordinances

The City currently has an adopted Culinary Water Shortage/Drought Management plan. The Culinary Water Shortage/ Drought Management Plan is a four-stage plan that can be implemented to address a water shortage due to a short-term supply issue or in response to drought conditions.

STAGE 1:

- A Stage 1 shortage shall be declared when the Water Services Department Staff and the City Manager determine that a 5% - 10% reduction in culinary water is required.
- Compliance consists of voluntary implementation of water conservation methods including, without limitation, reduced irrigation as well as turning off non-recirculating water features.

STAGE 2:

- A Stage 2 shortage shall be declared when Water Services Department Staff and the City Manager determine that a 15% - 20% reduction in culinary water is required.
- Compliance methods include mandatory methods as well as continued encouragement of voluntary measures specified in Stage 1.
- Mandatory conservation methods include daytime outdoor water prohibition.
- Large irrigators that use culinary water shall reduce irrigation by 25% of baseline year use.
- The use of water for cleaning streets, driveways or other paved areas is prohibited except to alleviate immediate fire or sanitation hazards.
- Delay planting new grass/sod or other new landscaping.

STAGE 3:

- A Stage 3 shortage shall be declared when Water Services Department Staff and the City Manager determine that a 25% - 30% reduction in culinary water is required.
- Compliance methods include mandatory methods specified in Stage 3 and Stage 2 as well as continued encouragement of voluntary measures specified in Stage 1.
- Use of fire hydrants for purposes other than fire protection is prohibited.
- Water use for non-essential uses shall not be permitted, such as non-commercial washing of automobiles and trucks.
- Culinary water will not be used to irrigate city parks, golf courses or schools.
- Filling of non-public swimming pools is prohibited.

DRAFT

STAGE 4:

- A Stage 4 shortage shall be declared when Water Services Department Staff and the City Manager determine that a 40% - 60% reduction in culinary water is required.
- Stage 4 compliance methods include mandatory methods specified in Stage 2 and 3 as well as continued encouragement of voluntary measures specified in Stage 1.
- It is expected that Stage 4 would be implemented for short term issues such as a natural disaster. In stage 4 water for basic health and sanitary needs would be provided, but other uses would be restricted until the issue is resolved.

The City is working with the WCWCD and other regional municipalities to develop a Regional Drought Management Plan. The Regional Drought Management Plan will ensure that all regional municipalities are consistent with their drought implementation and enforcement of the drought management actions The City will adopt the Regional Drought Management Plan when it is finalized, replacing this current plan.

The City has updated their zoning ordinances to include water efficient construction and landscape standards. The updated standards address the need for more water efficient construction and landscaping. The zoning ordinances include requirements such as those listed below.

- The use of water-conserving plants adapted to the St. George area climate.
- Storm Water detention and retention basins
- Limiting lawn to 8% of the landscaped area
- Prohibiting turf in park strips or other areas less than eight feet wide.
- Prohibits irrigation with culinary water from 10:00 am – 8:00 pm from June 1 – Sept 1 to maximize irrigation efficiency.
- Water waste is defined and prohibited.
- Hot water recirculation systems are required.
- WaterSmart and EnergyStar labeled fixtures and appliances are required.
- Water efficient commercial car washes.

Large irrigators using pressurized irrigation water supplied by the city are not subject to the daytime watering restriction due to the production and storage capacity limitations on the existing pressurized irrigation system. In addition, the City is a shareholder in several private irrigation systems within the area. The watering schedule of some of these irrigation companies requires water to be taken and used outside of the 10:00 am to 8:00 pm timeframe.

The WCWCD has recently adopted regional WCWCD Water Efficiency Standards. The City supports these standards and has incorporated these standards into our zoning ordinances.

DRAFT

It is anticipated that with these new regional WCWCD Water Efficiency Standards, the source sizing standard for new development will be 0.59 acre feet, which is a reduction from the current sizing standard of 0.89 acre feet.

Water Conservation Staff

Conservation efforts are managed by the Energy and Water Customer Service Manager, which is a shared position with the Energy Services Department. The responsibilities of this position include, but are not limited to, community outreach and education and implementation of conservation strategies that result in a reduction of water and energy use. In addition to this position, City staff from the Utility Billing Department and the Water Services Department are available to assist in the City's water conservation efforts.

The City recently established a water conservation hotline, where residents can call or e-mail the city for water conservation questions or to file a water wasting complaint. The water conservation hotline is (435) 627-4H20 and the e-mail address is 4H20@sgcity.org. Any observed water wasting complaint is investigated by City staff and the customer is provided with educational materials or assistance in identifying the leaks.

Conclusion

The City of St. George has been successful in reducing its per capita water use through its water conservation efforts. In addition, the City has been successful in implementing and using technology to improve the efficiency with which City facilities use water. Residents and businesses have responded favorably to the water-wise conservation messaging. Since 2006, there has been a shift to consider municipal water supplies on a regional level, as opposed to the individual municipal level. As such, the City will continue to work with the WCWCD to develop and implement a region-wide water conservation plan. Adoption of a regional water conservation plant will be imperative to sustain the growth that is anticipated in the region.

DRAFT

Agenda Date: 11/16/2023 **Agenda Item Number:** 04

Subject:

Consider approval of Ordinance No. 2023-036 amending the existing Rillisante Villas Planned Development Residential (PD-R) zone on approximately 24.10 acres to amend the approved Rillisante Villas development with conceptual site plan and elevations, located generally on the west side of the intersection of Canyon View Drive and Gap Canyon Parkway to be known as Rillisante Villas with conditions from the Planning Commission. Case No. 2023-PDA-021

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Greg Cronin

Reference Number: 2023-PDA-021

Address/Location:

Generally located on the west side of the intersection of Canyon View Drive and Gap Canyon Parkway

Item History (background/project status/public process):

In April of 2021, an application for 206 units (stacked units and townhomes) was approved by the City Council. The applicant desires to update the townhome elevations and make a minor revision to the roadway on the northern portion of the site. The Planning Commission held a public hearing and recommends approval of the application with a 7-0 vote and three conditions.

Staff Narrative (need/purpose):

The applicant is requesting two things: 1) Update the elevations of approved townhomes, and 2) flip the location of the townhomes and the cul-de-sac on the northern-most section of the development. Updating the elevations will slightly adjust the foot prints (foot prints will narrow and lengthen slightly). With that, the number of units, parking, stacked units to townhome ratio and density will not change.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

On October 24, 2023, the Planning Commission held a public hearing on the application. The Planning Commission voted 7-0 to forward a positive recommendation to the City Council with the following conditions:1.That the number of units is limited to 206 as originally approved by City Council.2.That parking will meet the minimum requirement required for a multi-family development. 3.That a site plan is applied for and approved prior to any construction.

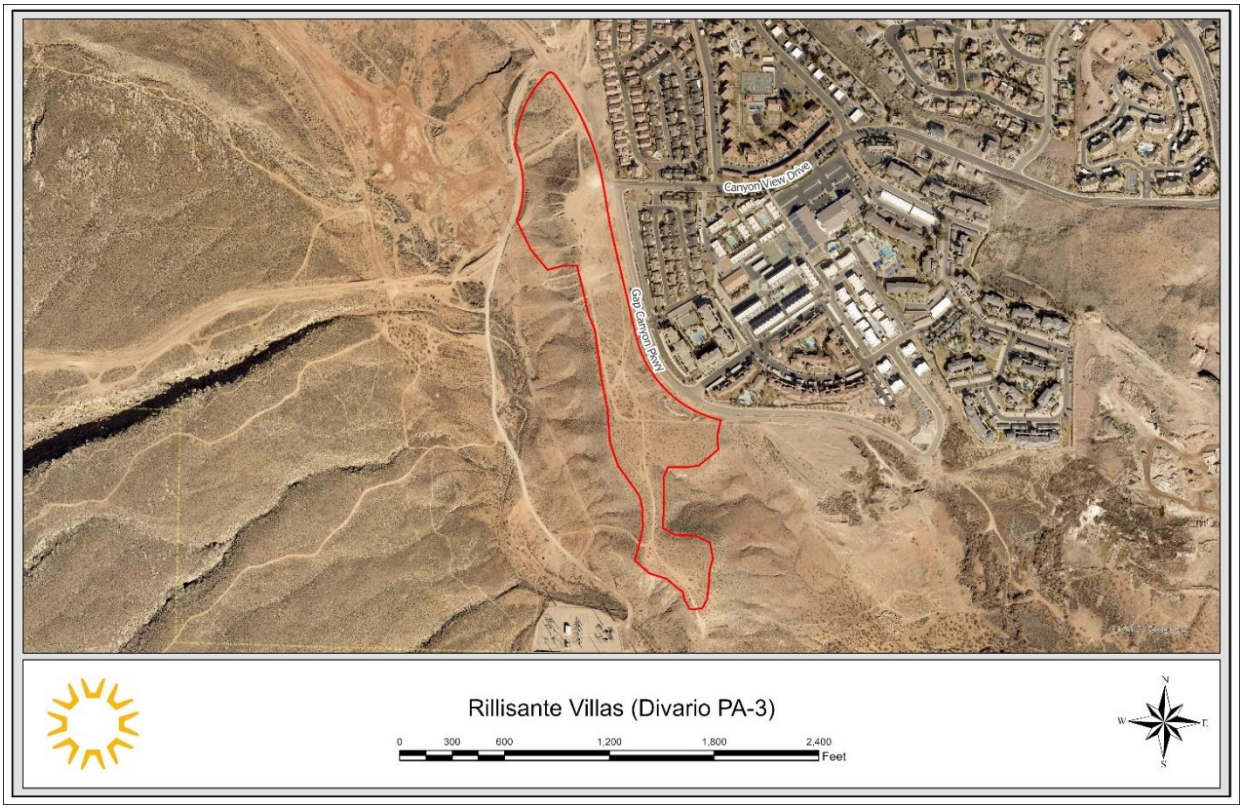
St.George
Community Development

PD AMENDMENT

PLANNING COMMISSION AGENDA REPORT: 10/24/2023
CITY COUNCIL AGENDA REPORT: 11/16/2023

PD Amendment
Rillisante Villas (Divario PA-3)
Case No. 2023-PDA-021

Request:	Consider a PD amendment for Rillisante Villas (Divario PA-3) PD (Planned Development) zone, specifically for a minor amendment to the previously approved townhome elevations and a slight change in the road alignment of the site.
Applicant:	Unified Business Alliance
Representative:	Greg Cronin
Area:	24.10 acres
Location:	The property is generally located on the west side of the intersection of Canyon View Drive and Gap Canyon Parkway
Current Zone:	PD-R (Planned Development Residential)
General Plan:	MDR (Medium Density Residential)



Background:
The property was annexed as part of the Plantations Land in 1994. A PD (Planned Development) was approved on at least two separate occasions, but upon failure to construct, expired and reverted back the R-1-10 zoning (current zoning). In 2007, a development agreement was approved between the developer and the city. The development at the time was called "The Lakes". The name has since changed to "Divario". An updated development agreement was approved in 2014 which sets forth the parameters of the development, planning areas, etc.

Under the Development Agreement, PA-3 was approved as a development area consisting of 24.10 acres with density of up to nine units per acre (maximum 216 residential units). Planning Commission held a hearing in 2020 on a proposal for 216 units in four stacked units and no townhomes which was denied by the City Council. The applicant made changes to the proposed site which included townhomes and in April of 2021, City Council voted to approve a zone change on the property from R-1-10 to PD-R.

REQUEST
The applicant is requesting two things: 1) Update the elevations of approved townhomes, and 2) flip the location of the townhomes and the cul-de-sac on the northern-most section of the development. Updating the elevations will slightly adjust the foot prints (foot prints will narrow and lengthen slightly). With that, the number of units, parking, stacked units to townhome ratio and density will not change.

Townhome Site Details:
Road change: The approved site plan shows a drive extends from Gap Canyon to the north on the west side of the townhomes. The northern-most portion of that drive terminates in a cul-de sac and serves 15 townhome units. The applicant is proposing to move that road to the east side of those townhomes. Staff believes that this is a fairly insignificant change.

Elevations: The site depicts 62 townhome units total which would not change with this proposal. The applicant is proposing to narrow and extend the townhomes, which would ultimately provide more space in between each building. They would also heighten the buildings from 27'6" to approximately 31'3" to the top of the parapet wall. The materials would still be stucco, brick, and siding though the color pallet would be more grey tones rather than browns and greens.

Recommendation:
The Planning Commission held a public hearing on October 24, 2023, to receive public comment on the request and, with a 7-0 vote, are forwarding a positive recommendation to the City Council with the conditions listed below.

Alternatives:
1. Approve as presented.
2. Approve with conditions.
3. Deny the application.
4. Continue the proposed PD amendment to a future date.

CC 2023-PDA-021
Rillisante Villas (Divario PA-3)

Possible Motion:
"I move that we approve the PD amendment for Rillisante Villas (Divario PA-3) as presented, case no. 2023-PDA-016, based on the findings and subject to the conditions listed in the staff report (and as modified by the following…)."

Conditions:
1. That the number of units is limited to 206 as originally approved by City Council.
2. That parking will meet the minimum requirement required for a multi-family development.
3. That a site plan is applied for and approved prior to any construction.

Findings for Approval:
1. The proposed amendment meets the requirements of section 10-7F of the zoning code.
2. There will be adequate parking to facilitate the development.
3. This amendment follows an initial approval in 2022.

St.George
THE BRIGHTER SIDE

Dan Boles <daniel.boles@sgcity.org>

Gap Canyon Development

Carolyn Lloyd [redacted] Sun, Oct 22, 2023 at 12:23 PM
To: Daniel.boles@sgcity.org

Mr. Boles,

We are writing in response to the request for the Planned Unit Development (PD) amendment to the existing Divario PA-3 (Rillisante Villas) PD-R (Planned Development Residential) Zone.

We have expressed our concern in the past regarding the negative impact of the height and density the proposed Rillisante Townhouse Villas on the existing quality of life, views, and traffic volumes. It is ironic the Divario marketing sign states “it is all about the views” and this development placement and design on the ridgetop will effectively block and destroy these views for everyone including the new residents..

While we understand the Planning Commission has previously created the PD-R zoning of this parcel and approved this development we are very concerned with the impact of this and other adjacent planned high density developments with little regard for public safety given the limited traffic access to the Gap Canyon Parkway area. The current volume of traffic on Canyon View Drive, the only access into and out of these developments combined with the heavy Divario construction truck traffic (High speed and dusty) has already creates a dangerous environment for the families and children in the area.

Knowing rezoning and approval of several parcels has already been given without regard for these traffic concerns we strongly ask the City either accelerate the extension of Gap Canyon Parkway connection South to Dixie prior to any further approvals. We hoping it won’t take a serious accident to have these concerns addressed.

Thank you,

Cottages South HOA

EXHIBIT A
NARRATIVE

Summary of Amendments Requested

Amendment Item 1:

Amend Site Plan to have the access drive to the northern 15 townhome units be at the front of the units rather than the rear of the units.

- This will preserve the views at the rear for these units seeing that that drive is not double loaded.

Amendment Item 2:

Approve new elevations and modified footprints of the buildings.

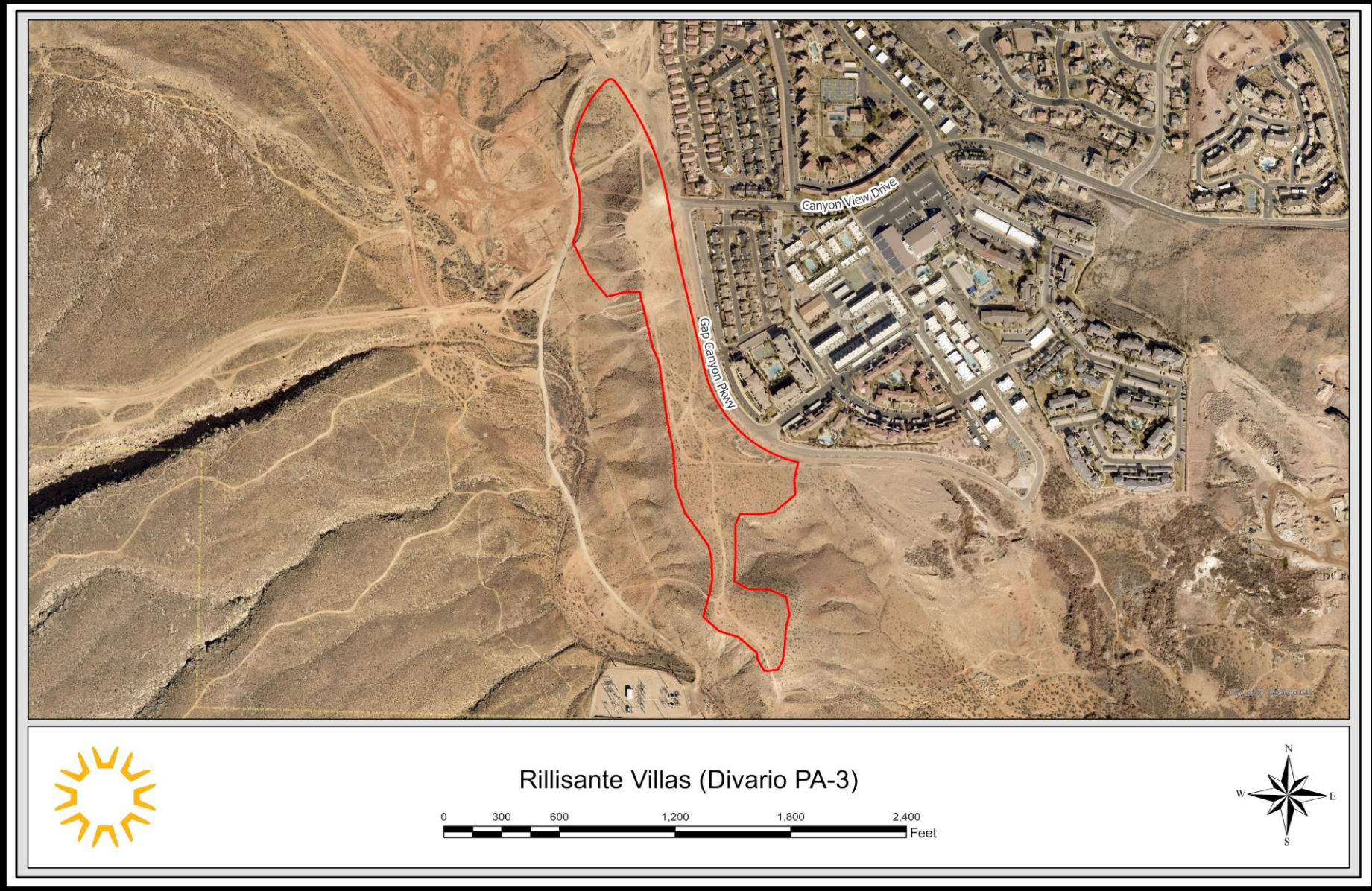
EXHIBIT B
PRESENTATION



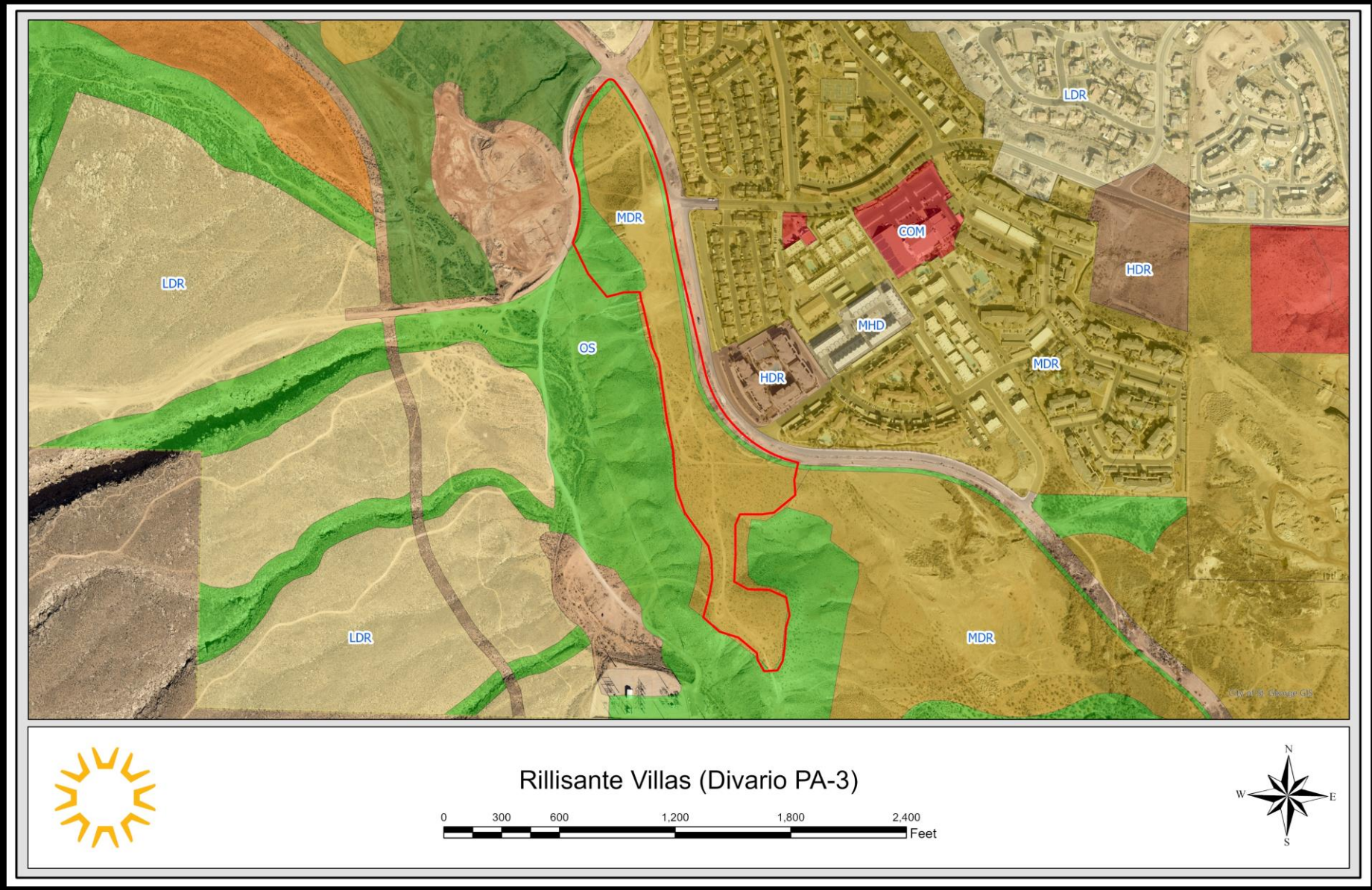
Rillisante Villas (Divario PA-3)

2023-PDA-021

Aerial Map


Canyon View Drive
Gap Canyon Pkwy
Rillisante Villas (Divario PA-3)
0
300
600
1,200
1,800
2,400
Feet
N
W
E
S

Land Use Map


LDR
MDR
COM
LDR
HDR
LDR
OS
MHD
HDR
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LDR
MDR
Rillisante Villas (Divario PA-3)
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1,800
2,400
Feet
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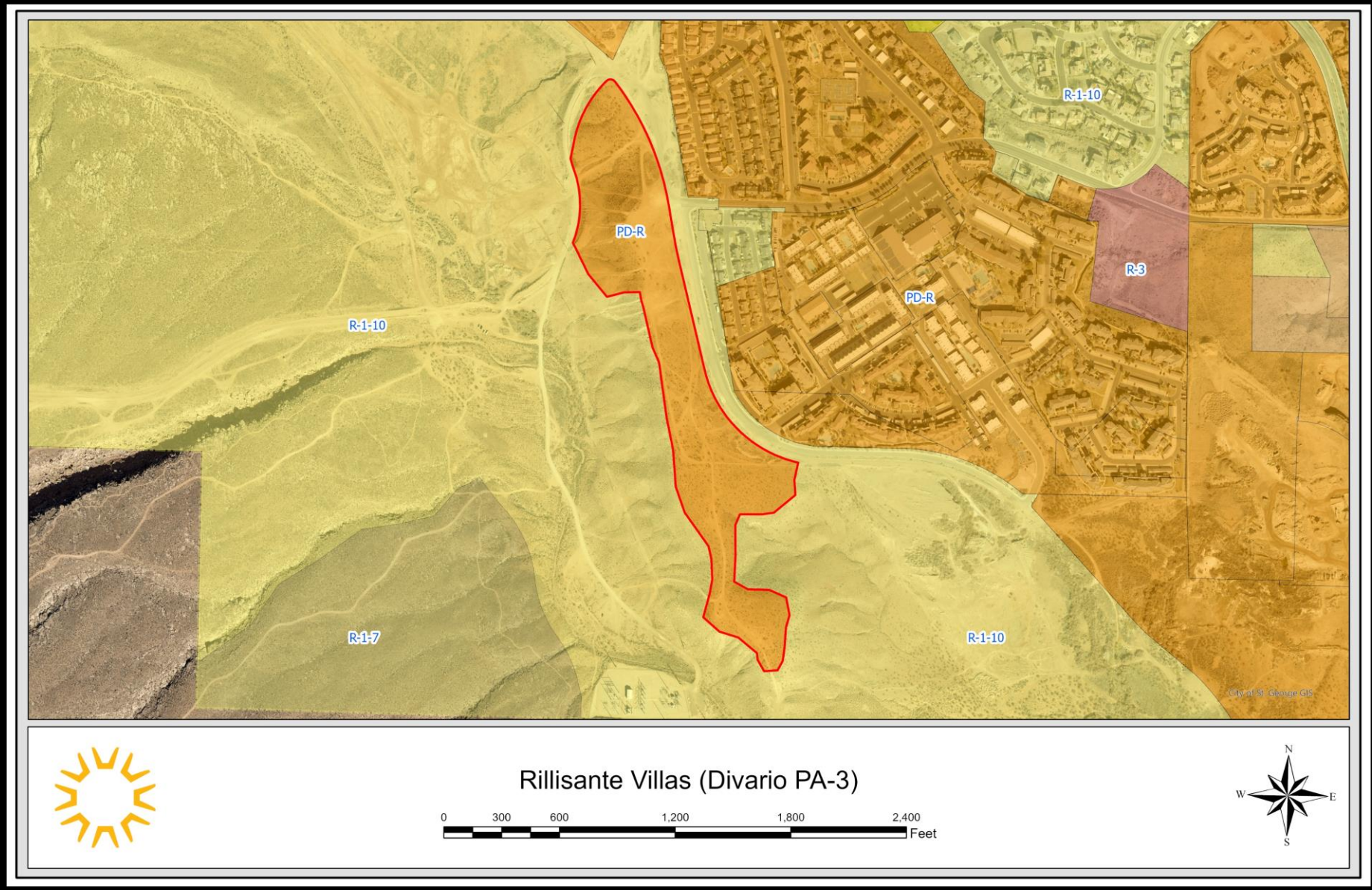
Zoning Map


R-1-10
PD-R
R-3
PD-R
R-1-10
R-1-7
R-1-10
Rillisante Villas (Divario PA-3)
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1,200
1,800
2,400
Feet
N
W
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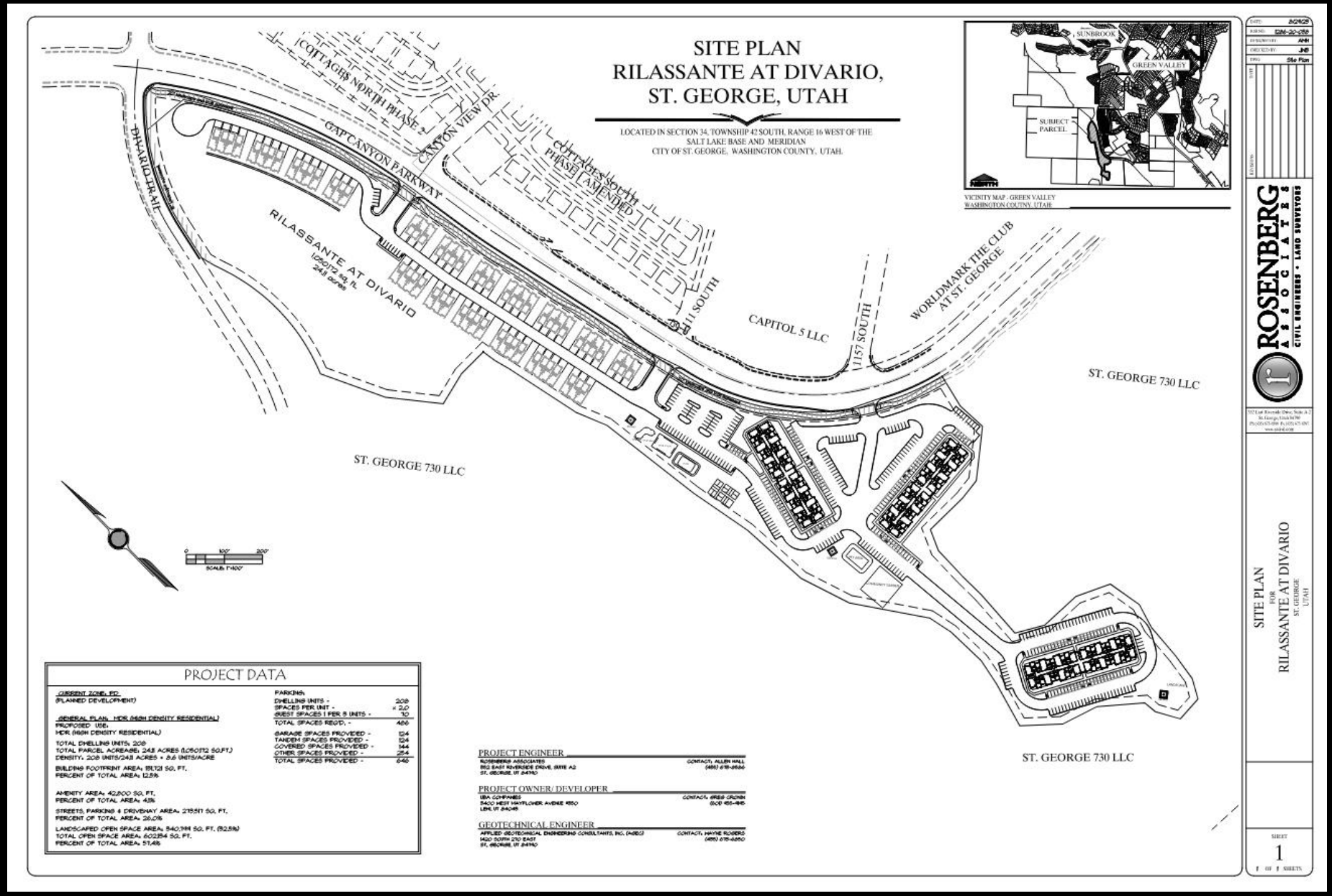
S

Approved Site Plan



Site Plan

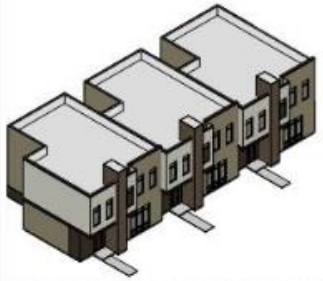

SITE PLAN
RILASSANTE AT DIVARIO,
ST. GEORGE, UTAH
LOCATED IN SECTION 34, TOWNSHIP 42 SOUTH, RANGE 16 WEST OF THE
SALT LAKE BASE AND MERIDIAN
CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH.
SUNBROOK
GREEN VALLEY
SUBJECT PARCEL
VICINITY MAP - GREEN VALLEY
WASHINGTON COUNTY, UTAH
COTTAGES NORTH PHASE 2
GAP CANYON PARKWAY
CANYON VIEW DR.
Cottages South
PHASE 1 AMENDED
DIVARIO DR.
RILASSANTE AT DIVARIO
1,050,172 sq. ft.
24.1 acres
1111 SOUTH
CAPITOL 5 LLC
1157 SOUTH
WORLDMARK THE CLUB
AT ST. GEORGE
ST. GEORGE 730 LLC
ST. GEORGE 730 LLC
ST. GEORGE 730 LLC
SCALE: 1"=100'
PROJECT DATA
CURRENT ZONE: PD
(PLANNED DEVELOPMENT)
GENERAL PLAN: MDR (MEDIUM DENSITY RESIDENTIAL)
PROPOSED USE:
MDR (MEDIUM DENSITY RESIDENTIAL)
TOTAL DWELLING UNITS: 208
TOTAL PARCEL ACREAGE: 24.8 ACRES (1,050,172 SQ.FT.)
DENSITY: 208 UNITS/24.8 ACRES = 8.6 UNITS/ACRE
BUILDING FOOTPRINT AREA: 131,721 SQ. FT.
PERCENT OF TOTAL AREA: 12.5%
AMENITY AREA: 42,800 SQ. FT.
PERCENT OF TOTAL AREA: 4.0%
STREETS, PARKING & DRIVEWAY AREA: 275,511 SQ. FT.
PERCENT OF TOTAL AREA: 26.0%
LANDSCAPED OPEN SPACE AREA: 340,791 SQ. FT. (32.5%)
TOTAL OPEN SPACE AREA: 602,254 SQ. FT.
PERCENT OF TOTAL AREA: 57.4%
PARKING:
DWELLING UNITS - 208
SPACES PER UNIT - x 2.0
GUEST SPACES 1 PER 5 UNITS - 10
TOTAL SPACES REQ'D. - 426
GARAGE SPACES PROVIDED - 124
TANDEM SPACES PROVIDED - 124
COVERED SPACES PROVIDED - 144
OTHER SPACES PROVIDED - 254
TOTAL SPACES PROVIDED - 646
PROJECT ENGINEER
ROSENBERG ASSOCIATES
862 EAST RIVERSIDE DRIVE, SUITE A2
ST. GEORGE, UT 84790
CONTACT: ALLEN HALL
(435) 673-8586
PROJECT OWNER/ DEVELOPER
LBA COMPANIES
5400 WEST HAYFLOWER AVENUE #250
LEHI, UT 84043
CONTACT: GREG CROWN
(801) 455-4145
GEOTECHNICAL ENGINEER
APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC. (AGEC)
1420 SOUTH 270 EAST
ST. GEORGE, UT 84790
CONTACT: WAYNE ROGERS
(435) 673-8250
ROSENBERG ASSOCIATES
CIVIL ENGINEERS · LAND SURVEYORS
SITE PLAN
FOR
RILASSANTE AT DIVARIO
ST. GEORGE
UTAH
SHEET
1
1 OF 1 SHEETS

Approved Elevations





FRONT ELEVATION
SCALE 1/8" = 1'-0"



ISOMETRIC AERIAL VIEW
SCALE 30' = 1' - 0"



SIDE ELEVATION
SCALE 1/8" = 1'-0"

aeurbia
architects and engineers

DESIGN ELEVATIONS

PROJECT NUMBER AE2021.076
5 APRIL 2020

Proposed Elevations





ORDINANCE NO._____

AN ORDINANCE AMENDING THE EXISTING RILLISANTE VILLAS PLANNED DEVELOPMENT RESIDENTIAL (PD-R) ZONE ON APPROXIMATELY 24.10 ACRES TO AMEND THE APPROVED RILLISANTE VILLAS DEVELOPMENT WITH CONCEPTUAL SITE PLAN AND ELEVATIONS, LOCATED GENERALLY ON THE WEST SIDE OF THE INTERSECTION OF CANYON VIEW DRIVE AND GAP CANYON PARKWAY TO BE KNOWN AS RILLISANTE VILLAS WITH CONDITIONS FROM THE PLANNING COMMISSION.

(Rillisante Villas - Divario PA-3)

WHEREAS, the property owner has requested an amendment to the approved Rillisante Villas PD, within the Divario Development known as PA-3, on approximately 24.10 acres, to approve an amendment to the elevations and site layout. The site is generally located on the west side of the intersection of Canyon View Drive and Gap Canyon Parkway; and

WHEREAS, the City Council held a public meeting on this request on November 16, 2023, to consider the amendment of the Rillisante Villas Planned Development; and

WHEREAS, the Planning Commission held a public hearing on October 24, 2023, and thereafter forwarded a recommendation for approval of the requested amendment to the City Council with a 7-0 vote with the following conditions:

1. That the number of units is limited to 206 as originally approved by City Council.
2. That parking will meet the minimum requirement required for a multi-family development.
3. That a site plan is applied for and approved prior to any construction.

WHEREAS, the City Council has determined that the requested PD amendment is consistent with the goals and objectives of the General Plan, consistent with the approved master plan, does not create an undue burden or hardship on the city, and is in the best interest of the health, safety, and welfare of the citizens of the City of St. George.

NOW, THEREFORE, BE IT ORDAINED, by the St. George City Council, as follows:

Section 1. Repealer. Any provision of the St. George City Code found to be in conflict with this Ordinance is hereby repealed.

Section 2. Enactment. The approved planned development within the PD-R Zone for the property described in Exhibit ‘A’ shall be amended upon the effective date of this ordinance to reflect the approval of an amended site as shown in Exhibit ‘B’. The planned development amendment and location is more specifically described on the attached property legal description, incorporated herein as Exhibit ‘A’, and parcel exhibit, incorporated herein as Exhibit ‘B’.

Section 3. Severability. If any provision of this Ordinance is declared to be invalid by a court of competent jurisdiction, the remainder shall not be affected thereby.

Section 4. Effective Date. This Ordinance shall take effect upon publication and the final approval by the land use authority of a final plat or site plan. In the event a final plat is not approved within one year of the adoption of this Ordinance, this Ordinance shall be considered null and void and of no effect.

APPROVED AND ADOPTED by the St. George City Council, this 16th day of November 2023.

CITY OF ST. GEORGE:

_____
Michele Randall, Mayor

ATTEST:

_____
Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____
Jami Brackin, Deputy City Attorney

VOTING OF CITY COUNCIL:

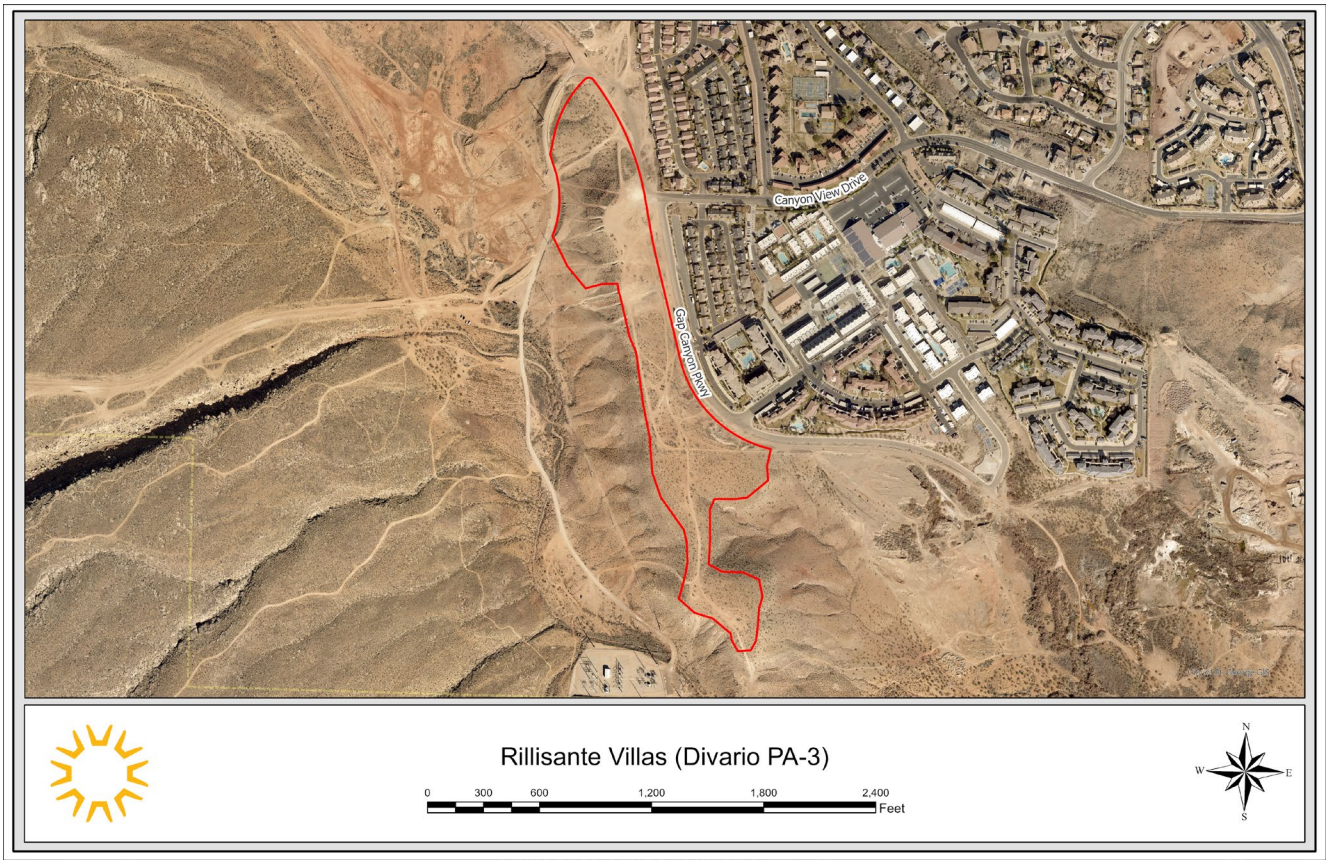
Councilmember Hughes _____
Councilmember McArthur _____
Councilmember Larkin _____
Councilmember Larsen _____
Councilmember Tanner _____

EXHIBIT "A"

Commencing at the Quarter corner common to Sections 34 and 35, Township 42 South, Range 16 West, Salt Lake Base and Meridian; thence North 00°48'55" East 1,158.00 feet along the section line; thence West 1,997.75 feet to a point on the Easterly line of Alienta Drive; thence Northerly along Alienta Drive, a distance of 206.72 feet along the arc of a 680.00 foot radius, non-tangent curve to the left (Radius bears: North 61°06'47" West) through a central angle of 17°25'04" to a point of tangency; thence North 11°28'09" East 281.95 feet along Alienta Drive to the Point of Beginning and continuing; Thence North 11°28'09" East, a distance of 96.64 feet to a point of curvature; thence Northeasterly, a distance of 354.76 feet along the arc of a 598.00 foot radius curve to the right through a central angle of 33°59'25" to a point of compound curvature; thence Easterly, a distance of 50.86 feet along the arc of a 30.00 foot radius, compound curve to the right through a central angle of 97°08'41" to a point of compound curvature and a point on the Southwesterly line of Plantations Drive; thence continuing along said Plantations Drive the following five (5) courses; thence Southeasterly, a distance of 707.94 feet along the arc of a 1,455.00 foot radius, compound curve to the right through a central angle of 27°52'40" to a point of tangency; thence South 09°31'05" East 159.71 feet to a point of curvature; thence Southerly, a distance of 133.35 feet along the arc of a 2,045.00 foot radius curve to the left through a central angle of 03°44'10" to a point of tangency; thence South 13°15'15" East 579.68 feet to a point of curvature; thence Southeasterly, a distance of 720.82 feet along the arc of a 645.00 foot radius curve to the left through a central angle of 64°01'53"; thence leaving Plantations Drive and running South 12°42'52" West 91.39 feet;

thence South 03°19'56" East 79.49 feet; thence South 50°26'54" West 87.89 feet; thence South 50°48'45" West 55.82 feet; thence South 82°16'27" West 59.34 feet; thence South 89°47'41" West 117.19 feet; thence South 23°16'05" West 59.56 feet; thence South 00°47'06" West 91.96 feet; thence South 01°25'55" East 68.65 feet; thence South 02°50'57" West 134.66 feet; thence South 61°01'55" East 81.71 feet; thence South 88°29'15" East 111.35 feet; thence South 65°31'37" East 95.57 feet; thence South 10°39'19" East 93.14 feet; thence South 16°17'41" West 67.37 feet; thence South 03°40'52" West 98.68 feet; thence South 07°48'43" West 74.16 feet; thence South 28°18'36" West 55.80 feet; thence South 85°52'01" West 69.91 feet; thence North 29°53'08" West 68.28 feet; thence North 06°17'06" West 35.70 feet; thence North 50°09'23" West 125.82 feet; thence North 72°45'53" West 102.03 feet; thence North 48°19'40" West 112.52 feet; thence North 15°10'45" East 126.84 feet; thence North 10°33'22" East 73.42 feet; thence North 02°25'57" West 108.55 feet; thence North 12°49'17" West 67.35 feet; thence North 35°16'01" West 214.51 feet; thence North 18°59'10" West 141.34 feet; thence North 04°03'59" West 189.78 feet; thence North 11°25'02" West 172.64 feet; thence North 07°48'33" West 288.76 feet; thence North 23°15'19" West 86.43 feet; thence North 12°51'33" West 211.96 feet; thence North 15°57'04" West 42.16 feet; thence North 09°23'09" West 38.89 feet; thence South 88°57'01" West 81.19 feet; thence South 75°24'11" West 92.23 feet; thence North 39°26'10" West 153.04 feet; thence North 26°07'16" West 181.50 feet; thence Northerly, a distance of 387.53 feet along the arc of a 530.00 foot radius, non tangent curve to the left (radius bears: North 68°17'37" West), through a central angle of 41°53'40" to a point of reverse curvature; thence Northerly, a distance of 60.00 feet along the arc of a 470.00 foot radius, reverse curve to the right through a central angle of 07°18'51" to the Point of Beginning.

Containing approximately 1,050,172 square feet or 24.11 acres.

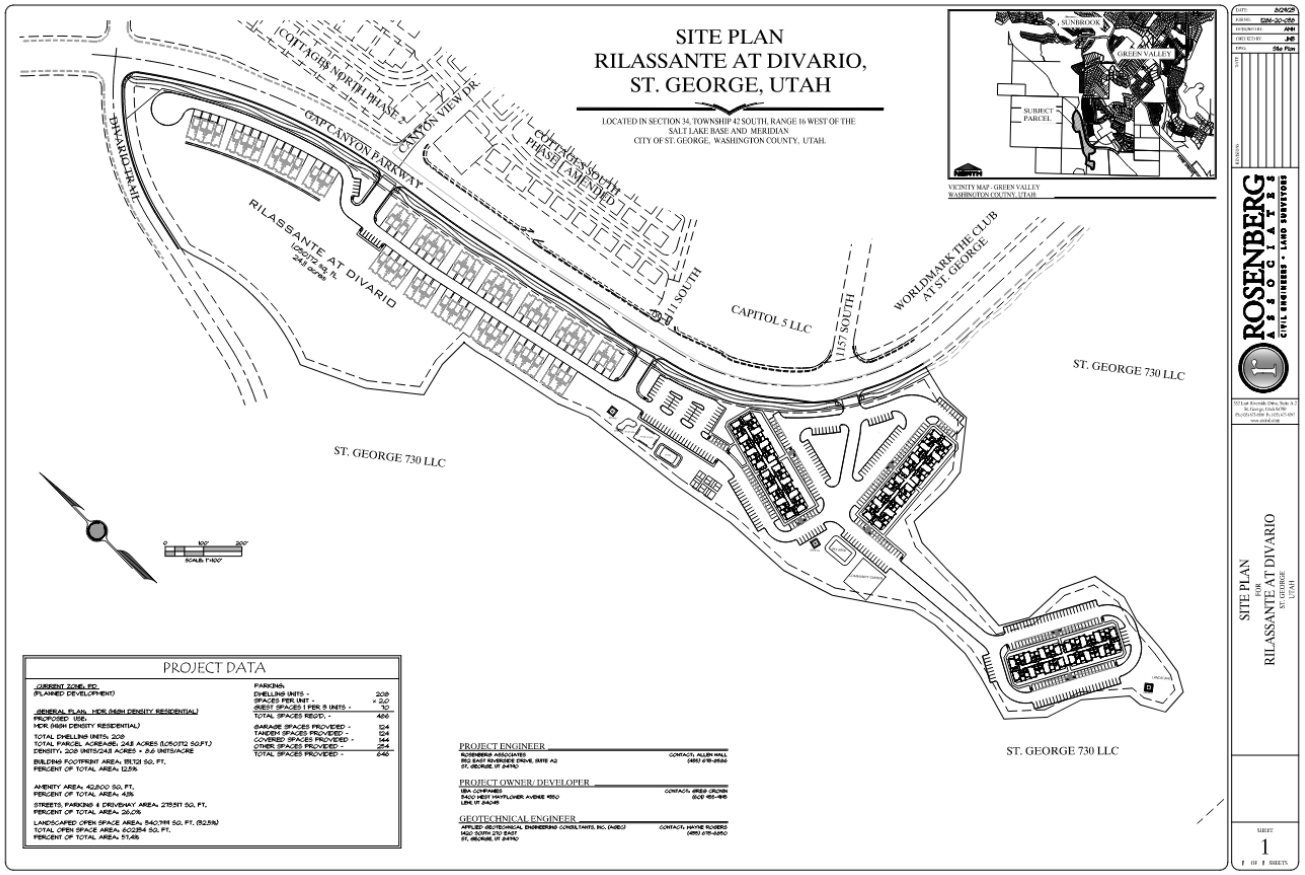


Rillisante Villas (Divario PA-3)

0 300 600 1,200 1,800 2,400 Feet

N W E S

EXHIBIT "B"


SITE PLAN
RILASSANTE AT DIVARIO,
ST. GEORGE, UTAH
LOCATED IN SECTION 34, TOWNSHIP 42 SOUTH, RANGE 16 WEST OF THE
SALT LAKE BASE AND MERIDIAN
CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH.
VICINITY MAP - GREEN VALLEY
WASHINGTON COUTNY, UTAH
SUNBROOK
GREEN VALLEY
SUBJECT PARCEL
COTTAGES NORTH PHASE 2
CANYON VIEW DR.
GAP CANYON PARKWAY
COTTAGES SOUTH PHASE 1 AMENDED
DIVARIO TRAIL
RILASSANTE AT DIVARIO
1,050,372 sq. ft.
24.3 acres
1111 SOUTH
CAPITOL 5 LLC
1157 SOUTH
WORLDMARK THE CLUB AT ST. GEORGE
ST. GEORGE 730 LLC
ST. GEORGE 730 LLC
ST. GEORGE 730 LLC
SCALE: 1"=100'
PROJECT DATA
PROJECT ENGINEER
PROJECT OWNER/ DEVELOPER
GEOTECHNICAL ENGINEER
ROSENBERG
ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
SITE PLAN
FOR
RILASSANTE AT DIVARIO
ST. GEORGE
UTAH
SHEET
1
OF SHEETS

Agenda Date: 11/16/2023 **Agenda Item Number:** 05

Subject:

Consider a request for approval of a Hillside Development Permit to allow disturbance of areas in the 20% plus slope areas on an approximately 24.10 acre site generally located just west of the Canyon View and Gap Canyon Parkway intersection for a project to be known as Rillisante at Divario (PA-3). Case No. 2022-HS-012

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Greg Cronin

Reference Number: 2022-HS-012

Address/Location:

Generally located just west of the Canyon View and Gap Canyon Parkway intersection

Item History (background/project status/public process):

The application came as a result of approval of PA-3 in 2021 and was held in anticipation of the accompanying PD amendment application. The Hillside Board and Planning Commission both held public meetings on the request and are recommending approval of the application with no conditions.

Staff Narrative (need/purpose):

This is a request for a Hillside Development Permit to allow the applicant to construct in the area shown on the slope map labeled 20-29%. The area of concern only affects three of the proposed four-plex buildings and a piece of the access road that serves it. This is specifically in the PA-3 area which is situated just west of the Canyon View Drive and Gap Canyon Parkway. In the original rezone, the site plan left all of the buildings out of the 20%+ slope areas but through the process of the zone change, changes were made that made it necessary to bring this back through hillside.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

The Planning Commission held a public meeting on the application and recommended approval of the request with no conditions.

St.George
Community Development

Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **07/27/2022**
PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT: **11/16/2023**

HILLSIDE DEVELOPMENT PERMIT
Rillisante at Divario (PA-3)
Case No. 2022-HS-012

Request: This is a request for a Hillside Development Permit to allow the applicant to construct in the area shown on the slope map labeled 20-29%. The area of concern only affects three of the proposed four-plex buildings and a piece of the access road that serves it. This is specifically in the PA-3 area which is situated just west of the Canyon View Drive and Gap Canyon Parkway. In the original rezone, the site plan left all of the buildings out of the 20%+ slope areas but through the process of the zone change, changes were made that made it necessary to bring this back through hillside. It appears that the area of disturbance is minor in size (approximately 6,500 sq ft).

Hillside History:

1) 2005 - Case No. 2005-HS-013 "The Lakes" (7/21/2005 - agenda item #2) – An overall conceptual hillside development permit review for 730 acres. Rosenberg Associates.

2) 2008 - Case No. 2008-HS-006 "PA-17" The Lakes (7/16/2008) – 12.30 acres. Rosenberg Associates.

3) 2008 - Case No. 2008-HS-012 (10/30/2008) Determine which PA areas have sensitive slopes and will require future hillside meetings for subdivisions; being PA-3, PA-4, PA-12, PA-13, PA-14, PA-15, PA-16, and PA-17 will require HS review (*Note: PA's # 1, 2, 4, 5, 6, 7, 8, 9 (if less than 10 ft.), 10, 11, & 18 will not require hillside review*).

4) 2016 - Case No. 2016-HS-001 (1/20/2016) – Approx. 45.73 acres. The Hillside Review Board met and reviewed PA-14 and PA-16 and at that time approved the exclusion of washes and rock outcroppings in these 2 areas. However, following that review meeting, Rosenberg Associates met with City staff to revisit two additional rock outcroppings that were not looked at as closely by the board. One of these was located in PA-14, labeled as Item #1. Following the meeting with City staff it was determined to re-design the lot layout and grading around the feature and preserve it as a subdivision amenity in order to avoid scheduling another hillside review board meeting. The project design proceeded with that feature preserved.

5) 2021 – Case No. 2021-HS-001 (01/27/2021) – Approx. 19.78 acres. The Hillside Review Board reviewed a request for PA-9 to allow cuts and fills in excess of 10 feet in height. This was a requirement from the original hillside review in 2008. This was ultimately approved by the City Council.

6) 2022 – Case No. 2022-HS-003 (01/26/2022 & 02/23/2022) – Approx. 35.64 Acres. The Hillside Review Board reviewed a request for PA-4 to allow construction in areas designated between 20% -39%. They also reviewed the preservation of a small wash that runs through that area. Ultimately the City Council approved the hillside permit.

7) 2022 – Case No. 2022-HS-004 (02/23/2022) – Approx. 9.47 acres. The Hillside Review Board reviewed a request for PA-18 to allow the developer to fill in an area of a wash that had been piped and was no longer used as a drainage area. The City Council approved the request.

Exhibits Provided:

1) Exhibit A - Overall Slope Analysis – Sheet 1
"Exhibit 1" in the packet shows the overall slope analysis for the entire PA (Planning Areas). *Note: There is a chart "Hillside Review" on the sheet that shows which PA areas will require a hillside review and which will not.*

2) Exhibit B – PA-3 Site/Slope Analysis
"Exhibit B" depicts the proposed grading and layout for PA-3 at Divario.

3) Exhibit C - Drainage Report
August 2016 – Drainage report produce by Rosenberg Associates.

4) Exhibit D – Executive Geotechnical Report
July 2005 – This was produced during the initial review of the Lakes development in 2005. Produced by Rosenberg Associates.

Background:

Open Space - The total proposed undisturbed open space and improved open space area for "The Lakes" will be approximately 212 acres (*which is about 30 % of the total project area*).

Manmade Slopes - Manmade slopes were identified and excluded (see blue area in "Exhibit A")

Exclusions - The hillside board allowed exclusions for small washes and rock outcroppings (see pink area in "Exhibit A")

Future Hillside Review - In 2008 the Hillside Board didn't visit all the small washes and outcroppings but left them for future consideration as plans would be submitted (with subdivisions). It was determined that some would require further review by the Hillside Board. PA-3 was one of those areas that require further review.

Owner: URE Fund 1 – Rillisante Villas, LLC

Engineer: Rosenberg Associates

Location: PA-3 is generally located just west of the Canyon View Drive and Gap Canyon Parkway intersection.

Acreage: 24.10 Acres (64.54 with adjacent open space)

Zoning: R-1-8

Powers & Duties: Section 10-13A-8.B.1 of the "Hillside Review Board Powers and Duties" states that the hillside board can make recommendations to "adopt, modify or reject a proposal" to the Planning Commission (PC).

Permit required: Section 10-13A-7 requires that all major development (i.e., cut greater than 4', etc.) on slopes above 20% requires a 'hillside development permit' granted by the City Council upon recommendation from the Hillside Review Board and the Planning Commission.

Applicable Ordinance(s):
(Selected portions)

10-13A-1: Density and Disturbance Standards

A. The hillside development overlay zone (HDOZ) limits development densities and provides specific development incentives to transfer underlying zone densities from hillsides (sending areas), to less steep slopes or more safe development areas (receiving areas), within a development.

Percent Natural Slope	Dwelling Units (DU) / Acre
0-19	See underlying zone
20-29	2 DU/acre, provided the units are clustered on 30 percent (30%) or less of the land area within this slope category. 70 percent of this slope category shall remain undisturbed. The 70 percent area is based upon the overall area/development rather than per lot. Also see subsections A1, A2, and A3 of this section.
30-39	1 DU/10 acres, provided no more than 5 percent (5%) of the site is disturbed, and 95 percent of the site remains undisturbed. If the cumulative area is at least 1 acre but less than 10 acres, the cumulative area shall be allowed 1 DU.
40	Development is not permitted (0%), **except** as provided for in subsection A4 of this section.

Section 10-13A-1: Density and Disturbance Standards

F. The applicant may:

1. Transfer all development density from steeper slope categories (sending areas), to areas within the development with natural slopes of twenty percent (20%) or less (receiving areas); and
2. Develop additional bonus density, calculated from each slope category, as follows:
    a. Natural slopes twenty percent (20%) or less transferred on a one-to-one (1:1) unit basis; plus
    b. One (1) additional density unit for each density unit transferred from natural slopes of twenty-one percent (21%) to thirty percent (30%); plus
    c. Two (2) additional density units for each density unit transferred from natural slopes of thirty-one percent (31%) to forty percent (40%).
3. Unit calculation for the receiving area shall be based on the requirements of the sending area zone.

G. Density transfers to the receiving area may occur without a zone change within the receiving area even though the resulting density or configuration may exceed the density limits of the receiving area zone. Other than density, the receiving area's zoning requirements apply to development in the receiving area. For instance, lot sizes may vary, but single-family zoning districts only allow single-family detached dwellings.

H. If the applicant proposes to develop within the twenty-one percent (21%) to forty percent (40%) slope area, the applicant cannot employ partial density transfers from the sending area and must propose a design, site development plans, and a grading plan that blends and harmonizes all aspects of the proposed development into the natural topography, and that minimizes road cuts and fills.

I. Non-disturb areas within a residential lot as shown on the slope analysis map shall not be used to calculate minimum lot size.

J. Disturbance standards do not apply to the city for limited city facilities: trails, parks, and utilities.

Hillside/PC Review: The HSRB recommended approval of the hillside permit. Subsequently, the Planning Commission, on October 24, 2023, held a public meeting to hear the request and recommend approval of the application with a 7-0 vote.

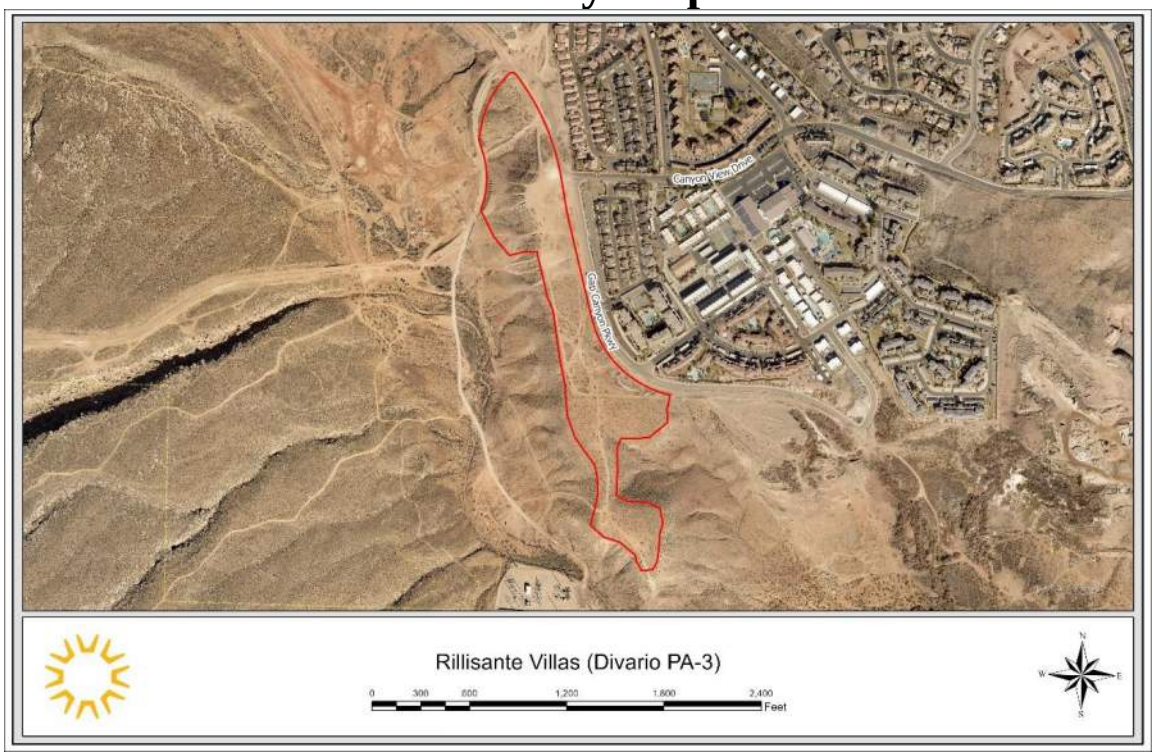
Council Options: The City Council has several different options regarding the application:

1. Denial
2. Approval as presented

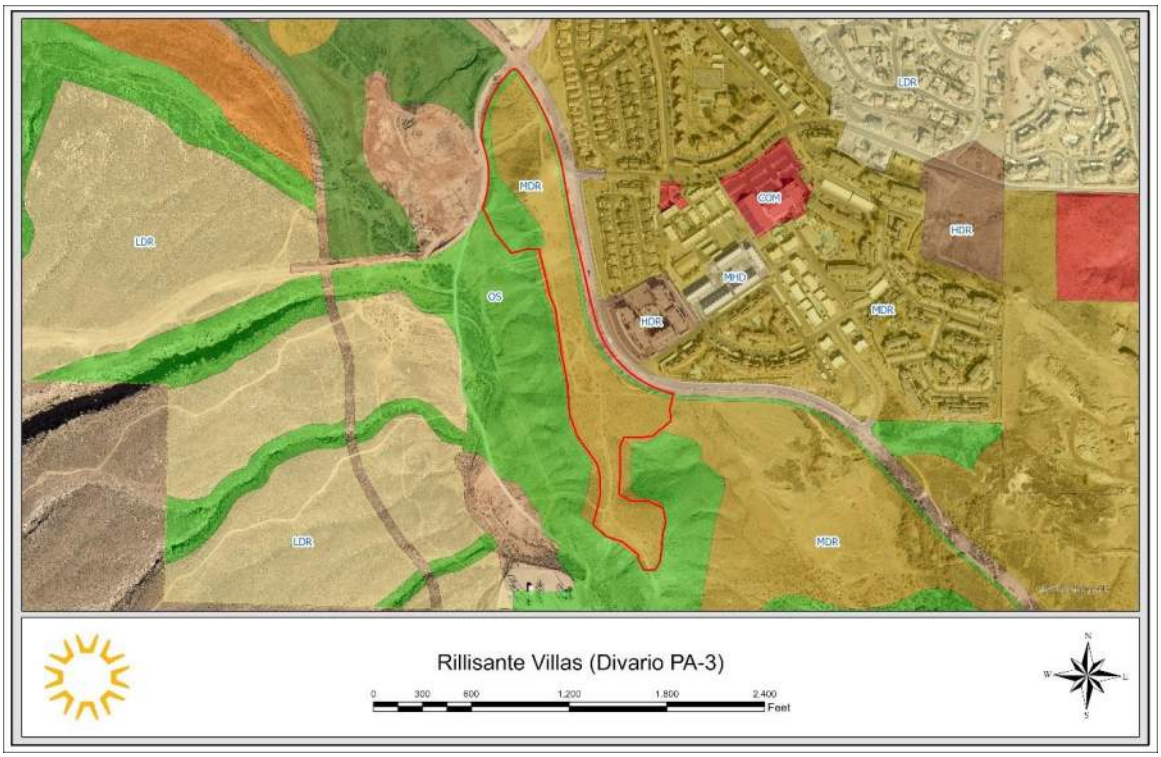
3. Approval with specific conditions and comments added as required.
4. Continue the application to a later date.

Example Motion: "I move that we approve the hillside permit for Rillisante at Divario (PA-3) as presented, case no. 2022-HS-012, based on the findings listed in the staff report."

Vicinity Map



General Plan = MDR



Zoning = R-1-8 (Not reflected on the map)

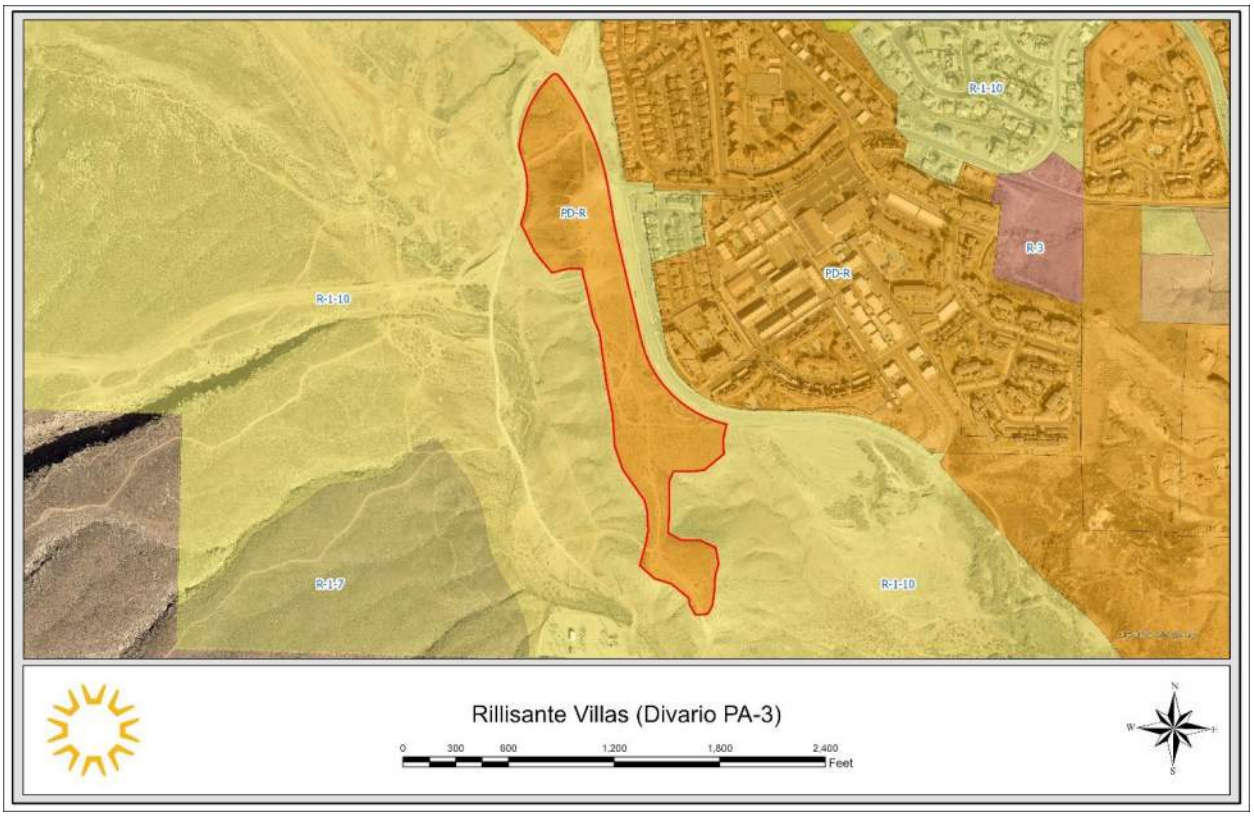
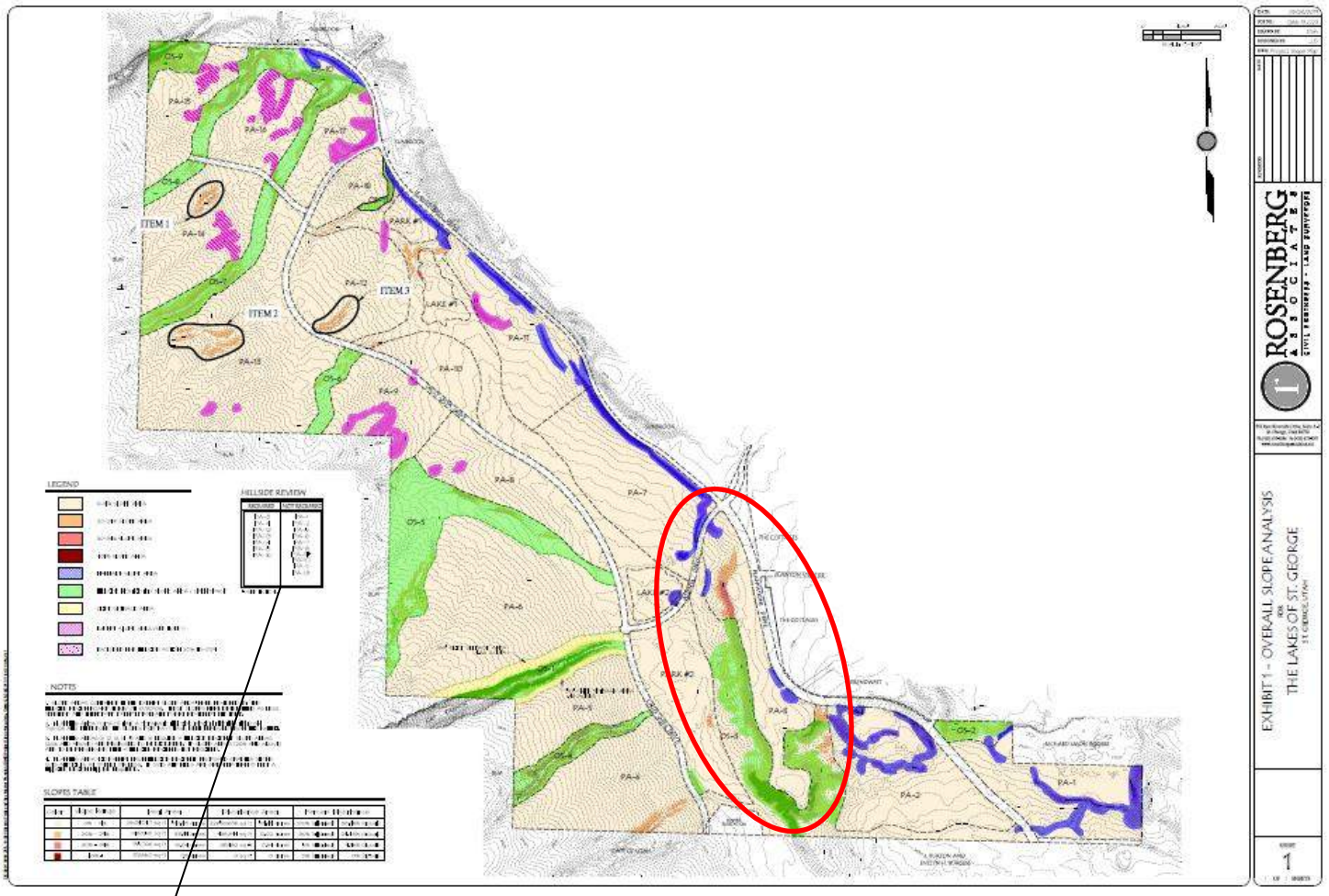


Exhibit A

Slope Map



HILLSIDE REVIEW

REQUIRED	NOT REQUIRED
PA-3	PA-1
PA-4	PA-2
PA-12	PA-5
PA-13	PA-6
PA-14	PA-7
PA-15	PA-8
PA-16	PA-9*
	PA-10
	PA-11
	PA-18

* SEE NOTE 4.

NOTES

1. SLOPE AREAS CONTAINED IN THE 'EXEMPT SLOPE AREA' WERE REVIEWED BY THE HILLSIDE REVIEW BOARD (HSRB) ON 10/30/08. THESE SLOPES WERE DETERMINED AS LESS SENSITIVE AND THEREFORE EXEMPT FROM ANY FUTURE REVIEW BY THE HSRB.

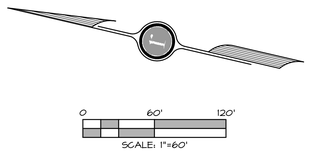
2. PLANNING AREA 17 (PA-17) HAD A SEPARATE HILLSIDE REVIEW MEETING HELD ON 7-16-08 AND THEREFORE THE SLOPES FOR PA-17 HAVE BEEN REMOVED FROM THIS EXHIBIT.

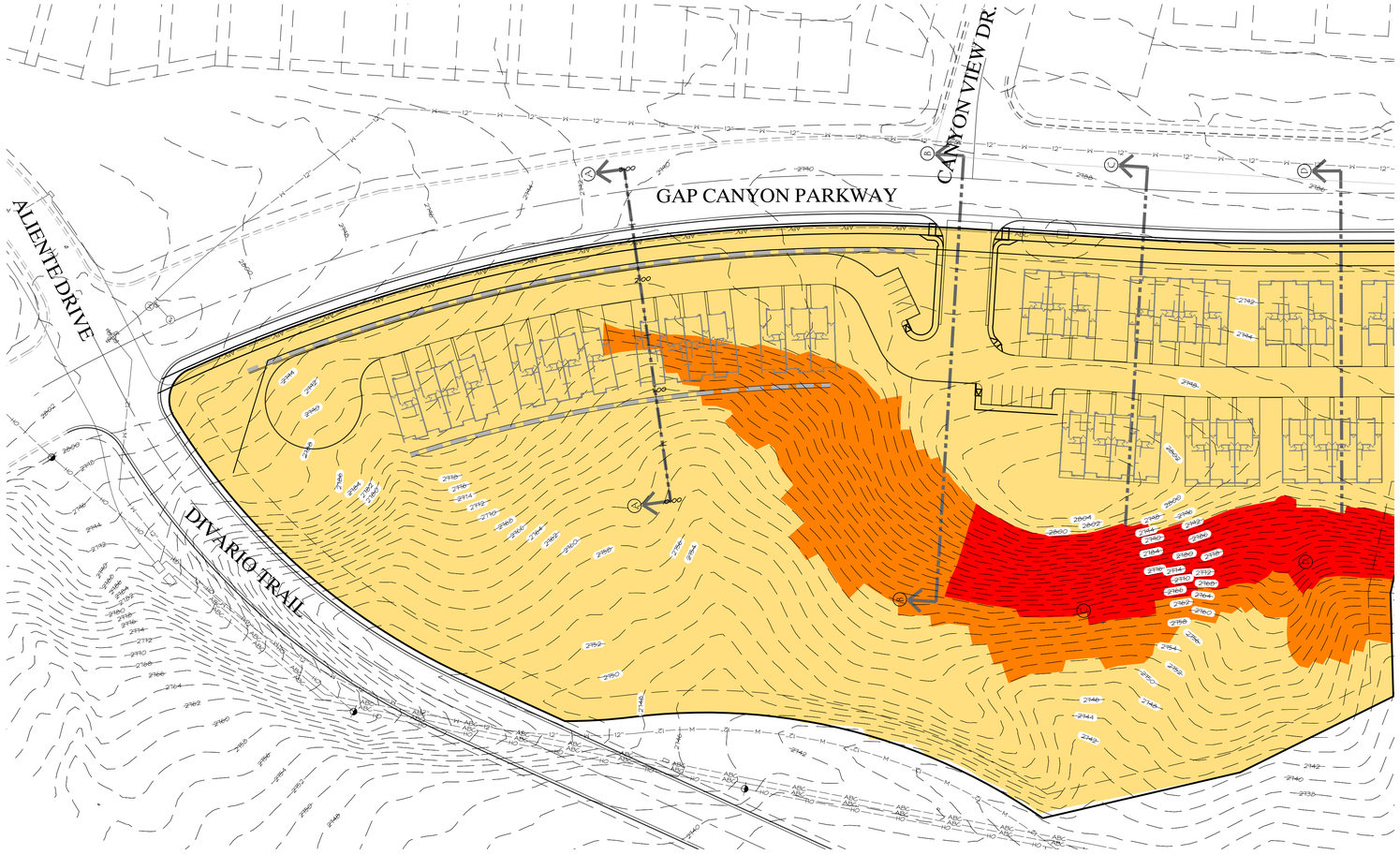
3. PLANNING AREAS 3, 12, 13, 14, 15 AND 16 REQUIRE A HILLSIDE REVIEW IF SLOPE AREAS (20% AND ABOVE) ARE PROPOSED TO BE DISTURBED. IF SLOPE AREAS (20% AND ABOVE) ARE TO BE PRESERVED, THEN A HILLSIDE REVIEW IS NOT REQUIRED.

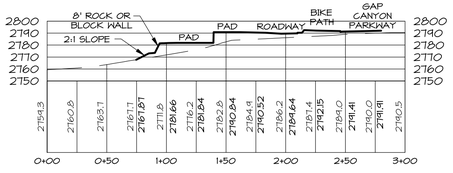
4. PLANNING AREA 9 IS EXEMPT FROM HILLSIDE REVIEW IF PROPOSED GRADING SHOWS CUTS AND FILLS AT 10 FEET OR LESS. IF CUTS AND FILLS ARE GREATER THAN 10 FEET A HILLSIDE REVIEW WILL BE REQUIRED.

Exhibit B

Site Plan/Slope Map

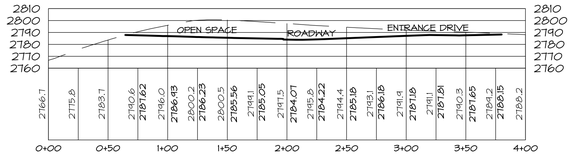






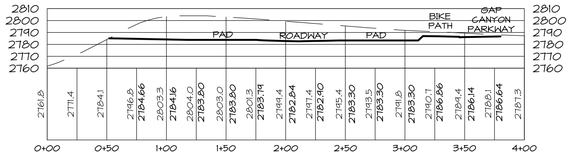
SECTION A-A

HORIZ. SCALE = 1" = 60'
VER. SCALE = 1" = 60'



SECTION B-B

HORIZ. SCALE = 1" = 60'
VER. SCALE = 1" = 60'



SECTION C-C

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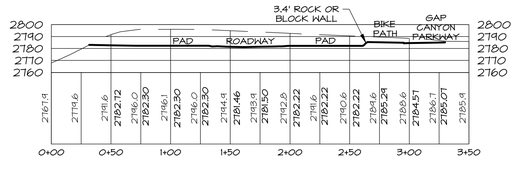
VER. SCALE = 1" = 60'



SECTION D-D

HORIZ. SCALE = 1" = 60'
VER. SCALE = 1" = 60'

DATE:	10/17/23
JOB NO.:	1286-20-038
DESIGNED BY:	AMH
CHECKED BY:	JAB
DWG:	Const Dwgs

REVISIONS — DATE

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
352 East Riverside Drive, Suite A-2
St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8397
www.racivil.com

SLOPE ANALYSIS
FOR
RILASSANTE AT DIVARIO
ST. GEORGE
UTAH

SHEET
2
2 OF 3 SHEETS

PROJECT ENGINEER

ROSENBERG ASSOCIATES
352 EAST RIVERSIDE DRIVE, SUITE A2
ST. GEORGE, UT 84790

CONTACT: ALLEN HALL
(435) 673-8586

PROJECT OWNER/ DEVELOPER

DAVIES DESIGN BUILD
240 NORTH 1200 EAST #201
LEHI, UT 84043

CONTACT: KYLE GRAY
(801) 787-1730

GEOTECHNICAL ENGINEER

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC. (AGEC)
1420 SOUTH 270 EAST
ST. GEORGE, UT 84790

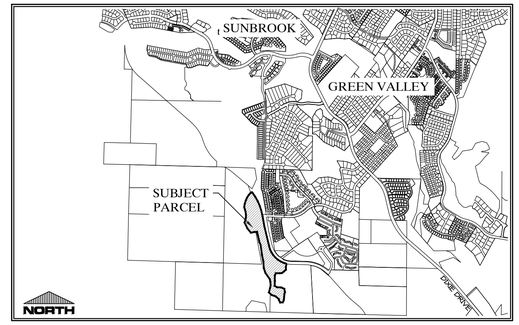
CONTACT: WAYNE ROGERS
(435) 673-6850

SITE PLAN
RILASSANTE AT DIVARIO,
ST. GEORGE, UTAH

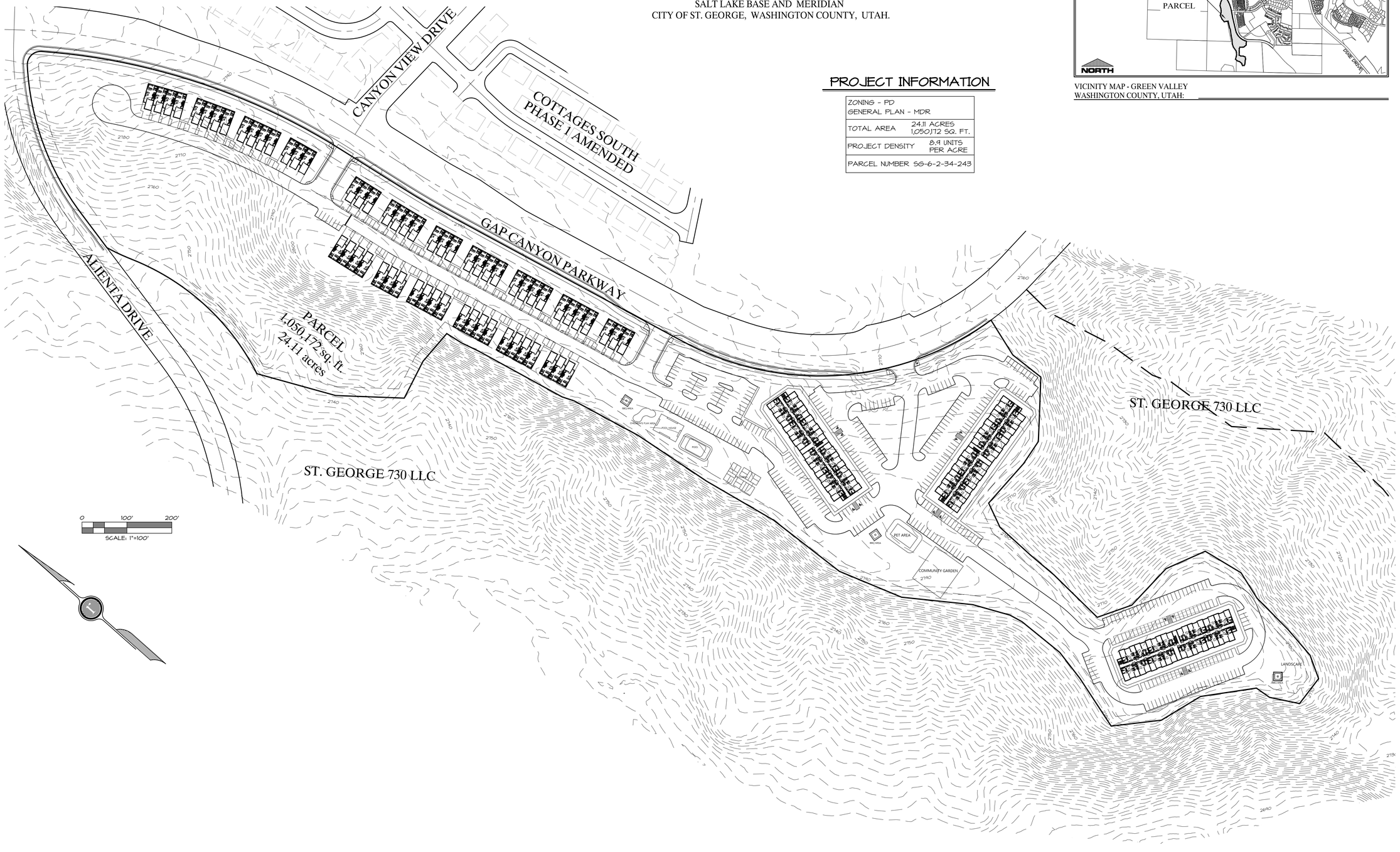
LOCATED IN SECTION 34, TOWNSHIP 42 SOUTH, RANGE 16 WEST OF THE SALT LAKE BASE AND MERIDIAN
CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH.

PROJECT INFORMATION

ZONING - PD GENERAL PLAN - MDR	
TOTAL AREA	24.11 ACRES 1,050,172 SQ. FT.
PROJECT DENSITY	8.9 UNITS PER ACRE
PARCEL NUMBER SG-6-2-34-243	



VICINITY MAP - GREEN VALLEY
WASHINGTON COUNTY, UTAH:



DATE: 6/6/22
JOB NO.: 1286-20-038
DESIGNED BY: AMH
CHECKED BY:
DWG: Site Plan
DATE
REVISIONS

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
352 East Riverside Drive, Suite A-2 St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8397
www.racivil.com

SITE PLAN - RILASSANTE AT DIVARIO
FOR
DAVIES DESIGN BUILD
ST. GEORGE
UTAH

SHEET
1
1 OF 2 SHEETS

PROJECT ENGINEER

ROSENBERG ASSOCIATES
352 EAST RIVERSIDE DRIVE, SUITE A2
ST. GEORGE, UT 84790

CONTACT: ALLEN HALL
(435) 673-8586

PROJECT OWNER/ DEVELOPER

DAVIES DESIGN BUILD
240 NORTH 1200 EAST #201
LEHI, UT 84043

CONTACT: KYLE GRAY
(801) 787-1730

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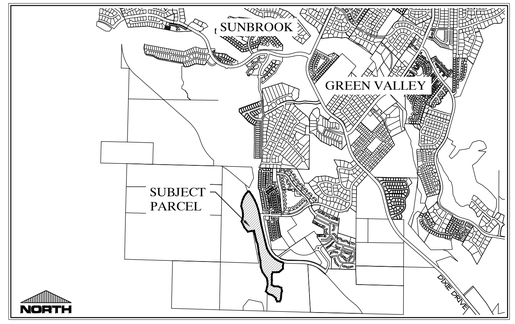
1420 SOUTH 270 EAST
ST. GEORGE, UT 84790

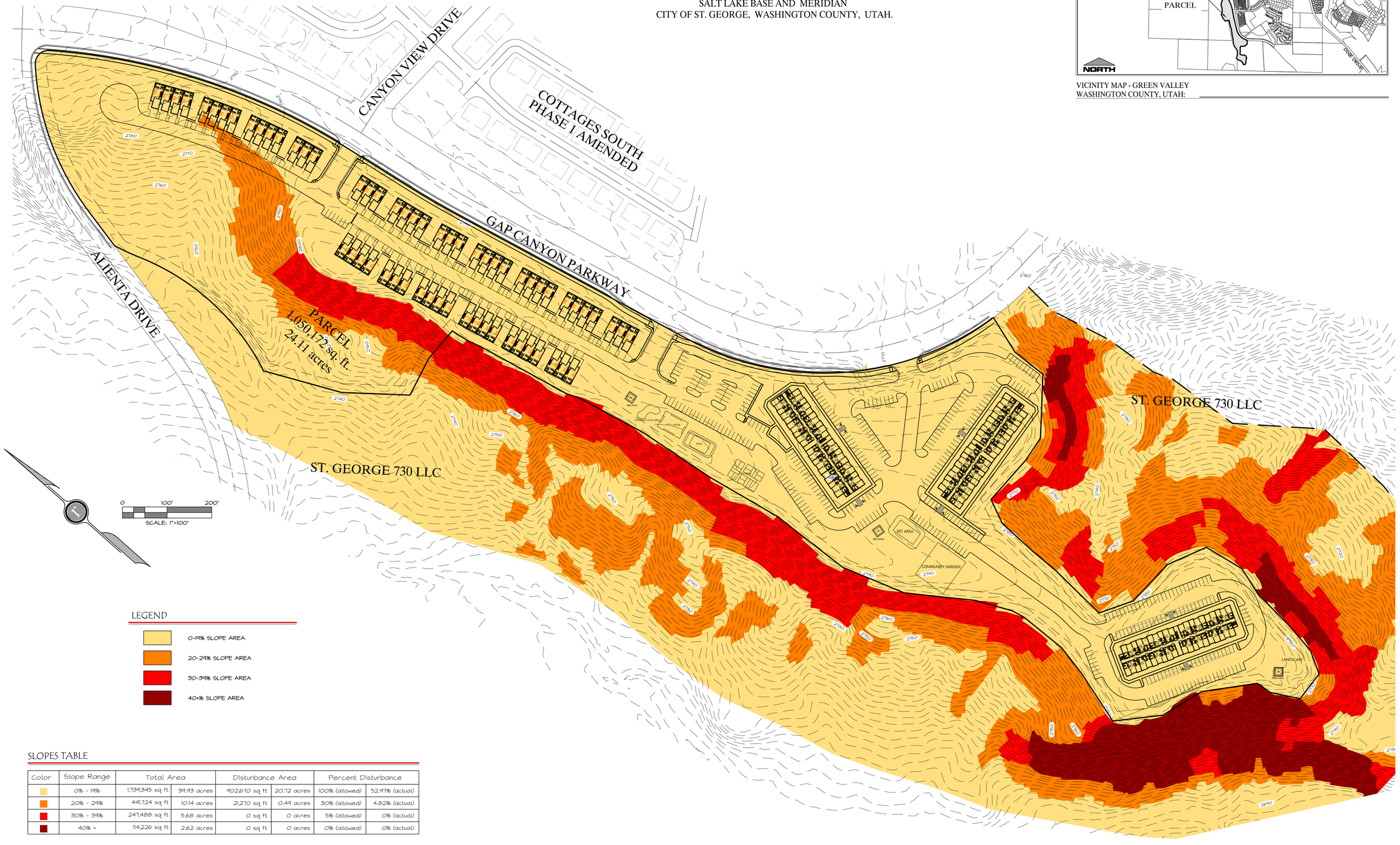
CONTACT: WAYNE ROGERS
(435) 673-6850

SLOPE MAP
RILASSANTE AT DIVARIO, ST. GEORGE, UTAH

LOCATED IN SECTION 34, TOWNSHIP 42 SOUTH, RANGE 16 WEST OF THE SALT LAKE BASE AND MERIDIAN
CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH.



VICINITY MAP - GREEN VALLEY
WASHINGTON COUNTY, UTAH:



LEGEND

- 0-19% SLOPE AREA
- 20-29% SLOPE AREA
- 30-39% SLOPE AREA
- 40+% SLOPE AREA

SLOPES TABLE

Color	Slope Range	Total Area		Disturbance Area		Percent Disturbance	
	0% - 19%	1,734,345 sq ft	39.93 acres	902,670 sq ft	20.72 acres	100% (allowed)	52.97% (actual)
	20% - 29%	441,724 sq ft	10.14 acres	21,270 sq ft	0.49 acres	30% (allowed)	4.82% (actual)
	30% - 39%	247,488 sq ft	5.68 acres	0 sq ft	0 acres	5% (allowed)	0% (actual)
	40% +	114,226 sq ft	2.62 acres	0 sq ft	0 acres	0% (allowed)	0% (actual)

DATE: 6/6/22
JOB NO.: 1286-20-038
DESIGNED BY: AMH
CHECKED BY:
DWG: SITE PLAN
DATE
REVISIONS

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS
352 East Riverside Drive, Suite A-2 St. George, Utah 84790
Ph (435) 673-8586 Fx (435) 673-8397
www.racivil.com

SLOPE MAP - RILASSANTE AT DIVARIO
FOR
DAVIES DESIGN BUILD
ST. GEORGE
UTAH

SHEET
2
2 OF 2 SHEETS

Exhibit C

Drainage Report

TECHNICAL DRAINAGE CONTROL REPORT

Project Land Use Planning, Offsite Road Construction, and Mass Grading
The Lakes Master Plan Community
St. George, Utah

Prepared For:

730 St. George, LLC
1636 Indian Wells Drive
Boulder City, Nevada 89005

Rosenberg Associates
352 East Riverside Drive, Suite A-2
St. George, Utah 84790



August 30, 2016

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CIVIL ENGINEERS LAND SURVEYORS

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1.0 PROJECT LOCATION

The following Drainage Control Plan and Report is submitted in support of The Lakes at St. George Master Plan Community, a proposed project, located along Plantations Drive in western St. George, Utah, spanning the distance between the Sunbrook Community at the end of Sunbrook Drive to the north, and near the Tonaquint Business Park to the South. The site is located within Sections 27, 28, 34 and 35 in Township 42 South, Range 16 West, Salt Lake Base and Meridian.

This report has been prepared to evaluate regional storm flows at key locations within the project area in order to perform mass grading operations, and to construct the following proposed off-site roadways to access the proposed development/planning areas:

- Plantations Drive
- Lago Vista Drive
- Alienta Drive
- Sentieri Vista Drive

This report has been prepared in accordance with the requirements and procedures outlined in the *Washington County Flood Control Authority Storm Drainage Systems Design and Management Manual*[1]. Conclusions and recommendations are made herein regarding drainage improvements required, floodplain impacts, and general conformance to city ordinances. Separate drainage studies will be prepared for each specific planning area to address localized drainage concerns and compliance with the city's drainage requirements.

The following supplemental figures have been prepared and included in the Appendix for reference and illustration information:

- *Figure 1 – Land Use Plan for The Lakes at St. George*, illustrating project location, project planning areas, and proposed planning area land uses and densities.
- *Figure 2 – Watershed Map for The Lakes at St. George*, illustrating the major watershed boundaries impacting the site.
- *Figure 3 – FEMA Regulatory 100-Year Floodplain Exhibit Map*, illustrating the drainage channels subject to the regulatory requirements of the Federal Emergency Management Agency (FEMA).
- *Figure 4 –Culvert Crossings*, showing the approximate location, minimum pipe diameter, and minimum slope requirements of culvert crossings and storm drain pipelines for the offsite roads including Plantations Drive, Lago Vista Drive, Alienta Drive, and Sentieri Vista Drive.
- *Figure 5 – Custom Soil Resource Report for Washington County Area*, showing soils and soil properties on the subject property.

[1] Bowen, Collins and Associates, Washington County Flood Control Authority Storm Drainage Design and Management Manual, Draft v0.3.

2.0 PROPERTY DESCRIPTION

The proposed Lakes at St. George is a 731-acre master plan community that is planned to be comprised of single-family residences, multi-family residences, parks and open spaces, commercial areas, public buildings such as churches, and associated streets of various right-of-way widths. *Figure 1 – Land Use Plan*, shows an overall view of the property. The proposed project is divided into 16 individual planning areas noted as PA-1, PA-2, etc. A legend on Figure 1 lists the master planned land uses and densities proposed for each planning area as follows:

- Low Density Residential: up to 4 units per acre, includes PA-4, PA-5, PA-6, PA-14, PA-15, and PA-16 covering approximately 174 acres.
- Medium Density Residential: up to 9 units per acre, includes PA-2, PA-3, PA-7, PA-9, PA-10, PA-11, PA-12, and PA-13 covering approximately 236 acres.
- High Density Residential: up to 15 units per acre, includes PA-1, PA-17, and PA-18 covering approximately 48 acres.
- Commercial/Mixed Use: includes PA-8 covering approximately 27 acres.

The remainder of the property will remain as undisturbed or improved open spaces to consist of parks, trails and other recreational facilities. These open spaces provide a natural break between each planning area, and most of them are located to accommodate the existing naturally flowing drainage patterns. The focal point of the open spaces will be two 5-acre lakes that will be used for detention, and to provide storage facilities for the City of St. George re-use water network.

3.0 EXISTING OFF-SITE DRAINAGE DESCRIPTION

3.1 UPSTREAM DRAINAGE

Storm water impacting the project from upstream sources generally originates on undeveloped desert land and drain in a sheet flow manner towards ephemeral washes that carry the concentrated water to the project property from the west and south.

The watershed impacting the proposed Lakes at St. George is illustrated in *Figure 2 – Watershed Map*. As seen in the exhibit, the total watershed area has been divided into a number of subareas to better pinpoint runoff amounts at specific locations within the project. Most off-site storm water enters the project from property belonging to the Bureau of Land Management (BLM). A small amount of off-site storm water enters the project along Plantations Drive from property belonging to the Sunbrook master plan community.

3.2 DOWNSTREAM DRAINAGE

In both the existing and proposed developed condition, storm water will exit the property in either the Box Canyon Wash, draining the northern portion of the property consisting of subarea Groups X, Y, A and B; or the Gap Wash, draining the rest of the property to the south and east. Flows leaving the project in the Box Canyon Wash travel through the Sunbrook Golf Course a distance of approximately 6,000 feet before discharging to the Santa Clara River just upstream of the Dixie Drive crossing at Mathis Park. Flows leaving the project in the Gap Wash travel eastward toward the Tonaquint Business Park, covering a total distance of approximately 4,800 feet before discharging to the Santa Clara River just north of the City of St. George Tonaquint Cemetery.

4.0 EXISTING ON-SITE DRAINAGE DESCRIPTION

In the undeveloped condition, the study area drains by sheet flow and washes to the Box Canyon Wash and the Gap Wash as shown in Figure 2. In the developed condition, storm water runoff will drain to the same major washes preserved in the designated open space corridors, as in the undeveloped condition.

5.0 MASTER PLANNED DRAINAGE CONSIDERATIONS

5.1 MASTER PLAN HYDROLOGIC MODEL

The Lakes property has been included in the hydrologic model prepared for the city's drainage master plan summarized in the *City of St. George Storm Drain Master Plan Update*[2]. Referencing Figure 2, Subareas A1, A2, A3, B1, B2, B3, B4, X1, X2, Y1, and Y2 in this report are part of the Box Canyon Wash BC100 master plan subarea. Subareas C1, C2, C3, C4, C5, D1, D2 in this report are part of the Gap Wash G20 master plan subarea. Subareas E1, E2, E3, E4, F1, F2, G1, G2, and H1 are part of the Gap Wash watershed G40 master plan subarea.

5.2 MASTER PLAN DRAINAGE INFRASTRUCTURE

Existing master planned drainage infrastructure impacting The Lakes project is limited to one 36-inch diameter pipe, labeled Pipe G50-2 in the city master plan and noted to carry a design flow of 65 cubic feet per second (cfs). This pipe conveys drainage from the Las Palmas and Worldmark Resort properties along 1790 West Street, discharging into the project property along the Plantations Drive right-of-way.

Proposed master planned drainage infrastructure impacting The Lakes project includes two proposed pipes linking to Pipe G50-2:

[2] Bowen, Collins and Associates and John H. Humphrey, City of St. George Storm Drain Master Plan Update, July, 2009.

- Pipe G50-1, a proposed 30-inch diameter pipe noted to carry a design flow of 65 cfs, to convey storm water along the Plantations Drive right-of-way along the Worldmark Resort frontage, and connecting to existing Pipe G50-2 at the intersection of 1790 West Street.
- Pipe G50-3, a proposed 42-inch diameter pipe noted to carry a design flow of 196 cfs, to combine flows from G50-1 and G50-2 and convey storm water south and eastward along the future Plantations Drive right-of-way.

The above existing and proposed pipelines were factored into this report analysis with some modifications to suit the drainage patterns and open space corridors proposed in The Lakes land use plan.

6.0 FEMA AND OTHER REGULATORY REQUIREMENTS

6.1 FEMA 100-YEAR FLOODPLAIN DELINEATION

Two drainage washes are located within the 100-year floodplain that are subject to the regulatory requirements of the Federal Emergency Management Agency (FEMA) including the Box Canyon Wash and the Gap Wash, as noted on the current FEMA Flood Insurance Rate Maps[3]. The 100-year floodplain boundaries for these two washes are shown in *Figure 3 – FEMA Regulatory 100-Year Floodplain Exhibit Map*.

Box Canyon Wash clips the north side of the property and receives drainage from Subareas A1, A2, A3, B1, B2, B3, Y1, Y2, X1, and X2. The remaining Subareas drain to the Gap Wash. Figure 3 illustrates the location of regulatory Zone A for both the Box Canyon and Gap washes, which is defined as the 100-year floodplain Special Flood Hazard Area with no base flood elevations established. All areas noted as Zone A are located within the designated open spaces for The Lakes master plan community. Areas proposed for development are all located within Zone X, which is defined to be outside the 0.2% annual floodplain.

6.2 EROSION HAZARD ZONE

The subject property is not located within an "Erosion Hazard Zone" as defined by the City of St. George.

[3] Federal Emergency Management Agency (FEMA) National Flood Insurance Program, Flood Insurance Rate Map, Washington County, Utah Map Numbers 49053C1007G and 49053C1009G, Effective Date April 2, 2009.

7.0 OTHER DRAINAGE STUDIES IMPACTING THE SITE

The following studies were referenced in preparing this report:

- The Lakes at St. George Hydrology Report, prepared by Rosenberg Associates, dated May 15, 2008. This report is a general overview of major drainage patterns encompassing the entire Lakes planned development property boundary. This report updates the earlier report to current city analysis and drainage design standards.
- Four Dams at The Lakes Preliminary Drainage Evaluation, prepared by Rosenberg Associates, dated September 14, 2005. This report is a hydrologic analysis of the proposed "lakes" to be constructed in the master plan community open space.
- Box Canyon Wash Hydraulic Modeling, performed by Rosenberg Associates in 2008. This work resulted in the delineation of the 100-year floodplain along the Box Canyon Wash.

8.0 PROPOSED DRAINAGE FACILITIES

Drainage facilities proposed for The Lakes master plan community will convey water through the planning areas and connecting roads by a combination of grading, street improvements, and storm drain infrastructure. Specific routing, sizing, and placement of storm drain infrastructure will be proposed during the detailed design stage of each planning area; however, this report has been prepared to evaluate regional storm flows at key locations within the project area in order to perform mass grading operations, and to construct the following proposed off-site roadways to access the proposed development/planning areas:

- Plantations Drive: Extending from the north property boundary and heading in a southeasterly direction approximately 12,400 feet to the southeastern property boundary.
- Lago Vista Drive: Extending from the point of intersection with Plantations Drive on the northwest side of the parcel, and extending in a southeasterly direction approximately 8,900 feet to the southwestern property boundary.
- Alienta Drive: Extending from Lago Vista Drive northward approximately 2,400 feet where it ties to the existing Alienta Drive.
- Sentieri Vista Drive: Extending from Lago Vista Drive in the northwest area of the project and heading in a westward direction approximately 1,300 feet through planning areas PA-14, Pa-16, and terminating in PA-15.

8.1 MASS GRADING

It is the desire of the project developers to conduct mass grading operations on portions of the master plan project. The purpose of this is to be able to move earth materials between the planning areas. Planning areas with an abundance of quality material that can be used for general fill, structural fill, and/or utility trench bedding will be mined and the excess material moved to planning areas where additional fill material is needed.

Limited grading design will be performed for various phases of mass grading. Plans will be submitted to the City of St. George engineering department and processed for a grading permit before any grading operations begin. Mass grading design will focus on maintaining the existing drainage patterns by picking up storm water offsite flows, routing storm water through the mass graded planning area to be discharged back into the open space areas as close as practicable to the historic point of discharge.

8.2 DETAIL GRADING

Detailed grading plans will be submitted with the project development plans for each planning area to include individual lot and/or building pad grading, interior road plan and profile drawings, and underground storm drain plan and profile where needed.

A detailed drainage study will be prepared for the proposed development and submitted with the project construction plans for each individual planning area.

8.3 OFFSITE ROADWAYS

Construction of the offsite roadways including Plantations Drive, Lago Vista Drive, Alienta Drive, and Sentieri Vista Drive, as noted above, will occur in phases as needed to service the development of the planning areas. The peak storm water runoff values in this drainage study were used to evaluate roadway cross section conveyance capacity, to size in-line underground storm water pipelines, and to locate and size offsite roadway culvert crossings. The approximate location, minimum pipe diameter sizing, and minimum slope requirements of culvert crossings and storm drain pipelines are illustrated in *Figure 4 – Proposed Offsite Road Culvert Crossing and Storm Drain Facilities*. Detailed construction plans for all offsite roadway drainage improvements will be submitted with the applicable planning area construction plans.

8.4 OPEN CHANNELS

Construction of open channels are proposed to convey storm water through the disturbed open space areas. The proposed routing location, size, minimum design slope and capacity of these channels will be addressed with the detailed drainage design of the adjacent planning areas or design of open space area. The channels are generally located as follows:

- Between Lake 1 and Lake 2 adjacent to Lago Vista Drive
- Routing the Gap Wash through Park 2 adjacent to Lago Vista Drive, between Lake 2 and the power substation.
- Routing the Gap Wash through planning areas PA-1 and PA-2 inside the boundaries of the delineated floodplain.

Additional temporary man-made open channels may need to be constructed to route storm water through mass-graded planning areas, then directed back into the natural drainages located in the adjacent open space areas. The peak flow values of this report will be used to

size these temporary channels, which will be called out as needed on the individual mass grading construction plans. Once the planning area goes into final design, these channels will be replaced with improved streets, storm drains, or culverts.

8.5 REGIONAL DETENTION

It is the desire of the project developers to detain increased storm water caused by development. Rather than design numerous smaller detention facilities for each planning area, storm water will be routed into regional facilities adjacent to the two 5-acre lake amenities, as discussed below. Storm water won't be routed directly in the lake amenities, but into a containment area next to the lake to help maintain the quality of the city's re-use water that will be stored in the lake facilities. Master Plan Model results indicate that detention may be minimal or not required. Finalization of detention needs will be addressed with detailed drainage design of each planning area.

- Lake 1 Detention Basin: Increased storm water runoff generated in Subareas B2 and B3 will be routed directly into a detention basin adjacent to Lake 1, then discharged into the Box Canyon Wash. Additional capacity and outlet control facilities will be installed in this detention basin to also detain the total combined increase from Subareas A2, A3, X2, and Y2. This will allow the increase from these subareas to discharge directly to Box Canyon Wash while limiting the total peak flow discharging from the property to the peak "pre-developed" design condition.
- Lake 2 Detention Basin: Increased storm water runoff generated in Subareas C2, C3 and D2 will be routed directly into a detention basin adjacent to Lake 2, then discharged into the Gap Wash. Additional capacity and outlet control facilities will be installed in this detention basin to also detain the total combined increase from Subareas E2, E3, E4, F2 and G2. This will allow the increase from these subareas to discharge directly to the Gap Wash while limiting the total peak flow discharging from the property to the peak "pre-developed" design condition.

9.0 PROPOSED DRAINAGE FACILITIES COMPLIANCE

The hydrologic and hydraulic analysis utilized for design of The Lakes master plan community storm water drainage facilities were performed in accordance with the requirements of the Washington County Flood Control Authority (WCFCA) *Storm drainage Systems Design and Management Manual*. Specific compliance measures were as follows:

- Hydrologic Analysis: The hydraulic analyses performed for The Lakes off-site and on-site watershed was performed in accordance with Section 4 of the drainage manual utilizing the US Army Corps of Engineers HEC-HMS Version 4.1[4] modeling software. The hydrologic

[4] U.S. Army Corps of Engineers, Hydraulic Engineering Circular Hydrologic Modeling System (HEC-HMS) software, Version 3.5.

analysis is discussed in greater detail in Section 10 of this report, with detailed information included in the appendix.

- Street Design: Street drainage design was performed in accordance with Section 3 of the drainage manual assuming that Sentieri Vista Drive is a minor collector, Lago Vista Drive and Alienta Drive are major collectors, and Plantations Drive is a major arterial in accordance with Table 3-1.
- Storm Drain Design: Storm drain design for Sentieri Vista Drive, Lago Vista Drive, Alienta Drive, and Plantations Drive was performed in accordance with Section 3 of the drainage manual assuming an open-channel flow condition.
- Culvert Design: Culverts for the offsite road system were designed in accordance with Section 3 of the drainage manual to fully convey the 100-year design storm event in an open channel flow condition.
- Open Channel Design: Open channels conveying storm water from detention areas to the Box Canyon Wash and Gap Wash, and conveying flows adjacent to Lago Vista Drive, will be designed with future phases. Open channels will be designed to match the natural channel flow characteristics of the existing channels.
- Storage Facilities Design: The two regional detention facilities have been sited and will designed with future phases as needed.

10.0 DESIGN RUNOFF COMPUTATIONS

10.1 HYDROLOGIC CALCULATIONS

The US Army Corps of Engineers HEC-HMS Version 4.1 was used to perform the hydrologic analysis for this study. The Farmer-Fletcher distribution is used for the 3-hour storm events and the SCS Type II distribution is used for the 24-hour storm events. The SCS Composite Curve Number method was utilized to determine the runoff curve number since all areas within the watershed evaluated are currently undeveloped.

Tables summarizing model input for the following values have been included in the appendix:

- Watershed areas, longest length, and average slope for the pre-developed and proposed post-developed condition.
- SCS composite curve number values for the pre-developed and proposed post-developed condition.
- Hydrologic model junction and routing characteristics.
- Calculated times of concentration and lag time.

10.2 COMPARISON OF PEAK FLOW VALUES

Modeling for The Lakes master plan development considered both the existing pre-developed condition and the assumed post-developed condition, in order to size storm drainage facilities and to compare impacts to storm water peak flow values caused by proposed development. HEC-HMS model peak storm values for all subareas, junctions, and routing conditions for the pre-developed and proposed post-developed condition are included in the appendix.

Post-developed conditions were assumed to match the proposed uses and densities described in Section 2 of this report and illustrated in *Figure 1 – Land Use Plan*. Since exact layout for each of the 16 individual planning areas is not known at this point, detailed drainage study update reports will be submitted with the development of each planning area.

11.0 PROPOSED DRAINAGE FACILITIES DESIGN COMPUTATIONS

Computations for the hydraulic design of The Lakes master plan community storm water drainage facilities were performed in accordance with the requirements of the Washington County Flood Control Authority *Storm Drainage Systems Design and Management Manual*. Output tables for calculations are included in the appendix.

11.1 CULVERT AND CHANNEL CAPACITY DESIGN

Culvert and channel capacities utilized Manning's equation for open channel flow:[5]

$$Q = \frac{1.49\,(A)^{5/3}(S)^{1/2}}{n(P)^{2/3}}$$

Where
- Q = Hydraulic Capacity, in cubic feet per second (cfs)
- A = Cross Sectional Flow Area, in square feet
- S = Average Slope, in feet per foot
- n = Manning's Roughness Coefficient
- P = Wetted Perimeter, in feet

[5] Flammer, Jeppson, and Keedy, Fundamental Principles and Applications of Fluid Mechanics, Utah State University, 1986, p. 289.

Table 11-1 lists the Manning's roughness coefficients used in the model evaluation:

TABLE 11-1: MANNING'S ROUGHNESS COEFFICIENTS

Surface Description	Manning's n Value
High Density Polyethylene Pipe (HDPE)	0.010
Concrete Pipe (RCP)	0.013
Open Channels	0.078
Asphalt Pavement	0.015

The following parameters were assumed for each evaluation:

- All culvert capacities were evaluated as flowing full in the open channel flow condition, assuming no surcharge.
- The slope of each culvert was assumed to be the average slope of the drainage basin or routing, unless additional information was known to justify a different value.
- If existing drainage or future road drainage infrastructure was determined to be inadequate to accommodate the modeled design storm, the culvert or open channel was sized to accommodate the full modeled design storm value.

11.2 STREET CAPACITY DESIGN

Street capacities were modeled using Manning's equation for open channel flow based on the master planned street cross-section, assuming full street improvements were constructed. Minimum slopes for all street sections were assumed to be at 0.5%.

11.3 STORAGE FACILITIES DESIGN

The two regional detention facilities are proposed, as discussed in Section 8.5. The master plan calculations summarized in this report do not include a proposed size for these two facilities, since overall post-development values do not exceed the pre-development values. If localized post-developed drainage values are determined to exceed pre-developed values during detailed drainage design of the planning areas, the storage facilities will be designed utilizing HEC-HMS output files, sizing for the 10-year 24-hour design storm, and sizing for the worst-case condition (whichever yielded the greatest volume) of the 100-year 3-hour design storm or the 100-year 24-hour design storm. Since not all subareas will be able to be routed directly through one of the detention basins, it is assumed that the regional facilities may need to be oversized to compensate for the total increased flow where storm water exits the property in the Box Canyon Wash for Lake 1, or in the Gap Wash for Lake 2, as discussed in Section 8.5 of this report.

12.0 REQUIRED EASEMENTS AND RIGHTS-OF-WAY

No additional easements or rights-of-way are being proposed for storm water drainage with the master plan, mass grading, or construction of offsite roadways. Major drainage channels within the proposed project are to remain in the open space areas shown in Figure 1, the master land use plan. Specific drainage easements, if needed within the individual planning areas, will be noted with the submittal of the planning area detailed drainage study report and project construction plans.

13.0 FEMA FLOODWAY AND FLOODPLAIN CALCULATIONS

No additional hydrologic or hydraulic calculations were performed for the purposes of modifying the existing floodplain as delineated on the FEMA flood insurance rate maps. It is the intention of the project developer to leave all designated floodplain areas for the Box Canyon Wash and Gap Wash out of the residential development areas.

14.0 CONCLUSIONS AND STATEMENT OF COMPLIANCE

This report for the drainage design of The Lakes Master Plan was prepared under my direct supervision in accordance with the provisions of Washington County Flood Control Authority (WCFCA) Storm Drainage Systems Design and Management Manual, and was designed to comply with the provisions thereof. I understand that the City of St. George and WCFCA do not and will not assume liability for drainage facilities design.

APPENDIX

Figure 1 – Land Use Plan for The Lakes at St. George
Figure 2 – Watershed Map for The Lakes at St. George
Figure 3 – FEMA Regulatory 100-Year Floodplain
Figure 4 – Proposed Culvert Crossing Calculations
Figure 5 – Custom Soil Resource Report for Washington County Area

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Watershed Hydrology Model Hydraulic Routing Spreadsheets
Watershed Hydrology Model Curve Number Spreadsheets
Watershed Hydrology Model Lag Time Spreadsheets
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Culvert Calculation Worksheets

AREA TOTALS

	= 173.80 ACRES	23.8%
	= 236.12 ACRES	32.3%
	= 48.43 ACRES	6.6%
	= 27.04 ACRES	3.7%
	= 202.84 ACRES	27.8%
	= 42.48 ACRES	5.8%
TOTAL	= 730.71 ACRES	100%

NOTE

THE BOUNDARIES DESIGNATED FOR LAKES AND PARKS ARE SUBJECT TO CHANGE AT THE DEVELOPERS DISCRETION.

LEGEND

- LOW DENSITY RESIDENTIAL (UP TO 4 UNITS PER ACRES)
- MEDIUM DENSITY RESIDENTIAL (UP TO 9 UNITS PER ACRE)
- HIGH DENSITY RESIDENTIAL (UP TO 15 UNITS PER ACRE)
- COMMERCIAL/MIXED USE
- OPEN SPACE / PARKS / LAKES (SEE NOTE BELOW)
- ROADWAYS / CITY PROPERTY
- MAJOR ARTERIALS
- MINOR ARTERIALS
- REGIONAL TRAILS (PAVED)
- LOCAL TRAILS (PAVED)
- RECREATION TRAILS (DIRT)
- FUTURE ROADWAYS
- PROPERTY LINE
- WASHES
- TRAILHEAD SITE

PLANNING AREAS

AREA	ZONE	ACRES	DENSITY
P.A.-1	HDR	28.09	UP TO 15 UNITS/ACRE
P.A.-2	MDR	35.96	UP TO 9 UNITS/ACRE
P.A.-3	MDR	24.10	UP TO 9 UNITS/ACRE
P.A.-4	LDR	33.52	UP TO 4 UNITS/ACRE
P.A.-5	LDR	19.37	UP TO 4 UNITS/ACRE
P.A.-6	LDR	59.74	UP TO 4 UNITS/ACRE
P.A.-7	MDR	35.93	UP TO 9 UNITS/ACRE
P.A.-8	MIXED USE	27.04	UP TO 10 UNITS/ACRE
P.A.-9	MDR	13.30	UP TO 9 UNITS/ACRE
P.A.-10	MDR	11.33	UP TO 9 UNITS/ACRE
P.A.-11	MDR	27.17	UP TO 9 UNITS/ACRE
P.A.-12	MDR	26.88	UP TO 9 UNITS/ACRE
P.A.-13	MDR	61.45	UP TO 9 UNITS/ACRE
P.A.-14	LDR	28.44	UP TO 4 UNITS/ACRE
P.A.-15	LDR	16.35	UP TO 4 UNITS/ACRE
P.A.-16	LDR	16.38	UP TO 4 UNITS/ACRE
P.A.-17	HDR	12.31	UP TO 15 UNITS/ACRE
P.A.-18	HDR	8.03	UP TO 15 UNITS/ACRE

BLM
SANTA CLARA CITY

FUTURE CONNECTION TO WESTERN CORRIDOR

SUNBROOK DR.

BOX CANYON WASH

OPEN SPACE
4.29 ACRES

P.A.-15
16.35 ACRES

P.A.-16
16.38 ACRES

P.A.-17
12.31 ACRES

P.A.-18
8.03 ACRES

OPEN SPACE
2.44 ACRES

P.A.-14
28.44 ACRES

BLM
(NON-INCORPORATED)

SUNBROOK

PARK #1
4.29 ACRES

PLANTATIONS DR.

P.A.-12
26.88 ACRES

LAKE #1
5.00 ACRES

OPEN SPACE
8.84 ACRES

P.A.-13
61.45 ACRES

OPEN SPACE
3.92 ACRES

P.A.-9
13.30 ACRES

P.A.-10
11.33 ACRES

P.A.-11
27.17 ACRES

P.A.-8
27.04 ACRES

PARK #3
10.00 ACRES

OPEN SPACE
0.33 ACRES

P.A.-7
35.93 ACRES

SUNBROOK DR.

LUCE DEL SOL DR.

ALIENTA DR.

HIGHLANDS

ALIENTA DR.

OPEN SPACE
1.92 ACRES

PROPOSED FIRE STATION

COTTAGES NORTH

SALES CENTER

CANYON VIEW DR.

(FUTURE)

BLM
(NON-INCORPORATED)

OPEN SPACE
29.01 ACRES

P.A.-6
59.74 ACRES

LAKE #2
5.07 ACRES

P.A.-3
24.10 ACRES

COTTAGES SOUTH

OPEN SPACE
1.79 ACRES

EXISTING SUBSTATION (TO BE REMOVED)

HWY. 18 TO VEYO
PINE VALLEY

DIXIE DOWNS RD.

SUNSET BLVD.

INTERSTATE I-15 TO SALT LAKE CITY

ST. GEORGE BLVD.

DOWNTOWN

VALLEY VIEW DR.

GREEN VALLEY

BLUFF ST.

DIXIE DR.

EASTSIDE

VIRGIN RIVER

BLOOMINGTON

BLOOMINGTON HILLS

INTERSTATE I-15 TO LAS VEGAS, NEV.

The Lakes at St. George

EXISTING BLM TRAILHEAD

OPEN SPACE
12.41 ACRES

PARK #2
25.00 ACRES

OPEN SPACE
40.44 ACRES

LAS PALMAS

TRENDWEST

P.A.-5
19.37 ACRES

OPEN SPACE
6.82 ACRES

P.A.-4
33.52 ACRES

SUBSTATION
3.24 ACRES

OPEN SPACE
3.43 ACRES

RICHARD JASON ROGERS

P.A.-2
35.96 ACRES

PLANTATIONS DR.

P.A.-1
28.09 ACRES

DIXIE DR.

TRAILHEAD

(FUTURE)

J. BURTON & EVELYN H. BURGESS

NORTH

LOCATION MAP
ST. GEORGE, UTAH

DATE: 8/31/2016
JOB NO.: 1286-14-014
DESIGNED BY: JLN
CHECKED BY: RMA
DWG: Land Use Plan

REVISIONS | DATE

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Land Use Plan
FOR
The Lakes at St. George
St. George, Utah

SHEET
Fig. 1
1 OF 1 SHEETS

Q= 2,950 CFS
AS PER FEMA
AUGUST 2006

Q= 650 CFS
AS PER FEMA
AUGUST 2006

Box Canyon
Stucki Spring
Mojave Desert
The Gap
Cove Wash
Halfway Wash
Halfway Wash
Santa Clara River

CANYON RIDGE RD
EMERAUD
W SUNBROOK DR
W RIVERS EDGE LN
S VALLEY VIEW DR
SOL TO VISTA DEL
S DIXIE DR
PLANTATIONS DR.
LUCE DEL SOL DR
ALIENTA DR
S VILLAGE RD
LAGO VISTA DR.
ALIENTA DR.

X2 A3 X1 Y2 Y1 A2 A1 B4 B3 B2 B1 C4 C3 C2 C1 D1 D2 E2 E3 F2 G2 E4 E1 F1 G1 H1

3000 3200 2800 2700

0 1400' 2800'
SCALE: 1"=1400'

DATE: 4-14-08
JOB NO.: 1286-PDA
DRAWN BY: JRH
DESIGNED BY:
DWG: WATERSHED MAP
DATE
REVISIONS

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FIGURE 2 WATERSHED MAP
FOR
THE LAKES AT ST. GEORGE
ST. GEORGE, UTAH

SHEET
Fig. 2
1 OF 1 SHEETS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Floodway Data table shown on this FIRM.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 12N. **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the U.S. Farm Service National Agriculture Imagery Program (NAIP), dated summer 2004, and by the U.S. Geological Survey Digital Orthophoto Quadrangles, dated 1993 and later, produced at a scale of 1:24000. The data was obtained from the State Geographic Information Dataset (SGID) maintained by the Automated Geographic Reference Center (AGRC).

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1007G

FIRM
FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY, UTAH
AND INCORPORATED AREAS

PANEL 1007 OF 1225
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SANTA CLARA, CITY OF	490179	1007	G
ST. GEORGE, CITY OF	490177	1007	G
WASHINGTON COUNTY	490224	1007	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
49053C1007G
EFFECTIVE DATE
APRIL 2, 2009

Federal Emergency Management Agency

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1009G

FIRM
FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY, UTAH
AND INCORPORATED AREAS

PANEL 1009 OF 1225
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ST. GEORGE, CITY OF	490177	1009	G
WASHINGTON COUNTY	490224	1009	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
49053C1009G
EFFECTIVE DATE
APRIL 2, 2009

Federal Emergency Management Agency

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1028G

FIRM
FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY, UTAH
AND INCORPORATED AREAS

PANEL 1028 OF 1225
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

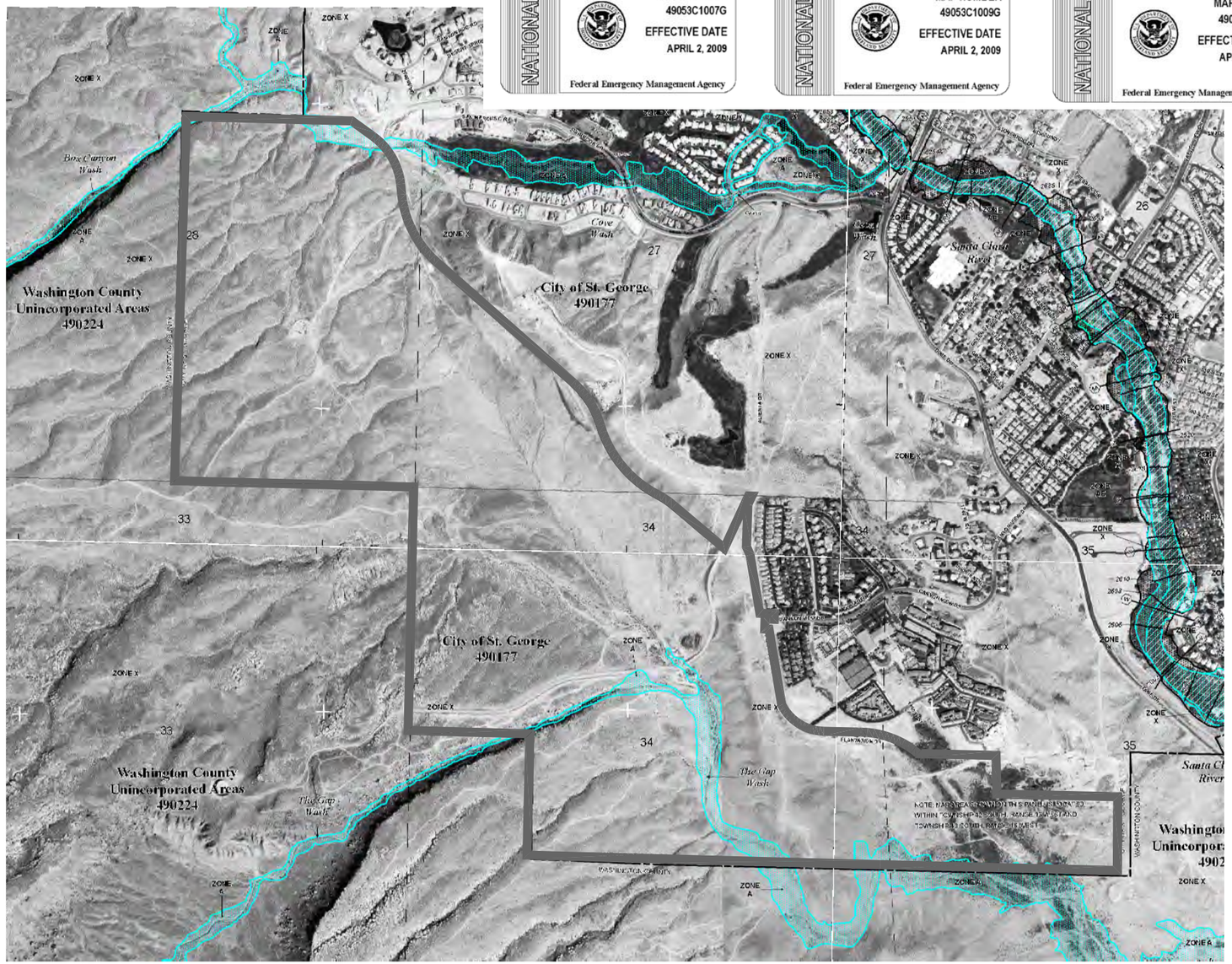
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ST. GEORGE, CITY OF	490177	1028	G
WASHINGTON COUNTY	490224	1028	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
49053C1028G
EFFECTIVE DATE
APRIL 2, 2009

Federal Emergency Management Agency



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A) — (A) Cross section line
- (27) — (27) Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4376 000 m E — 1000-meter Universal Transverse Mercator grid values, zone 12
- 600000 FT — 5000-foot grid ticks: Utah State Plane coordinate system, south zone (FIPSZONE 4302), Lambert Conformal Conic projection
- DX5510 × — Bench mark (See explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
APRIL 2, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

DATE: 4-14-08
JOB NO.: 1286-PDA
DRAWN BY: JRH
DESIGNED BY:
DWG: WATERSHED MAP
DATE
REVISIONS

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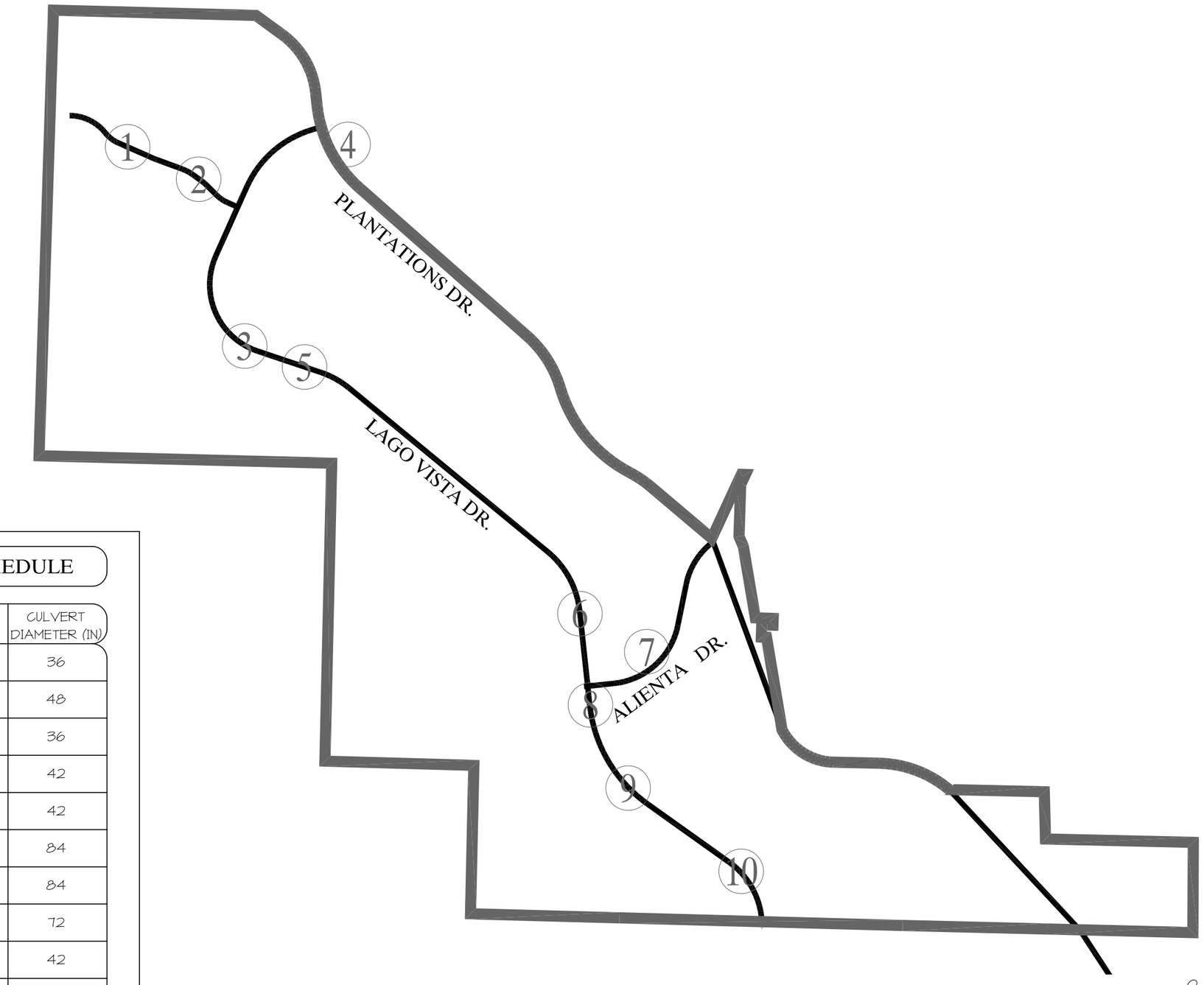
FIGURE 3- FEMA Regulatory 100-YR Floodplain
FOR
The Lakes at St. George
St. George, Utah

SHEET
Fig. 3
1 OF 1 SHEETS



CULVERT SCHEDULE

CULVERT ID	100-YR FLOW (CFS)	CULVERT DIAMETER (IN)
1	80.7	36
2	191.9	48
3	88.1	36
4	139.9	42
5	104.5	42
6	654.3	84
7	810.0	84
8	456.7	72
9	134.7	42
10	249.4	60

NOTE
CULVERT DIAMETER CALCULATIONS ASSUME 1.0% SLOPE.

0 1000' 2000'

SCALE: 1"=1000'

DATE: 4-14-08
JOB NO.: 1286-PDA
DRAWN BY: JLN
DESIGNED BY: RMA
DWG: WATERSHED MAP

REVISIONS DATE

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FIGURE 4 CULVERT CROSSINGS FOR THE LAKES AT ST. GEORGE

ST. GEORGE, UTAH

SHEET
Fig. 4
1 OF 1 SHEETS

United States Department of Agriculture

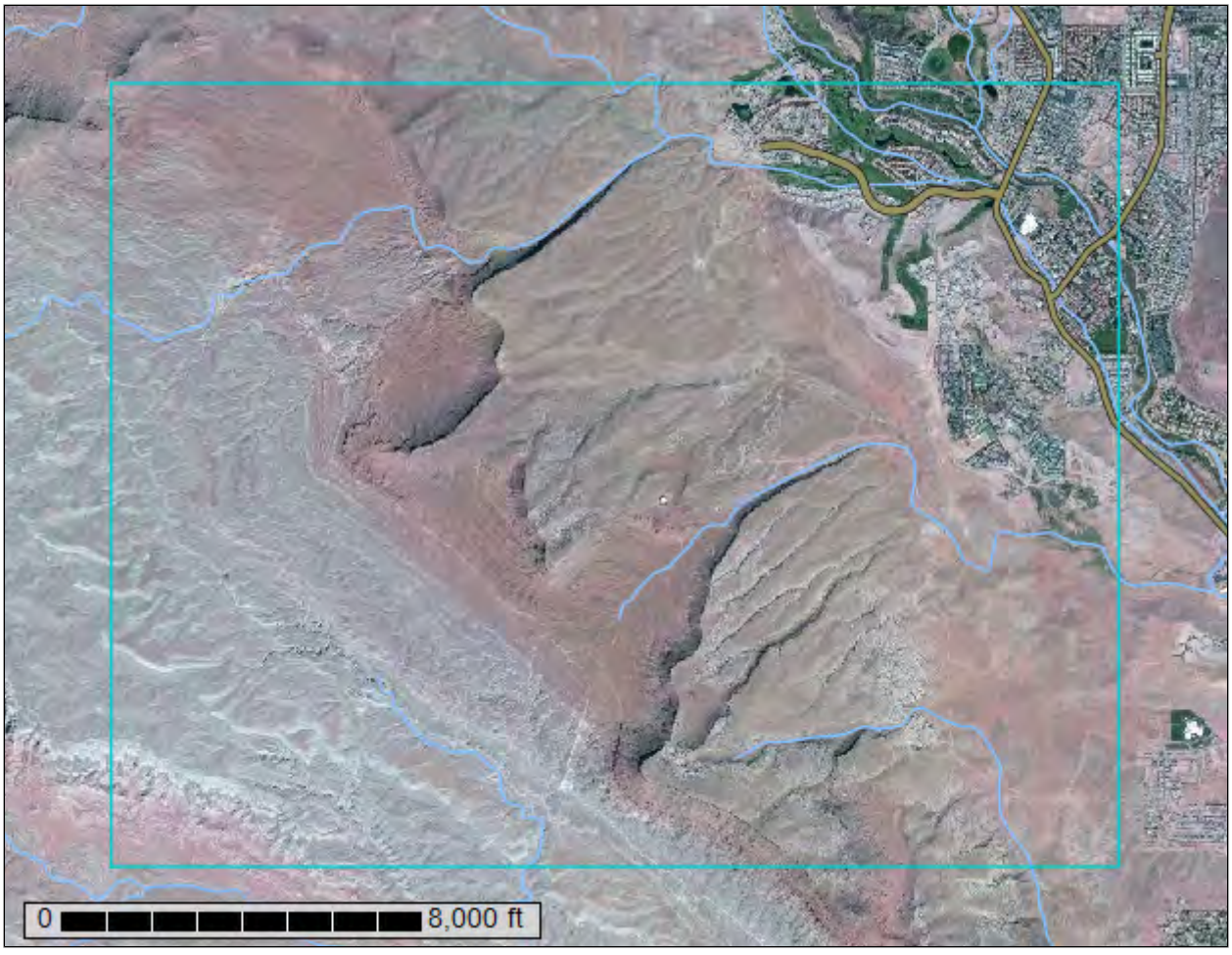
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Washington County Area, Utah

The Lakes



August 19, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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Map Unit Descriptions.....10
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GP—Gravel pits.....17
Ha—Hantz silty clay loam.....17
HG—Hobog-Rock land association.....18
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JaC—Junction fine sandy loam, 2 to 5 percent slopes.....21
LcC—Laverkin fine sandy loam, 2 to 5 percent slopes.....22
LeB—Leeds silty clay loam, 1 to 2 percent slopes.....23
NLE—Nikey sandy loam, 3 to 15 percent slopes.....24
PnC—Pintura loamy fine sand, 1 to 5 percent slopes.....26
PoD—Pintura loamy fine sand, hummocky, 1 to 10 percent slopes.....27
RE—Renbac-Rock land association.....28
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

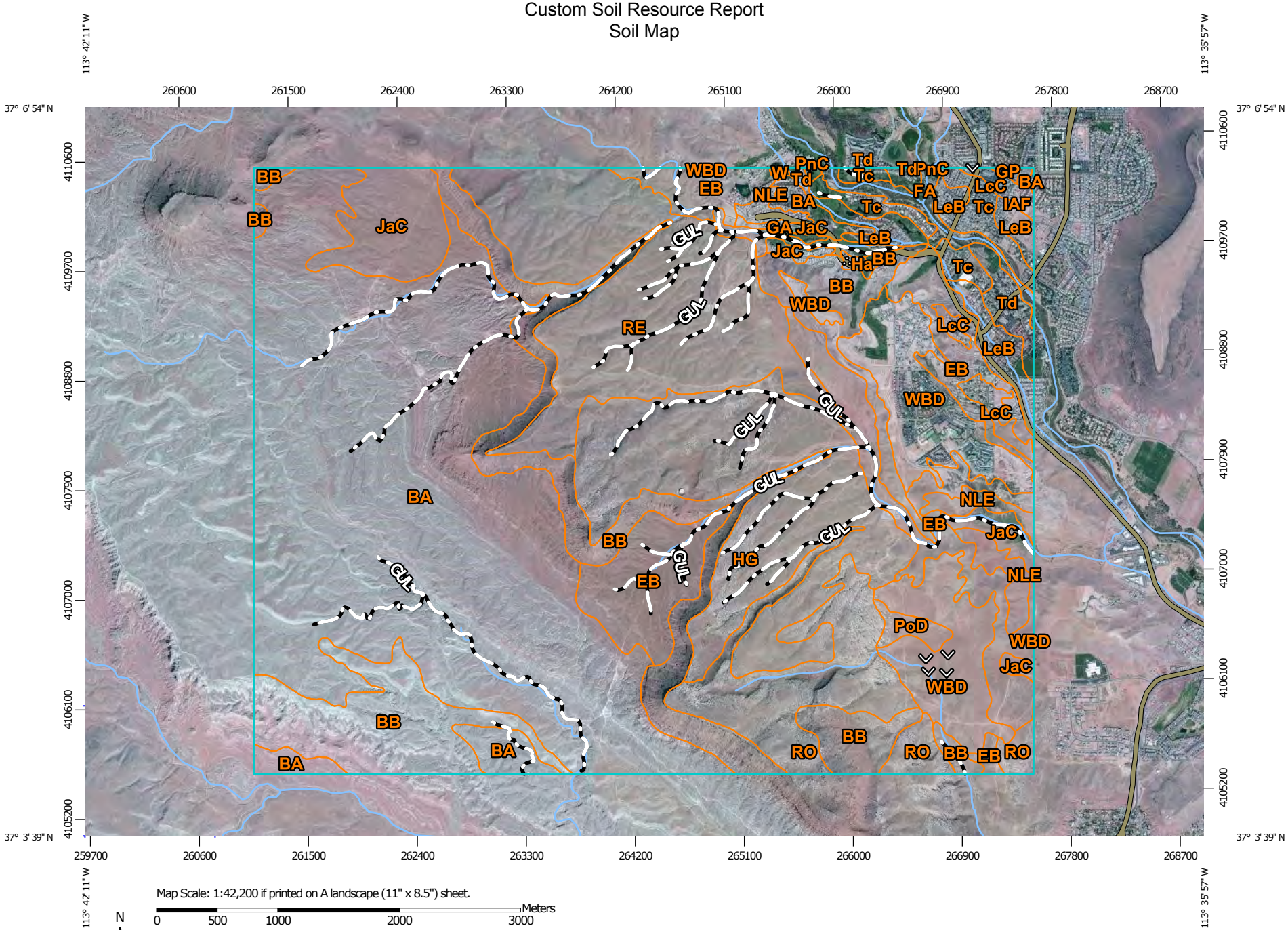
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County Area, Utah
Survey Area Data: Version 9, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 11, 2010—Nov 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Washington County Area, Utah (UT641)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BA	Badland	2,583.6	32.5%
BB	Badland, very steep	1,031.7	13.0%
EB	Eroded land-Shalet complex, warm	727.4	9.1%
FA	Fluvaquents and torrifluvents, sandy	63.4	0.8%
GA	Gullied land	35.1	0.4%
GP	Gravel pits	4.1	0.1%
Ha	Hantz silty clay loam	9.7	0.1%
HG	Hobog-Rock land association	870.7	10.9%
IAF	Isom cobbly sandy loam, 3 to 30 percent slopes	15.6	0.2%
JaC	Junction fine sandy loam, 2 to 5 percent slopes	250.5	3.1%
LcC	Laverkin fine sandy loam, 2 to 5 percent slopes	49.5	0.6%
LeB	Leeds silty clay loam, 1 to 2 percent slopes	142.6	1.8%
NLE	Nikey sandy loam, 3 to 15 percent slopes	100.1	1.3%
PnC	Pintura loamy fine sand, 1 to 5 percent slopes	3.1	0.0%
PoD	Pintura loamy fine sand, hummocky, 1 to 10 percent slopes	30.4	0.4%
RE	Renbac-Rock land association	893.1	11.2%
RO	Rock land	431.7	5.4%
Tc	Tobler fine sandy loam	129.0	1.6%
Td	Tobler silty clay loam	71.5	0.9%
W	Water	2.7	0.0%
WBD	Winkel gravelly fine sandy loam, 1 to 8 percent slopes	507.9	6.4%
Totals for Area of Interest		**7,953.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Washington County Area, Utah

BA—Badland

Map Unit Composition

Badland: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Badland

Setting

Landform: Escarpments, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face, side slope
Down-slope shape: Convex
Across-slope shape: Convex

BB—Badland, very steep

Map Unit Composition

Badland: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Badland

Setting

Landform: Escarpments, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Free face, side slope
Down-slope shape: Convex
Across-slope shape: Convex

EB—Eroded land-Shalet complex, warm

Map Unit Setting

National map unit symbol: j8ds
Elevation: 3,600 to 5,550 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 52 to 56 degrees F
Frost-free period: 165 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Eroded land: 78 percent
Shalet and similar soils: 20 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eroded Land

Setting

Landform: Erosion remnants
Parent material: Residuum weathered from shale

Description of Shalet

Setting

Landform: Swales
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 4 inches: clay loam
H2 - 4 to 12 inches: clay loam
H3 - 12 to 16 inches: weathered bedrock

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: 4 to 15 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Gypsum, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Desert Shallow Loam (Creosotebush) (R030XY134UT)
Hydric soil rating: No

Minor Components

Badland

Percent of map unit: 2 percent

FA—Fluvaquents and torrifluvents, sandy

Map Unit Setting

National map unit symbol: j8dt
Elevation: 2,500 to 3,000 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 55 percent
Torrifluvents and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Swales
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 5 inches: fine sand
H2 - 5 to 60 inches: stratified fine sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: Rare
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Ecological site: Loamy Bottom (Basin Big Sagebrush) (R035XY011UT)

Hydric soil rating: Yes

Description of Torrifluvents

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 5 inches: loamy fine sand
H2 - 5 to 60 inches: stratified loamy fine sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: Loamy Bottom (Basin Big Sagebrush) (R035XY011UT)
Other vegetative classification: Loamy Bottom (Basin Big Sagebrush) (035XY011UT)
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Tobler, fine sandy loam

Percent of map unit: 3 percent

Tobler, silty clay loam

Percent of map unit: 3 percent

GA—Gullied land

Map Unit Composition

Gullied land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

GP—Gravel pits

Map Unit Composition

Gravel pit: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pit

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Ha—Hantz silty clay loam

Map Unit Setting

National map unit symbol: j8dy

Elevation: 2,700 to 3,300 feet

Mean annual precipitation: 8 to 11 inches

Mean annual air temperature: 57 to 65 degrees F

Frost-free period: 190 to 195 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hantz and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hantz

Setting

Landform: Alluvial fans

Down-slope shape: Concave

Across-slope shape: Convex

Parent material: Mixed alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 9 inches: silty clay loam

H2 - 9 to 19 inches: silty clay
H3 - 19 to 47 inches: silty clay
H4 - 47 to 70 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Leeds

Percent of map unit: 5 percent

Tobler

Percent of map unit: 5 percent

St. george, moderately saline

Percent of map unit: 5 percent

HG—Hobog-Rock land association

Map Unit Setting

National map unit symbol: j8dx
Elevation: 2,600 to 3,800 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Hobog and similar soils: 50 percent
Rock land: 40 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hobog

Setting

Landform: Mesas
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Material weathered from sandstone

Typical profile

H1 - 0 to 4 inches: very cobbly loam
H2 - 4 to 13 inches: very flaggy loam
H3 - 13 to 17 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 40 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Very low (about 0.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Desert Shallow Loam (Creosotebush) (R030XY134UT)
Hydric soil rating: No

Description of Rock Land

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Convex

Minor Components

Rock outcrop

Percent of map unit: 5 percent

Renbac

Percent of map unit: 5 percent

IAF—Isom cobbly sandy loam, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: j8f0
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Isom and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Isom

Setting

Landform: Alluvial fans
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Cobbly alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 2 inches: very cobbly sandy loam
H2 - 2 to 10 inches: very cobbly sandy loam
H3 - 10 to 22 inches: very cobbly sandy loam
H4 - 22 to 60 inches: extremely cobbly sandy loam

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Gypsum, maximum in profile: 10 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A

Ecological site: Desert Shallow Loam (Creosotebush) (R030XY134UT)
Hydric soil rating: No

Minor Components

Shallow soils
Percent of map unit: 5 percent

Nickey
Percent of map unit: 5 percent

JaC—Junction fine sandy loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: j8f4
Elevation: 2,700 to 3,400 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Junction and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Junction

Setting
Landform: Alluvial fans, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, convex
Across-slope shape: Convex

Typical profile
H1 - 0 to 2 inches: fine sandy loam
H2 - 2 to 9 inches: fine sandy loam
H3 - 9 to 21 inches: fine sandy loam
H4 - 21 to 32 inches: fine sandy loam
H5 - 32 to 60 inches: fine sandy loam

Properties and qualities
Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum in profile: 20 percent
Gypsum, maximum in profile: 7 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Tobler

Percent of map unit: 5 percent

Harrisburg

Percent of map unit: 5 percent

Junction

Percent of map unit: 5 percent

LcC—Laverkin fine sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: j8fg
Elevation: 2,550 to 3,300 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Laverkin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laverkin

Setting

Landform: Alluvial fans, stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Convex, concave
Parent material: Alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 3 inches: fine sandy loam
H2 - 3 to 16 inches: fine sandy loam
H3 - 16 to 30 inches: sandy clay loam
H4 - 30 to 42 inches: sandy clay loam

H5 - 42 to 60 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Tobler

Percent of map unit: 5 percent

Nikey

Percent of map unit: 5 percent

LeB—Leeds silty clay loam, 1 to 2 percent slopes

Map Unit Setting

National map unit symbol: j8fk
Elevation: 2,550 to 3,300 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 200 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Leeds and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leeds

Setting

Landform: Flood plains

Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 15 inches: silty clay loam
H3 - 15 to 23 inches: sandy loam
H4 - 23 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Hydrologic Soil Group: C
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Hantz

Percent of map unit: 4 percent

St george

Percent of map unit: 4 percent

Leeds

Percent of map unit: 4 percent

Tobler

Percent of map unit: 3 percent

NLE—Nikey sandy loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: j8fw
Elevation: 2,650 to 3,350 feet
Mean annual precipitation: 8 to 11 inches

Mean annual air temperature: 59 to 62 degrees F
Frost-free period: 180 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Nikey and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nikey

Setting

Landform: Alluvial fans
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Gravelly alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 3 inches: sandy loam
H2 - 3 to 26 inches: fine sandy loam
H3 - 26 to 38 inches: very gravelly loam
H4 - 38 to 46 inches: very gravelly loam
H5 - 46 to 60 inches: very gravelly loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Gypsum, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Harrisburg

Percent of map unit: 5 percent

Isom

Percent of map unit: 5 percent

Nikey

Percent of map unit: 5 percent

PnC—Pintura loamy fine sand, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: j8g9
Elevation: 2,600 to 3,600 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pintura and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pintura

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian sands derived from sandstone

Typical profile

H1 - 0 to 3 inches: loamy fine sand
H2 - 3 to 65 inches: fine sand

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Desert Sand (Indian ricegrass) (R030XY120UT)
Hydric soil rating: No

Minor Components

Toquerville
Percent of map unit: 4 percent

Harrisburg
Percent of map unit: 4 percent

Tobler
Percent of map unit: 4 percent

Ivins
Percent of map unit: 3 percent

PoD—Pintura loamy fine sand, hummocky, 1 to 10 percent slopes

Map Unit Setting
National map unit symbol: j8gb
Elevation: 2,600 to 3,600 feet
Mean annual precipitation: 7 to 8 inches
Mean annual air temperature: 57 to 67 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition
Pintura and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pintura

Setting
Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Hummocky eolian sands derived from sandstone

Typical profile
H1 - 0 to 3 inches: loamy fine sand
H2 - 3 to 65 inches: fine sand

Properties and qualities
Slope: 1 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Desert Sand (Indian ricegrass) (R030XY120UT)
Hydric soil rating: No

Minor Components

Dune land

Percent of map unit: 5 percent

Pintura

Percent of map unit: 5 percent

Toquerville

Percent of map unit: 5 percent

RE—Renbac-Rock land association

Map Unit Setting

National map unit symbol: j8gd
Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Renbac and similar soils: 60 percent
Rock land: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Renbac

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Material weathered from sandstone, conglomerate, and shale

Typical profile

H1 - 0 to 2 inches: channery clay loam
H2 - 2 to 5 inches: very channery clay
H3 - 5 to 9 inches: very channery clay

H4 - 9 to 12 inches: very flaggy sandy loam
H5 - 12 to 16 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 8 to 17 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Semidesert Shallow Hardpan (Blackbrush) (R030XY230UT)
Hydric soil rating: No

Minor Components

Hobog

Percent of map unit: 5 percent

RO—Rock land

Map Unit Composition

Rock land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Land

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Minor Components

Shallow soils

Percent of map unit: 20 percent

Tc—Tobler fine sandy loam

Map Unit Setting

National map unit symbol: j8h2
Elevation: 2,500 to 3,500 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 160 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Tobler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tobler

Setting

Landform: Alluvial fans, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, convex
Across-slope shape: Convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 13 inches: fine sandy loam
H3 - 13 to 38 inches: fine sandy loam
H4 - 38 to 60 inches: fine sandy loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Harrisburg
Percent of map unit: 4 percent

Ivins
Percent of map unit: 4 percent

Pintura
Percent of map unit: 4 percent

Junction
Percent of map unit: 3 percent

Td—Tobler silty clay loam

Map Unit Setting
National map unit symbol: j8h3
Elevation: 2,500 to 3,500 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 160 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Tobler and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tobler

Setting
Landform: Flood plains, valleys
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Alluvium derived from sandstone and shale

Typical profile
H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 13 inches: fine sandy loam
H3 - 13 to 38 inches: fine sandy loam
H4 - 38 to 60 inches: fine sandy loam

Properties and qualities
Slope: 1 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Desert Loam (Creosotebush) (R030XY110UT)
Hydric soil rating: No

Minor Components

Tobler

Percent of map unit: 3 percent

Leeds

Percent of map unit: 3 percent

Leeds

Percent of map unit: 2 percent

Leeds

Percent of map unit: 2 percent

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WBD—Winkel gravelly fine sandy loam, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: j8h9
Elevation: 2,800 to 4,000 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Winkel and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Winkel

Setting

Landform: Mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous material weathered from basalt, limestone, and wind-deposited sand.

Typical profile

H1 - 0 to 1 inches: gravelly fine sandy loam
H2 - 1 to 6 inches: gravelly fine sandy loam
H3 - 6 to 12 inches: very gravelly fine sandy loam
H4 - 12 to 16 inches: extremely cobbly fine sandy loam
H5 - 16 to 20 inches: indurated
H6 - 20 to 24 inches: unweathered bedrock

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 11 to 19 inches to petrocalcic; 14 to 24 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Desert Shallow Loam (Creosotebush) (R030XY134UT)
Hydric soil rating: No

Minor Components

Lava flows

Percent of map unit: 5 percent

Harrisburg

Percent of map unit: 5 percent

Bermesa

Percent of map unit: 5 percent

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (The Lakes)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

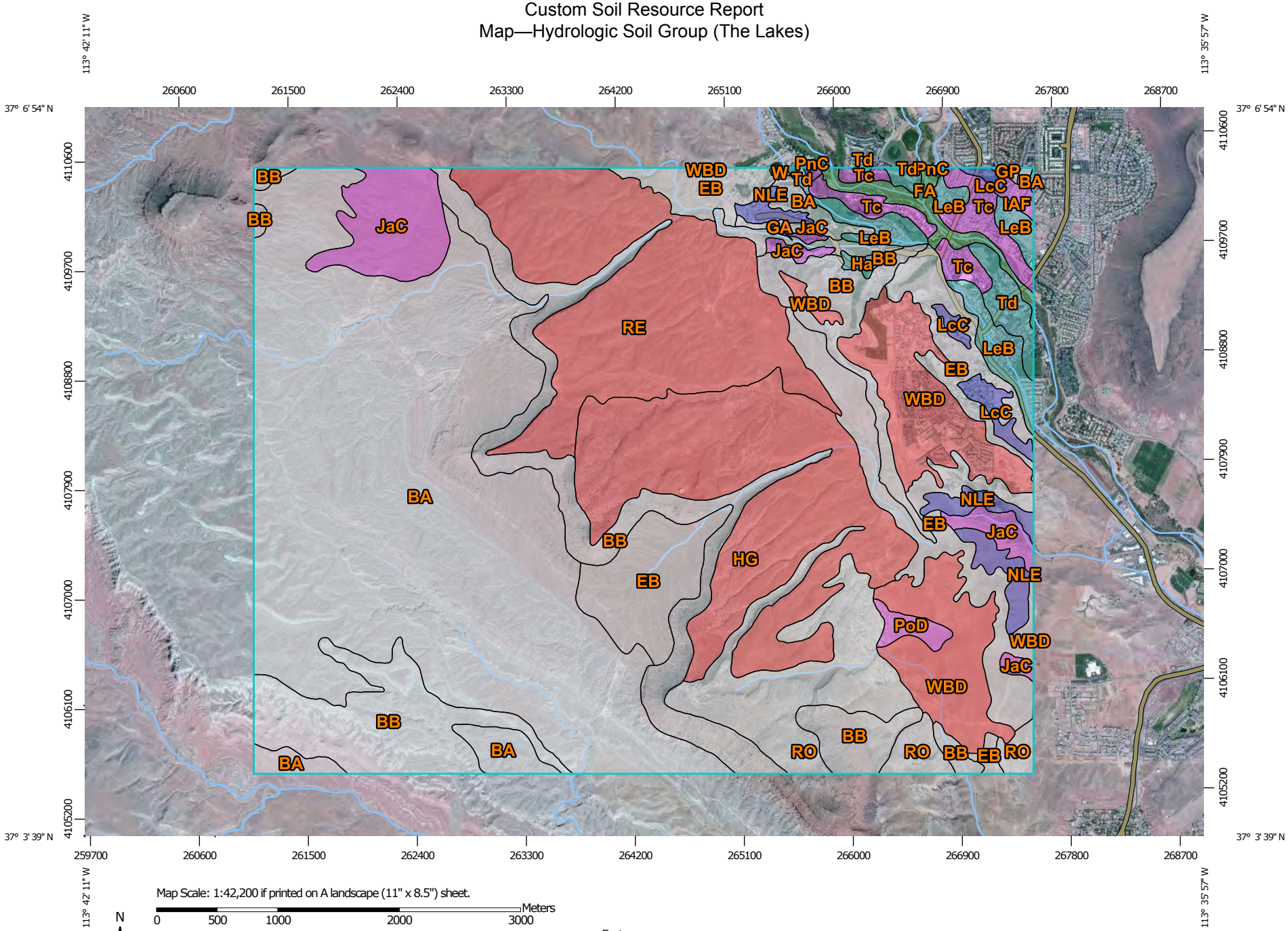
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group (The Lakes)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County Area, Utah
Survey Area Data: Version 9, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 11, 2010—Nov 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (The Lakes)

Hydrologic Soil Group— Summary by Map Unit — Washington County Area, Utah (UT641)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BA	Badland		2,583.6	32.5%
BB	Badland, very steep		1,031.7	13.0%
EB	Eroded land-Shalet complex, warm		727.4	9.1%
FA	Fluvaquents and torrifluvents, sandy	A/D	63.4	0.8%
GA	Gullied land		35.1	0.4%
GP	Gravel pits		4.1	0.1%
Ha	Hantz silty clay loam	C	9.7	0.1%
HG	Hobog-Rock land association	D	870.7	10.9%
IAF	Isom cobbly sandy loam, 3 to 30 percent slopes	A	15.6	0.2%
JaC	Junction fine sandy loam, 2 to 5 percent slopes	A	250.5	3.1%
LcC	Laverkin fine sandy loam, 2 to 5 percent slopes	B	49.5	0.6%
LeB	Leeds silty clay loam, 1 to 2 percent slopes	C	142.6	1.8%
NLE	Nikey sandy loam, 3 to 15 percent slopes	B	100.1	1.3%
PnC	Pintura loamy fine sand, 1 to 5 percent slopes	A	3.1	0.0%
PoD	Pintura loamy fine sand, hummocky, 1 to 10 percent slopes	A	30.4	0.4%
RE	Renbac-Rock land association	D	893.1	11.2%
RO	Rock land		431.7	5.4%
Tc	Tobler fine sandy loam	A	129.0	1.6%
Td	Tobler silty clay loam	C	71.5	0.9%
W	Water		2.7	0.0%
WBD	Winkel gravelly fine sandy loam, 1 to 8 percent slopes	D	507.9	6.4%
Totals for Area of Interest			**7,953.3**	**100.0%**

Rating Options—Hydrologic Soil Group (The Lakes)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: Drainage Study Hydrology Information CHKD: RMA DATE: 30-Aug-16

EXISTING PRE-DEVELOPMENT CONDITION

Hydraulic Element		Area			Hydraulic Properties	
(label)	*(notes)*	*(sq ft)*	*(acre)*	*(sq mi)*	*Lo (ft)*	*S (%)*
X1	Subarea X - Offiste	625,298	14.35	0.02243	1,480	9.00
X2	Subarea X - Onsite to Plantations	908,340	20.85	0.03258	1,205	8.00
Y1	Subarea Y - Offsite	1,925,866	44.21	0.06908	3,500	9.00
Y2	Subarea Y - Onsite to Sentieri	400,265	9.19	0.01436	802	8.00
A1	Subarea A - Offiste	3,962,682	90.97	0.14214	3,779	7.00
A2	Subarea A - Onsite to Sentieri	2,138,492	49.09	0.07671	2,951	7.00
A3	Subarea A - Onsite to Plantations	1,627,354	37.36	0.05837	1,870	4.45
B1	Subarea B - Offsite	476,820	10.95	0.01710	450	7.80
B2	Subarea B - Onsite to Lago Vista	1,670,183	38.34	0.05991	1,495	7.80
B3	Subarea B - Onsite to Plantations	2,149,110	49.34	0.07709	1,943	5.60
B4	Subarea B - Offsite to Plantations	528,071	12.12	0.01894	1,880	2.00
C1	Subarea C - Offsite	465,481	10.69	0.01670	878	11.67
C2	Subarea C - Onsite to Lago Vista	1,748,993	40.15	0.06274	1,190	6.72
C3	Subarea C - Onsite to Alienta	4,733,374	108.66	0.16979	4,503	2.67
C4	Subarea C - Offsite to Plantations	435,932	10.01	0.01564	1,504	2.00
C5	Subarea C - Offsite to Plantations	979,960	22.50	0.03515	2,040	3.00
D1	Sunarea D - Offsite	16,555,867	380.07	0.59386	4,694	7.48
D2	Subarea D - Onsite to Lago Vista	4,179,275	95.94	0.14991	3,297	7.80
E1	Subarea E - Offsite (Gap Wash)	36,853,282	846.03	1.32193	14,986	2.25
E2	Subarea E - Onsite (Gap Wash) to Lago Vista	894,958	20.55	0.03210	1,303	4.27
E3	Subarea E - Onsite (Gap Wash) to Plantations	3,288,611	75.50	0.11796	3,501	4.47
E4	Subarea E - Onsite (Gap Wash) to Plantations	2,126,723	48.82	0.07629	2,949	9.50
F1	Subarea F - Offsite	1,869,681	42.92	0.06707	3,213	8.42
F2	Subarea F - Onsite to Lago Vista	991,181	22.75	0.03555	1,764	8.80
G1	Subarea G - Offsite	8,038,729	184.54	0.28835	7,531	9.56
G2	Subarea G - Onsite to Lago Vista	1,486,884	34.13	0.05333	561	3.56
H1	Subarea H - Offsite to Plantations	590,142	13.55	0.02117	1,924	4.20

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: Drainage Study Hydrology Information CHKD: RMA DATE: 30-Aug-16

PROPOSED POST-DEVELOPMENT CONDITION

Hydraulic Element		Area			Hydraulic Properties	
(label)	*(notes)*	*(sq ft)*	*(acre)*	*(sq mi)*	*Lo (ft)*	*S (%)*
X1	Subarea X - Offiste	625,298	14.35	0.02243	1,480	9.00
X2	Subarea X - Onsite to Plantations	908,340	20.85	0.03258	1,205	8.00
Y1	Subarea Y - Offsite	1,925,866	44.21	0.06908	3,500	9.00
Y2	Subarea Y - Onsite to Sentieri	400,265	9.19	0.01436	802	8.00
A1	Subarea A - Offiste	3,962,682	90.97	0.14214	3,779	7.00
A2	Subarea A - Onsite to Sentieri	2,138,492	49.09	0.07671	2,951	7.00
A3	Subarea A - Onsite to Plantations	1,627,354	37.36	0.05837	1,870	4.45
B1	Subarea B - Offsite	476,820	10.95	0.01710	450	7.80
B2	Subarea B - Onsite to Lago Vista	1,670,183	38.34	0.05991	1,495	7.80
B3	Subarea B - Onsite to Plantations	2,149,110	49.34	0.07709	1,943	5.60
B4	Subarea B - Offsite to Plantations	528,071	12.12	0.01894	1,880	2.00
C1	Subarea C - Offsite	465,481	10.69	0.01670	878	11.67
C2	Subarea C - Onsite to Lago Vista	1,748,993	40.15	0.06274	1,190	6.72
C3	Subarea C - Onsite to Alienta	4,733,374	108.66	0.16979	4,503	2.67
C4	Subarea C - Offsite to Plantations	435,932	10.01	0.01564	1,504	2.00
C5	Subarea C - Offsite to Plantations	979,960	22.50	0.03515	2,040	3.00
D1	Sunarea D - Offsite	16,555,867	380.07	0.59386	4,694	7.48
D2	Subarea D - Onsite to Lago Vista	4,179,275	95.94	0.14991	3,297	7.80
E1	Subarea E - Offsite (Gap Wash)	36,853,282	846.03	1.32193	14,986	2.25
E2	Subarea E - Onsite (Gap Wash) to Lago Vista	894,958	20.55	0.03210	1,303	4.27
E3	Subarea E - Onsite (Gap Wash) to Plantations	3,288,611	75.50	0.11796	3,501	4.47
E4	Subarea E - Onsite (Gap Wash) to Plantations	2,126,723	48.82	0.07629	2,949	9.50
F1	Subarea F - Offsite	1,869,681	42.92	0.06707	3,213	8.42
F2	Subarea F - Onsite to Lago Vista	991,181	22.75	0.03555	1,764	8.80
G1	Subarea G - Offsite	8,038,729	184.54	0.28835	7,531	9.56
G2	Subarea G - Onsite to Lago Vista	1,486,884	34.13	0.05333	561	3.56
H1	Subarea H - Offsite to Plantations	590,142	13.55	0.02117	1,924	4.20

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: Hydraulic Links and Routing CHKD: RMA DATE: 30-Aug-16

JUNCTIONS FOR EXISTING PRE-DEVELOPMENT CONDITION

Hydraulic Element	
J-A	Collecting A1, A2
J-Y	Collecting Y1, Y2
J-AY	Collecting CulvertY, Culvert A, A3
J-B	Collecting B1, B2
J-B3	Collecting J-B, B3, B4
Box Canyon	Collecting J-AY, J-B3, X1, X2
J-C2	Collecting C1, C2
J-C5	Collecting C4, C5
J-C3	Collecting J-C2, J-C5
J-D2	Collecting D1, D2
J-CD	Collecting J-C3, J-D2
J-E2	Collecting E1, E2
J-F2	Collecting F1, F2
J-G2	Collecting G1, G2
J-E3	Collecting J-E2, J-F2, J-G2, E3, H1
Gap Wash	Collecting J-E3, E4

JUNCTIONS FOR PROPOSED POST-DEVELOPMENT CONDITION

Hydraulic Element	
J-A	Collecting A1, A2
J-Y	Collecting Y1, Y2
J-AY	Collecting CulvertY, Culvert A, A3
J-B	Collecting B1, B2
J-B3	Collecting J-B, B3, B4
Box Canyon	Collecting J-AY, J-B3, X1, X2
J-C2	Collecting C1, C2
J-C5	Collecting C4, C5
J-C3	Collecting J-C2, J-C5
J-D2	Collecting D1, D2
J-CD	Collecting J-C3, J-D2
J-E2	Collecting E1, E2
J-F2	Collecting F1, F2
J-G2	Collecting G1, G2
J-E3	Collecting J-E2, J-F2, J-G2, E3, H1
Gap Wash	Collecting J-E3, E4

ROSENBERG ASSOCIATES
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PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: Hydraulic Links and Routing CHKD: RMA DATE: 30-Aug-16

ROUTING CONDUITS

Hydraulic Element		Routed Length (ft)	Average Slope (%)	Manning's Roughness (n)	Culvert Diameter (in)	Bottom Width (ft)	Side Slopes (H:1V)
X to Box	Routing X1 to Box Canyon	855	2.9	0.023	N/A	N/A	6.50
Y1 to Y2	Routing Y1 to J-Y	549	3.1	0.023	N/A	N/A	6.50
Culvert Y	Routing J-Y to J-AY	900	4.5	0.023	N/A	N/A	6.50
A1 to A2	Routing A1 to J-A	2,951	7.0	0.023	N/A	N/A	6.50
Culvert A	Routing J-A to J-AY	100	5.0	0.010	48	N/A	N/A
A to Box	Routing J-AY to Box Canyon	855	2.9	0.023	N/A	N/A	6.50
B1 to B2	Routing B1 to J-B	1,495	7.8	0.023	N/A	N/A	6.50
B to B3	Routing J-B to J-B3	1,943	5.6	0.023	N/A	N/A	6.50
Culvert B	Routing J-B3 to Box Canyon	855	2.9	0.023	N/A	N/A	6.50
C to C2	Routing C1 to J-C2	1,189	6.7	0.023	N/A	N/A	6.50
C2 to C3	Routing J-C2 to J-C3	4,503	2.7	0.023	N/A	N/A	6.50
C4 to C5	Routing C4 to J-C5	2,043	2.0	0.023	N/A	N/A	6.50
C5 to C3	Routing J-C5 to J-C3	1,170	7.0	0.023	N/A	N/A	6.50
C to D	Routing J-C3 to J-CD	3,088	2.0	0.023	N/A	N/A	6.50
D1 to D2	Routing D1 to J-D2	2,390	7.8	0.023	N/A	N/A	6.50
D to E3	Routing J-D2 to J-CD	120	2.0	0.023	N/A	N/A	6.50
C to E3	Routing J-CD to J-E3	577	2.0	0.023	N/A	N/A	6.50
E1 to E2	Routing JE1 to J-E2	1,303	4.3	0.023	N/A	N/A	6.50
E2 to E3	Routing J-E2 to J-E3	3,501	2.0	0.023	N/A	N/A	6.50
F1 to F2	Routing F1 to J-F2	1,764	8.8	0.023	N/A	N/A	6.50
F to F3	Routing J-F2 to J-E3	2,651	2.0	0.023	N/A	N/A	6.50
G1 to G2	Routing G1 to J-G2	561	2.3	0.023	N/A	N/A	6.50
G to E3	Routing J-G2 to J-E3	883	2.0	0.023	N/A	N/A	6.50
E3 to E4	Routing J-E3 to Gap Wash	2,951	2.0	0.023	N/A	N/A	6.50

TYPICAL MANNING'S n VALUES

0.013 - Poly Pipe	0.023 - Dirt
0.017 - CM Pipe	0.026 - Grass
0.015 - Concrete	0.035 - Gravel
0.016 - Asphalt	0.040 - Riprap

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PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: NRCS Curve Number CHKD: RMA DATE: 30-Aug-16

NRCS CURVE NUMBER (CN) CHART

Land Use Description	SCS Curve Number (CN) Values							
	Group A		Group B		Group C		Group D	
	CN	%	CN	%	CN	%	CN	%
Cultivated Land								
Cultivated Land; Without Conservation Treatment	72		81		88		91	
Cultivated Land; With Conservation Treatment	62		71		78		81	
Pasture or Range Land								
Pasture or Range Land; Poor Condition	68		79		86		89	
Pasture or Range Land; Good Condition	39		61		74		80	
Open Spaces (Lawns, Parks, etc.)								
Open Space; Poor Condition; Grass Cover < 50%	68		79		86		89	
Open Space; Fair Condition; Grass Cover 50% to 75%	49		69		79		84	
Open Space; Good Condition; Grass Cover > 75%	39		61		74		80	
Impervious Areas								
Impervious Areas; Paved Parking Lots, Roofs, Driveways	98		98		98		98	
Impervious Areas; Streets and Roads; Paved; Curbs and Storm Sewers	98		98		98		98	
Impervious Areas; Streets and Roads; Paved; Open Ditches (w/ Right-of-Way)	83		89		92		93	
Impervious Areas; Streets and Roads; Gravel (w/ Right-of-Way)	76		85		89		91	
Impervious Areas; Streets and Roads; Dirt (w/ Right-of-Way)	72		82		87		89	
Urban Commercial and Industrial Districts								
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95	
Urban Districts; Industrial; Average 72% Impervious	81		88		91		93	
Residential Districts								
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	
Residential Districts; 1/3 Acre; Average 30% Impervious	57		72		81		86	
Residential Districts; 1/2 Acre; Average 25% Impervious	54		70		80		85	
Residential Districts; 1 Acre; Average 20% Impervious	51		68		79		84	
Residential Districts; 2 Acre; Average 12% Impervious	46		65		77		82	
Western Desert Urban Areas								
Natural Desert Vegetation (Pervious Areas Only)	63		77		85		88	
Artificial Desert Landscaping	96		96		96		96	
Developing Urban Area (No Vegetation)								
Newly Graded Area (Pervious Only)	77		86		91		94	

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CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: NRCS Curve Number CHKD: RMA DATE: 30-Aug-16

NRCS WEIGHTED AVERAGE CN VALUES **EXISTING PRE-DEVELOPMENT CONDITION**

Land Use Description	SCS Curve Number (CN) Values									
	Group A		Group B		Group C		Group D		Totals	
	CN	%	CN	%	CN	%	CN	%	CN	%
X1, X2, Y1, Y2, A1, A2, A3, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2, G1, G2, H1									93	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	50	49	50
Natural Desert Vegetation	63		77		85		88	50	44	50
B3, B4, C3, C4, C5 E3									88	100
Natural Desert Vegetation	63		77		85		88	100	88	100
E4									79	100
Natural Desert Vegetation	63	20	77	35	85		88	45	79.2	100

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: NRCS Curve Number CHKD: RMA DATE: 30-Aug-16

NRCS WEIGHTED AVERAGE CN VALUES **PROPOSED POST-DEVELOPMENT CONDITION**

Land Use Description	SCS Curve Number (CN) Values									
	Group A		Group B		Group C		Group D		Totals	
	CN	%	CN	%	CN	%	CN	%	CN	%
X1, Y1, A1,B1, C1, D1, E1 F1, G1, H1									93	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	50	49	50
Natural Desert Vegetation	63		77		85		88	50	44	50
X2, Y2									89	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	13	12	13
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	75	65	75
Natural Desert Vegetation	63		77		85		88	12.5	11	12.5
A2									90	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	10	10	10
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	35	32	35
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	45	39	45
Natural Desert Vegetation	63		77		85		88	10	8.8	10
A3									91	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	13	12	13
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	40	35	40
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95	35	33.3	35
Natural Desert Vegetation	63		77		85		88	12.5	11	12.5
B2									92	100
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	100	92	100
B3									88	100
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95	15	14.3	15
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	55	48	55
Open Space; Good Condition; Grass Cover > 75%	39		61		74		80	10	8	10
Natural Desert Vegetation	63		77		85		88	20	17.6	20
B4, C4. C5									87	100
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	100	87	100
C2									94	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	10	10	10
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95	45	42.8	45
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	45	41	45
C3									91	100
Natural Desert Vegetation (NaC Naplene Silt Loam)	63		77		85		88	32	28	32
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	68	63	68

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PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: NRCS Curve Number CHKD: RMA DATE: 30-Aug-16

Land Use Description	SCS Curve Number (CN) Values									
	Group A		Group B		Group C		Group D		Totals	
	CN	%	CN	%	CN	%	CN	%	CN	%
D2									91	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	30	29	30
Urban Districts; Commercial and Business; Average 85% Impervious	89		92		94		95	10	9.5	10
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	60	52	60
E2									92	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	45	44	45
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	55	48	55
E3									87	100
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77		85		90		92	32	29	32
Open Space; Good Condition; Grass Cover > 75%	39		61		74		80	31	25	31
Natural Desert Vegetation (NaC Naplene Silt Loam)	63		77		85		88	37	32.6	37
E4									84	100
Residential Districts; 1/8 Acre (Town Houses); Average 65% Impervious	77	5	85	35	90		92	45	75	85
Natural Desert Vegetation (NaC Naplene Silt Loam)	63	15	77		85		88		9.45	15
F2									90	100
Natural Desert Vegetation (RO Rock Outcropping, mostly impervious)	98		98		98		98	29	28	29
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	71	62	71
G2									87	100
Residential Districts; 1/4 Acre; Average 38% Impervious	61		75		83		87	100	87	100

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PROJECT NO. 1286-14-014

PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: SCS Lag Time CHKD: RMA DATE: 30-Aug-16

TIME OF CONCENTRATION

$$t_c = \frac{1.67\, L_O^{\,0.8} \left(\frac{1000}{CN} - 9 \right)^{0.7}}{1900 \sqrt{S_{percent}}}$$

Where: CN = SCS runoff curve number
S = Average slope in percent
Lo = Length in ft

SCS LAG TIME

13.46 SCS Lag = 0.6*t_c

EXISTING PRE-DEVELOPMENT CONDITION

Hydrologic Element	SCS CN	Longest Length Lo (ft)	Average Slope S (%)	t_c (hr)	Lag Time (hr)	Lag Time (min)
X1	93	1,480	9.00	0.149	0.089	5.37
X2	93	1,205	8.00	0.134	0.081	4.83
Y1	93	3,500	9.00	0.297	0.178	10.69
Y2	93	802	8.00	0.097	0.058	3.49
A1	93	3,779	7.00	0.358	0.215	12.89
A2	93	2,951	7.00	0.294	0.176	10.58
A3	93	1,870	4.45	0.256	0.153	9.21
B1	93	450	7.80	0.062	0.037	2.23
B2	93	1,495	7.80	0.162	0.097	5.81
B3	88	1,943	5.60	0.290	0.174	10.43
B4	88	1,880	2.00	0.472	0.283	17.01
C1	93	878	11.67	0.086	0.052	3.11
C2	93	1,190	6.72	0.145	0.087	5.22
C3	88	4,503	2.67	0.822	0.493	29.60
C4	88	1,504	2.00	0.395	0.237	14.23
C5	88	2,040	3.00	0.412	0.247	14.82
D1	93	4,694	7.48	0.412	0.247	14.83
D2	93	3,297	7.80	0.304	0.182	10.95
E1	93	14,986	2.25	1.901	1.141	68.44
E2	93	1,303	4.27	0.196	0.117	7.04
E3	88	3,501	4.47	0.520	0.312	18.71
E4	79	2,949	9.50	0.420	0.252	15.12
F1	93	3,213	8.42	0.287	0.172	10.32
F2	93	1,764	8.80	0.174	0.104	6.25
G1	93	7,531	9.56	0.532	0.319	19.15
G2	93	561	3.56	0.109	0.065	3.93
H1	93	1,924	4.20	0.269	0.162	9.70

ROSENBERG ASSOCIATES
CIVIL ENGINEERS • LAND SURVEYORS

PROJECT NO. 1286-14-014

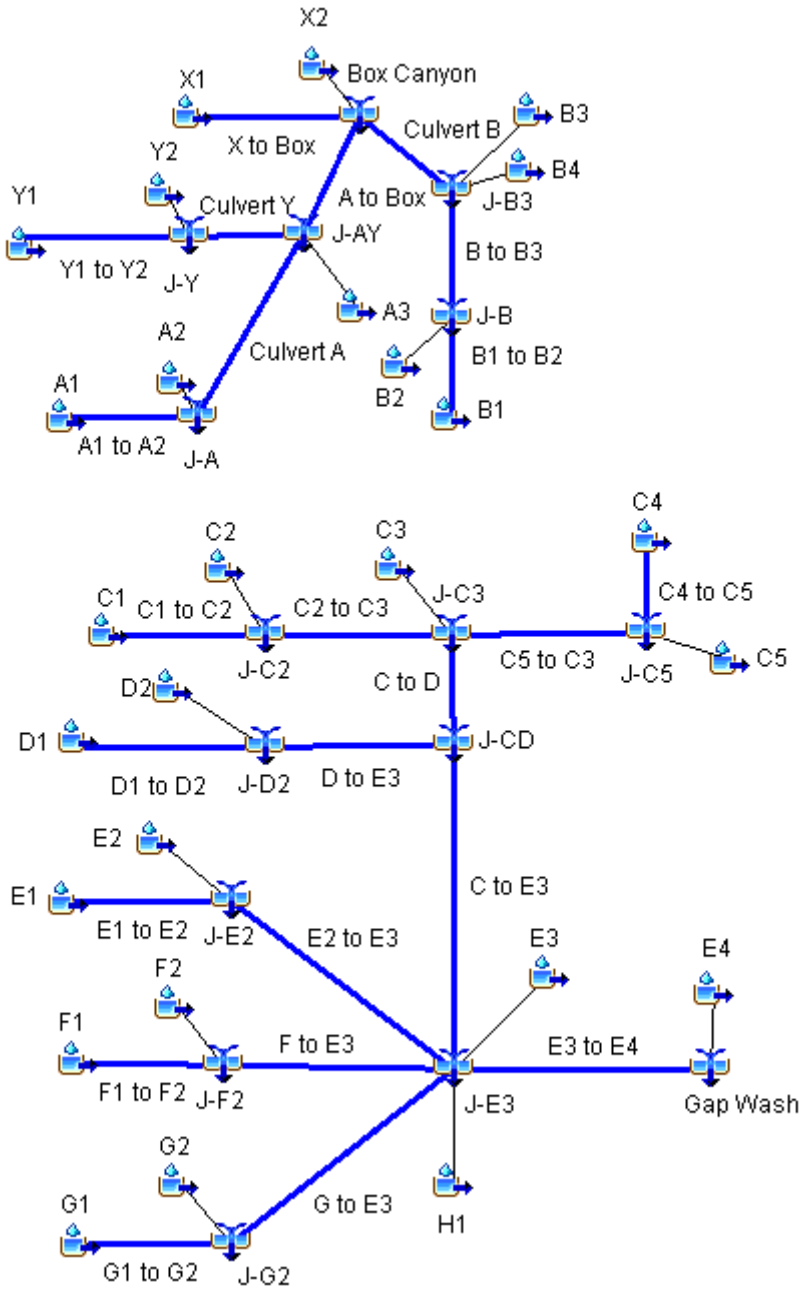
PROJECT: The Lakes - Master Plan BY: JLW DATE: 30-Aug-16

SUBJECT: SCS Lag Time CHKD: RMA DATE: 30-Aug-16

PROPOSED POST-DEVELOPMENT CONDITION

Hydrologic Element	SCS CN	Longest Length Lo (ft)	Average Slope S (%)	t_c (hr)	Lag Time (hr)	Lag Time (min)
X1	93	1,480	9.00	0.149	0.089	5.37
X2	89	1,205	8.00	0.162	0.097	5.84
Y1	93	3,500	9.00	0.297	0.178	10.69
Y2	89	802	8.00	0.117	0.070	4.22
A1	93	3,779	7.00	0.358	0.215	12.89
A2	90	2,951	7.00	0.335	0.201	12.07
A3	91	1,870	4.45	0.276	0.166	9.93
B1	93	450	7.80	0.062	0.037	2.23
B2	92	1,495	7.80	0.169	0.101	6.08
B3	88	1,943	5.60	0.293	0.176	10.55
B4	87	1,880	2.00	0.490	0.294	17.66
C1	93	878	11.67	0.086	0.052	3.11
C2	94	1,190	6.72	0.139	0.083	4.99
C3	91	4,503	2.67	0.737	0.442	26.55
C4	87	1,504	2.00	0.410	0.246	14.77
C5	87	2,040	3.00	0.428	0.257	15.39
D1	93	4,694	7.48	0.412	0.247	14.83
D2	91	3,297	7.80	0.331	0.198	11.91
E1	93	14,986	2.25	1.901	1.141	68.44
E2	92	1,303	4.27	0.205	0.123	7.38
E3	87	3,501	4.47	0.544	0.326	19.57
E4	84	2,949	9.50	0.353	0.212	12.72
F1	93	3,213	8.42	0.287	0.172	10.32
F2	90	1,764	8.80	0.196	0.118	7.06
G1	93	7,531	9.56	0.532	0.319	19.15
G2	87	561	3.56	0.140	0.084	5.03
H1	93	1,924	4.20	0.269	0.162	9.70

HEC-HMS Model



Project: The Lakes Master Simulation Run: N Pre 10 3hr

Start of Run: 01Jan2000, 12:00 Basin Model: Pre
End of Run: 01Jan2000, 20:00 Meteorologic Model: 10-3
Compute Time: 30Aug2016, 13:54:22 Control Specifications: 10-3

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	148.6	01Jan2000, 13:00	0.45
A1	0.14214	59.6	01Jan2000, 12:55	0.45
A1 to A2	0.14214	59.4	01Jan2000, 13:00	0.45
A2	0.07671	35.5	01Jan2000, 12:55	0.45
A3	0.05837	27.7	01Jan2000, 12:55	0.45
Box Canyon	0.58871	223.2	01Jan2000, 12:55	0.41
B to B3	0.07701	40.7	01Jan2000, 12:50	0.45
B1	0.01710	10.5	01Jan2000, 12:45	0.45
B1 to B2	0.01710	9.9	01Jan2000, 12:50	0.45
B2	0.05991	32.5	01Jan2000, 12:50	0.45
B3	0.07709	18.1	01Jan2000, 12:55	0.25
B4	0.01894	0.0	01Jan2000, 12:00	0.00
Culvert A	0.21885	91.0	01Jan2000, 13:00	0.45
Culvert B	0.17304	56.5	01Jan2000, 12:55	0.31
Culvert Y	0.08344	35.4	01Jan2000, 12:55	0.45
C to D	0.30002	0.0	01Jan2000, 12:00	0.00
C to E3	1.04382	0.0	01Jan2000, 12:00	0.00
C1	0.01670	0.0	01Jan2000, 12:00	0.00
C1 to C2	0.01670	0.0	01Jan2000, 12:00	0.00
C2	0.06274	0.0	01Jan2000, 12:00	0.00
C2 to C3	0.07944	0.0	01Jan2000, 12:00	0.00
C3	0.16979	0.0	01Jan2000, 12:00	0.00
C4	0.01564	0.0	01Jan2000, 12:00	0.00
C4 to C5	0.01564	0.0	01Jan2000, 12:00	0.00
C5	0.03515	0.0	01Jan2000, 12:00	0.00
C5 to C3	0.05079	0.0	01Jan2000, 12:00	0.00
D1	0.59389	0.0	01Jan2000, 12:00	0.00

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1 to D2	0.59389	0.0	01Jan2000, 12:00	0.00
D2	0.14991	0.0	01Jan2000, 12:00	0.00
D2 to C3	0.74380	0.0	01Jan2000, 12:00	0.00
E1	1.32193	0.0	01Jan2000, 12:00	0.00
E1 to E2	1.32193	0.0	01Jan2000, 12:00	0.00
E2	0.03210	0.0	01Jan2000, 12:00	0.00
E2 to E3	1.35403	0.0	01Jan2000, 12:00	0.00
E3	0.11796	0.0	01Jan2000, 12:00	0.00
E3 to E4	3.02244	0.0	01Jan2000, 12:00	0.00
E4	0.07629	0.0	01Jan2000, 12:00	0.00
F to E3	0.14378	0.0	01Jan2000, 12:00	0.00
F1	0.06707	0.0	01Jan2000, 12:00	0.00
F1 to F2	0.06707	0.0	01Jan2000, 12:00	0.00
F2	0.07671	0.0	01Jan2000, 12:00	0.00
Gap Wash	3.02244	0.0	01Jan2000, 12:00	0.00
G to E3	0.34168	0.0	01Jan2000, 12:00	0.00
G1	0.28835	0.0	01Jan2000, 12:00	0.00
G1 to G2	0.28835	0.0	01Jan2000, 12:00	0.00
G2	0.05333	0.0	01Jan2000, 12:00	0.00
H1	0.02117	0.0	01Jan2000, 12:00	0.00
J-A	0.21885	91.0	01Jan2000, 13:00	0.45
J-AY	0.36066	149.0	01Jan2000, 12:55	0.45
J-B	0.07701	42.4	01Jan2000, 12:50	0.45
J-B3	0.17304	57.2	01Jan2000, 12:55	0.31
J-CD	1.04382	0.0	01Jan2000, 12:00	0.00
J-C2	0.07944	0.0	01Jan2000, 12:00	0.00
J-C3	0.30002	0.0	01Jan2000, 12:00	0.00
J-C5	0.05079	0.0	01Jan2000, 12:00	0.00
J-D2	0.74380	0.0	01Jan2000, 12:00	0.00
J-E2	1.35403	0.0	01Jan2000, 12:00	0.00
J-E4	3.09873	0.0	01Jan2000, 12:00	0.00

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	0.0	01Jan2000, 12:00	0.00
J-G2	0.34168	0.0	01Jan2000, 12:00	0.00
J-Y	0.08344	36.3	01Jan2000, 12:55	0.45
X to Box	0.02243	12.0	01Jan2000, 12:50	0.45
X1	0.02243	12.3	01Jan2000, 12:50	0.45
X2	0.03258	18.0	01Jan2000, 12:50	0.45
Y1	0.06908	31.9	01Jan2000, 12:55	0.45
Y1 to Y2	0.06908	30.9	01Jan2000, 12:55	0.45
Y2	0.01436	8.4	01Jan2000, 12:45	0.45

Project: The Lakes Master Simulation Run: N Pre 10 24hr

Start of Run: 01Jan2000, 12:00 Basin Model: Pre
End of Run: 03Jan2000, 00:30 Meteorologic Model: 10-24hr
Compute Time: 30Aug2016, 13:54:14 Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	141.2	02Jan2000, 00:00	1.03
A1	0.14214	61.6	02Jan2000, 00:00	1.03
A1 to A2	0.14214	54.7	02Jan2000, 00:00	1.03
A2	0.07671	33.2	02Jan2000, 00:00	1.03
A3	0.05837	25.3	02Jan2000, 00:00	1.03
Box Canyon	0.58871	218.4	02Jan2000, 00:00	0.98
B to B3	0.07701	29.7	02Jan2000, 00:00	1.03
B1	0.01710	7.4	02Jan2000, 00:00	1.03
B1 to B2	0.01710	6.7	02Jan2000, 00:00	1.03
B2	0.05991	26.0	02Jan2000, 00:00	1.03
B3	0.07709	22.0	02Jan2000, 00:00	0.71
B4	0.01894	5.1	02Jan2000, 00:00	0.71
Culvert A	0.21885	87.8	02Jan2000, 00:00	1.03
Culvert B	0.17304	54.1	02Jan2000, 00:00	0.86
Culvert Y	0.08344	33.3	02Jan2000, 00:00	1.03
C to D	0.30002	65.9	02Jan2000, 00:30	0.80
C to E3	1.04382	350.4	02Jan2000, 00:00	0.97
C1	0.01670	7.2	02Jan2000, 00:00	1.03
C1 to C2	0.01670	6.7	02Jan2000, 00:00	1.03
C2	0.06274	27.2	02Jan2000, 00:00	1.03
C2 to C3	0.07944	23.6	02Jan2000, 00:00	1.03
C3	0.16979	34.1	02Jan2000, 00:30	0.71
C4	0.01564	4.5	02Jan2000, 00:00	0.71
C4 to C5	0.01564	3.3	02Jan2000, 00:00	0.72
C5	0.03515	10.0	02Jan2000, 00:00	0.71
C5 to C3	0.05079	12.4	02Jan2000, 00:00	0.72
D1	0.59389	257.3	02Jan2000, 00:00	1.03

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1 to D2	0.59389	241.9	02Jan2000, 00:00	1.03
D2	0.14991	65.0	02Jan2000, 00:00	1.03
D2 to C3	0.74380	305.4	02Jan2000, 00:00	1.03
E1	1.32193	266.6	02Jan2000, 01:00	1.03
E1 to E2	1.32193	264.1	02Jan2000, 01:00	1.03
E2	0.03210	13.9	02Jan2000, 00:00	1.03
E2 to E3	1.35403	258.5	02Jan2000, 01:00	1.03
E3	0.11796	29.7	02Jan2000, 00:00	0.71
E3 to E4	3.02244	596.6	02Jan2000, 00:30	1.00
E4	0.07629	7.5	02Jan2000, 00:00	0.35
F to E3	0.14378	50.3	02Jan2000, 00:00	1.03
F1	0.06707	29.1	02Jan2000, 00:00	1.03
F1 to F2	0.06707	26.9	02Jan2000, 00:00	1.03
F2	0.07671	33.2	02Jan2000, 00:00	1.03
Gap Wash	3.02244	644.2	02Jan2000, 00:00	0.99
G to E3	0.34168	124.3	02Jan2000, 00:00	1.03
G1	0.28835	109.3	02Jan2000, 00:00	1.03
G1 to G2	0.28835	106.8	02Jan2000, 00:00	1.03
G2	0.05333	23.1	02Jan2000, 00:00	1.03
H1	0.02117	9.2	02Jan2000, 00:00	1.03
J-A	0.21885	88.0	02Jan2000, 00:00	1.03
J-AY	0.36066	146.4	02Jan2000, 00:00	1.03
J-B	0.07701	32.7	02Jan2000, 00:00	1.03
J-B3	0.17304	56.7	02Jan2000, 00:00	0.86
J-CD	1.04382	358.2	02Jan2000, 00:00	0.96
J-C2	0.07944	33.9	02Jan2000, 00:00	1.03
J-C3	0.30002	66.6	02Jan2000, 00:30	0.80
J-C5	0.05079	13.3	02Jan2000, 00:00	0.72
J-D2	0.74380	306.9	02Jan2000, 00:00	1.03
J-E2	1.35403	267.1	02Jan2000, 01:00	1.03
J-E4	3.09873	602.2	02Jan2000, 00:30	0.98

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	60.2	02Jan2000, 00:00	1.03
J-G2	0.34168	129.9	02Jan2000, 00:00	1.03
J-Y	0.08344	34.9	02Jan2000, 00:00	1.03
X to Box	0.02243	9.0	02Jan2000, 00:00	1.03
X1	0.02243	9.7	02Jan2000, 00:00	1.03
X2	0.03258	14.1	02Jan2000, 00:00	1.03
Y1	0.06908	29.9	02Jan2000, 00:00	1.03
Y1 to Y2	0.06908	28.7	02Jan2000, 00:00	1.03
Y2	0.01436	6.2	02Jan2000, 00:00	1.03

Project: The Lakes Master Simulation Run: N Pre 100 3hr

Start of Run: 01Jan2000, 12:00 Basin Model: Pre
End of Run: 01Jan2000, 18:30 Meteorologic Model: 100-3
Compute Time: 30Aug2016, 13:54:38 Control Specifications: 100-3

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	344.2	01Jan2000, 12:55	0.99
A1	0.14214	139.2	01Jan2000, 12:55	0.99
A1 to A2	0.14214	135.5	01Jan2000, 13:00	0.99
A2	0.07671	80.3	01Jan2000, 12:55	0.99
A3	0.05837	64.4	01Jan2000, 12:50	0.99
Box Canyon	0.58871	541.9	01Jan2000, 12:55	0.94
B to B3	0.07701	94.8	01Jan2000, 12:50	0.99
B1	0.01710	23.5	01Jan2000, 12:40	0.99
B1 to B2	0.01710	23.4	01Jan2000, 12:45	0.99
B2	0.05991	73.1	01Jan2000, 12:45	0.99
B3	0.07709	53.9	01Jan2000, 12:55	0.68
B4	0.01894	10.6	01Jan2000, 13:05	0.68
Culvert A	0.21885	208.0	01Jan2000, 12:55	0.99
Culvert B	0.17304	145.8	01Jan2000, 12:55	0.82
Culvert Y	0.08344	82.4	01Jan2000, 12:55	0.99
C to D	0.30002	152.5	01Jan2000, 13:05	0.76
C to E3	1.04382	815.0	01Jan2000, 13:00	0.93
C1	0.01670	22.7	01Jan2000, 12:45	0.99
C1 to C2	0.01670	22.1	01Jan2000, 12:45	0.99
C2	0.06274	79.6	01Jan2000, 12:45	0.99
C2 to C3	0.07944	98.2	01Jan2000, 12:55	0.98
C3	0.16979	71.3	01Jan2000, 13:20	0.68
C4	0.01564	9.6	01Jan2000, 13:00	0.68
C4 to C5	0.01564	9.4	01Jan2000, 13:05	0.69
C5	0.03515	21.3	01Jan2000, 13:00	0.68
C5 to C3	0.05079	29.4	01Jan2000, 13:05	0.69
D1	0.59389	540.9	01Jan2000, 13:00	0.99

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1 to D2	0.59389	537.5	01Jan2000, 13:00	0.99
D2	0.14991	156.1	01Jan2000, 12:55	0.99
D2 to C3	0.74380	671.7	01Jan2000, 13:00	0.99
E1	1.32193	456.4	01Jan2000, 14:00	0.99
E1 to E2	1.32193	456.3	01Jan2000, 14:00	0.99
E2	0.03210	38.3	01Jan2000, 12:50	0.99
E2 to E3	1.35403	456.8	01Jan2000, 14:05	0.99
E3	0.11796	63.8	01Jan2000, 13:05	0.68
E3 to E4	3.02244	1331.1	01Jan2000, 13:05	0.95
E4	0.07629	19.5	01Jan2000, 13:05	0.33
F to E3	0.14378	152.6	01Jan2000, 12:55	0.99
F1	0.06707	70.4	01Jan2000, 12:55	0.99
F1 to F2	0.06707	69.9	01Jan2000, 12:55	0.99
F2	0.07671	92.3	01Jan2000, 12:50	0.99
Gap Wash	3.02244	1353.9	01Jan2000, 13:00	0.96
G to E3	0.34168	255.8	01Jan2000, 13:05	0.99
G1	0.28835	232.1	01Jan2000, 13:05	0.99
G1 to G2	0.28835	231.6	01Jan2000, 13:05	0.99
G2	0.05333	71.5	01Jan2000, 12:45	0.99
H1	0.02117	22.7	01Jan2000, 12:50	0.99
J-A	0.21885	208.4	01Jan2000, 12:55	0.99
J-AY	0.36066	351.9	01Jan2000, 12:55	0.99
J-B	0.07701	96.5	01Jan2000, 12:45	0.99
J-B3	0.17304	148.6	01Jan2000, 12:50	0.82
J-CD	1.04382	821.0	01Jan2000, 13:00	0.92
J-C2	0.07944	101.7	01Jan2000, 12:45	0.99
J-C3	0.30002	153.6	01Jan2000, 13:00	0.76
J-C5	0.05079	29.6	01Jan2000, 13:00	0.68
J-D2	0.74380	672.3	01Jan2000, 13:00	0.99
J-E2	1.35403	457.9	01Jan2000, 14:00	0.99
J-E4	3.09873	1350.6	01Jan2000, 13:05	0.94

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	154.2	01Jan2000, 12:50	0.99
J-G2	0.34168	256.5	01Jan2000, 13:05	0.99
J-Y	0.08344	82.6	01Jan2000, 12:55	0.99
X to Box	0.02243	27.5	01Jan2000, 12:50	0.99
X1	0.02243	28.2	01Jan2000, 12:45	0.99
X2	0.03258	42.3	01Jan2000, 12:45	0.99
Y1	0.06908	72.2	01Jan2000, 12:55	0.99
Y1 to Y2	0.06908	71.6	01Jan2000, 12:55	0.99
Y2	0.01436	19.4	01Jan2000, 12:45	0.99

Project: The Lakes Master Simulation Run: N Pre 100 24hr

Start of Run: 01Jan2000, 12:00 Basin Model: Pre
End of Run: 03Jan2000, 00:30 Meteorologic Model: 100-24hr
Compute Time: 30Aug2016, 13:54:31 Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	251.4	02Jan2000, 00:00	1.80
A1	0.14214	107.9	02Jan2000, 00:00	1.79
A1 to A2	0.14214	97.7	02Jan2000, 00:00	1.80
A2	0.07671	58.2	02Jan2000, 00:00	1.79
A3	0.05837	44.3	02Jan2000, 00:00	1.79
Box Canyon	0.58871	396.1	02Jan2000, 00:00	1.73
B to B3	0.07701	52.9	02Jan2000, 00:00	1.80
B1	0.01710	13.0	02Jan2000, 00:00	1.79
B1 to B2	0.01710	12.0	02Jan2000, 00:00	1.80
B2	0.05991	45.5	02Jan2000, 00:00	1.79
B3	0.07709	44.8	02Jan2000, 00:00	1.39
B4	0.01894	10.3	02Jan2000, 00:00	1.39
Culvert A	0.21885	155.7	02Jan2000, 00:00	1.80
Culvert B	0.17304	104.0	02Jan2000, 00:00	1.58
Culvert Y	0.08344	59.2	02Jan2000, 00:00	1.80
C to D	0.30002	124.8	02Jan2000, 00:30	1.51
C to E3	1.04382	637.6	02Jan2000, 00:00	1.71
C1	0.01670	12.7	02Jan2000, 00:00	1.79
C1 to C2	0.01670	11.8	02Jan2000, 00:00	1.80
C2	0.06274	47.6	02Jan2000, 00:00	1.79
C2 to C3	0.07944	44.4	02Jan2000, 00:00	1.80
C3	0.16979	68.0	02Jan2000, 00:30	1.39
C4	0.01564	9.1	02Jan2000, 00:00	1.39
C4 to C5	0.01564	7.2	02Jan2000, 00:00	1.40
C5	0.03515	20.4	02Jan2000, 00:00	1.39
C5 to C3	0.05079	26.2	02Jan2000, 00:00	1.40
D1	0.59389	451.0	02Jan2000, 00:00	1.79

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1 to D2	0.59389	428.0	02Jan2000, 00:00	1.80
D2	0.14991	113.8	02Jan2000, 00:00	1.79
D2 to C3	0.74380	539.6	02Jan2000, 00:00	1.79
E1	1.32193	466.2	02Jan2000, 01:00	1.79
E1 to E2	1.32193	462.8	02Jan2000, 01:00	1.79
E2	0.03210	24.4	02Jan2000, 00:00	1.79
E2 to E3	1.35403	455.8	02Jan2000, 01:00	1.79
E3	0.11796	60.9	02Jan2000, 00:00	1.39
E3 to E4	3.02244	1088.8	02Jan2000, 00:00	1.75
E4	0.07629	23.8	02Jan2000, 00:00	0.84
F to E3	0.14378	91.3	02Jan2000, 00:00	1.80
F1	0.06707	50.9	02Jan2000, 00:00	1.79
F1 to F2	0.06707	47.8	02Jan2000, 00:00	1.80
F2	0.07671	58.2	02Jan2000, 00:00	1.79
Gap Wash	3.02244	1182.9	02Jan2000, 00:00	1.75
G to E3	0.34168	220.4	02Jan2000, 00:00	1.79
G1	0.28835	192.0	02Jan2000, 00:00	1.79
G1 to G2	0.28835	188.3	02Jan2000, 00:00	1.79
G2	0.05333	40.5	02Jan2000, 00:00	1.79
H1	0.02117	16.1	02Jan2000, 00:00	1.79
J-A	0.21885	155.9	02Jan2000, 00:00	1.80
J-AY	0.36066	259.2	02Jan2000, 00:00	1.80
J-B	0.07701	57.5	02Jan2000, 00:00	1.79
J-B3	0.17304	108.1	02Jan2000, 00:00	1.57
J-CD	1.04382	649.6	02Jan2000, 00:00	1.71
J-C2	0.07944	59.5	02Jan2000, 00:00	1.79
J-C3	0.30002	125.6	02Jan2000, 00:00	1.50
J-C5	0.05079	27.7	02Jan2000, 00:00	1.39
J-D2	0.74380	541.8	02Jan2000, 00:00	1.79
J-E2	1.35403	467.8	02Jan2000, 01:00	1.79
J-E4	3.09873	1112.6	02Jan2000, 00:00	1.73

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	106.0	02Jan2000, 00:00	1.79
J-G2	0.34168	228.8	02Jan2000, 00:00	1.79
J-Y	0.08344	61.5	02Jan2000, 00:00	1.79
X to Box	0.02243	16.0	02Jan2000, 00:00	1.79
X1	0.02243	17.0	02Jan2000, 00:00	1.79
X2	0.03258	24.7	02Jan2000, 00:00	1.79
Y1	0.06908	52.5	02Jan2000, 00:00	1.79
Y1 to Y2	0.06908	50.6	02Jan2000, 00:00	1.79
Y2	0.01436	10.9	02Jan2000, 00:00	1.79

Project: The Lakes Master Simulation Run: Post 10-3

Start of Run: 01Jan2000, 12:00 Basin Model: Post
End of Run: 01Jan2000, 20:00 Meteorologic Model: 10-3
Compute Time: 30Aug2016, 13:54:54 Control Specifications: 10-3

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	132.3	01Jan2000, 13:00	0.40
A1	0.14214	59.6	01Jan2000, 12:55	0.45
A1 to A2	0.14214	59.4	01Jan2000, 13:00	0.45
A2	0.07671	22.3	01Jan2000, 13:00	0.32
A3	0.05837	21.3	01Jan2000, 12:55	0.36
Box Canyon	0.58871	199.4	01Jan2000, 13:00	0.37
B to B3	0.07701	35.9	01Jan2000, 12:50	0.41
B1	0.01710	10.5	01Jan2000, 12:45	0.45
B1 to B2	0.01710	9.9	01Jan2000, 12:50	0.45
B2	0.05991	28.5	01Jan2000, 12:50	0.40
B3	0.07709	18.0	01Jan2000, 12:55	0.25
B4	0.01894	3.1	01Jan2000, 13:05	0.22
Culvert A	0.21885	81.6	01Jan2000, 13:00	0.40
Culvert B	0.17304	54.4	01Jan2000, 12:55	0.32
Culvert Y	0.08344	33.9	01Jan2000, 12:55	0.42
C to D	0.30002	76.2	01Jan2000, 13:10	0.37
C to E3	1.04382	346.1	01Jan2000, 13:05	0.42
C1	0.01670	10.0	01Jan2000, 12:45	0.45
C1 to C2	0.01670	9.5	01Jan2000, 12:50	0.45
C2	0.06274	39.0	01Jan2000, 12:45	0.50
C2 to C3	0.07944	48.0	01Jan2000, 12:55	0.49
C3	0.16979	39.4	01Jan2000, 13:15	0.36
C4	0.01564	2.8	01Jan2000, 13:05	0.22
C4 to C5	0.01564	2.8	01Jan2000, 13:10	0.22
C5	0.03515	6.2	01Jan2000, 13:05	0.22
C5 to C3	0.05079	8.6	01Jan2000, 13:10	0.22
D to E3	0.74380	280.4	01Jan2000, 13:00	0.43

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1	0.59389	238.8	01Jan2000, 13:00	0.45
D1 to D2	0.59389	231.9	01Jan2000, 13:00	0.45
D2	0.14991	52.7	01Jan2000, 12:55	0.36
E1	1.32193	204.8	01Jan2000, 14:00	0.45
E1 to E2	1.32193	204.2	01Jan2000, 14:00	0.45
E2	0.03210	14.7	01Jan2000, 12:50	0.40
E2 to E3	1.35403	204.7	01Jan2000, 14:05	0.45
E3	0.11796	19.2	01Jan2000, 13:10	0.22
E3 to E4	3.02244	551.9	01Jan2000, 13:10	0.42
E4	0.07629	8.7	01Jan2000, 13:05	0.15
F to E3	0.14378	55.0	01Jan2000, 13:00	0.38
F1	0.06707	31.3	01Jan2000, 12:55	0.45
F1 to F2	0.06707	30.0	01Jan2000, 12:55	0.45
F2	0.07671	27.8	01Jan2000, 12:50	0.32
Gap Wash	3.09873	560.5	01Jan2000, 13:10	0.41
G to E3	0.34168	107.2	01Jan2000, 13:05	0.42
G1	0.28835	102.5	01Jan2000, 13:05	0.45
G1 to G2	0.28835	101.5	01Jan2000, 13:05	0.45
G2	0.05333	14.2	01Jan2000, 12:50	0.22
H1	0.02117	10.0	01Jan2000, 12:55	0.45
J-A	0.21885	81.7	01Jan2000, 13:00	0.40
J-AY	0.36066	133.7	01Jan2000, 13:00	0.40
J-B	0.07701	38.4	01Jan2000, 12:50	0.41
J-B3	0.17304	55.9	01Jan2000, 12:55	0.32
J-CD	1.04382	346.3	01Jan2000, 13:05	0.42
J-C2	0.07944	48.1	01Jan2000, 12:50	0.49
J-C3	0.30002	77.0	01Jan2000, 13:00	0.37
J-C5	0.05079	8.6	01Jan2000, 13:10	0.22
J-D2	0.74380	281.4	01Jan2000, 13:00	0.43
J-E2	1.35403	205.1	01Jan2000, 14:00	0.45
J-E3	3.02244	561.0	01Jan2000, 13:05	0.42

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	55.5	01Jan2000, 12:55	0.38
J-G2	0.34168	109.4	01Jan2000, 13:05	0.42
J-Y	0.08344	35.1	01Jan2000, 12:55	0.42
X to Box	0.02243	12.0	01Jan2000, 12:50	0.45
X1	0.02243	12.3	01Jan2000, 12:50	0.45
X2	0.03258	10.5	01Jan2000, 12:50	0.28
Y1	0.06908	31.9	01Jan2000, 12:55	0.45
Y1 to Y2	0.06908	31.1	01Jan2000, 12:55	0.45
Y2	0.01436	5.0	01Jan2000, 12:50	0.28

Project: The Lakes Master Simulation Run: Post 10-24

Start of Run: 01Jan2000, 12:00 Basin Model: Post
End of Run: 02Jan2000, 12:00 Meteorologic Model: 10-24hr
Compute Time: 30Aug2016, 13:54:45 Control Specifications: 24hr

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	129.3	02Jan2000, 00:00	0.95
A1	0.14214	61.6	02Jan2000, 00:00	1.02
A1 to A2	0.14214	54.7	02Jan2000, 00:00	1.02
A2	0.07671	26.1	02Jan2000, 00:00	0.82
A3	0.05837	21.6	02Jan2000, 00:00	0.88
Box Canyon	0.58871	200.2	02Jan2000, 00:00	0.90
B to B3	0.07701	27.8	02Jan2000, 00:00	0.97
B1	0.01710	7.4	02Jan2000, 00:00	1.02
B1 to B2	0.01710	6.7	02Jan2000, 00:00	1.02
B2	0.05991	24.0	02Jan2000, 00:00	0.95
B3	0.07709	22.0	02Jan2000, 00:00	0.71
B4	0.01894	4.5	02Jan2000, 00:00	0.65
Culvert A	0.21885	80.7	02Jan2000, 00:00	0.95
Culvert B	0.17304	51.8	02Jan2000, 00:00	0.82
Culvert Y	0.08344	31.9	02Jan2000, 00:00	0.98
C to D	0.30002	75.9	02Jan2000, 00:30	0.90
C to E3	1.04382	350.7	02Jan2000, 00:00	0.96
C1	0.01670	7.2	02Jan2000, 00:00	1.02
C1 to C2	0.01670	6.7	02Jan2000, 00:00	1.02
C2	0.06274	29.3	02Jan2000, 00:00	1.09
C2 to C3	0.07944	25.4	02Jan2000, 00:00	1.08
C3	0.16979	42.8	02Jan2000, 00:30	0.88
C4	0.01564	4.1	02Jan2000, 00:00	0.66
C4 to C5	0.01564	3.0	02Jan2000, 00:00	0.66
C5	0.03515	9.0	02Jan2000, 00:00	0.66
C5 to C3	0.05079	11.2	02Jan2000, 00:00	0.66
D to E3	0.74380	295.9	02Jan2000, 00:00	0.99

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1	0.59389	257.3	02Jan2000, 00:00	1.02
D1 to D2	0.59389	241.9	02Jan2000, 00:00	1.02
D2	0.14991	55.4	02Jan2000, 00:00	0.88
E1	1.32193	266.6	02Jan2000, 01:00	1.00
E1 to E2	1.32193	264.1	02Jan2000, 01:00	1.00
E2	0.03210	12.9	02Jan2000, 00:00	0.95
E2 to E3	1.35403	258.3	02Jan2000, 01:00	1.00
E3	0.11796	27.0	02Jan2000, 00:00	0.65
E3 to E4	3.02244	590.6	02Jan2000, 00:30	0.97
E4	0.07629	14.5	02Jan2000, 00:00	0.52
F to E3	0.14378	44.0	02Jan2000, 00:00	0.92
F1	0.06707	29.1	02Jan2000, 00:00	1.02
F1 to F2	0.06707	26.9	02Jan2000, 00:00	1.02
F2	0.07671	26.1	02Jan2000, 00:00	0.82
Gap Wash	3.09873	599.6	02Jan2000, 00:30	0.95
G to E3	0.34168	115.3	02Jan2000, 00:00	0.96
G1	0.28835	109.3	02Jan2000, 00:00	1.01
G1 to G2	0.28835	106.8	02Jan2000, 00:00	1.02
G2	0.05333	13.8	02Jan2000, 00:00	0.66
H1	0.02117	9.2	02Jan2000, 00:00	1.02
J-A	0.21885	80.8	02Jan2000, 00:00	0.95
J-AY	0.36066	134.2	02Jan2000, 00:00	0.94
J-B	0.07701	30.7	02Jan2000, 00:00	0.96
J-B3	0.17304	54.3	02Jan2000, 00:00	0.82
J-CD	1.04382	358.5	02Jan2000, 00:00	0.96
J-C2	0.07944	36.0	02Jan2000, 00:00	1.08
J-C3	0.30002	76.1	02Jan2000, 00:00	0.89
J-C5	0.05079	12.0	02Jan2000, 00:00	0.66
J-D2	0.74380	297.4	02Jan2000, 00:00	0.99
J-E2	1.35403	267.0	02Jan2000, 01:00	1.00
J-E3	3.02244	625.5	02Jan2000, 00:00	0.96

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	53.0	02Jan2000, 00:00	0.91
J-G2	0.34168	120.6	02Jan2000, 00:00	0.96
J-Y	0.08344	33.4	02Jan2000, 00:00	0.97
X to Box	0.02243	9.0	02Jan2000, 00:00	1.02
X1	0.02243	9.7	02Jan2000, 00:00	1.02
X2	0.03258	10.2	02Jan2000, 00:00	0.76
Y1	0.06908	29.9	02Jan2000, 00:00	1.02
Y1 to Y2	0.06908	28.9	02Jan2000, 00:00	1.02
Y2	0.01436	4.5	02Jan2000, 00:00	0.76

Project: The Lakes Master Simulation Run: Post 100-3

Start of Run: 01Jan2000, 12:00 Basin Model: Post
End of Run: 01Jan2000, 18:30 Meteorologic Model: 100-3
Compute Time: 30Aug2016, 13:55:09 Control Specifications: 100-3

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	311.8	01Jan2000, 13:00	0.92
A1	0.14214	139.2	01Jan2000, 12:55	0.99
A1 to A2	0.14214	135.5	01Jan2000, 13:00	0.99
A2	0.07671	60.1	01Jan2000, 12:55	0.79
A3	0.05837	52.7	01Jan2000, 12:55	0.86
Box Canyon	0.58871	498.1	01Jan2000, 12:55	0.87
B to B3	0.07701	88.1	01Jan2000, 12:50	0.93
B1	0.01710	23.5	01Jan2000, 12:40	0.99
B1 to B2	0.01710	23.4	01Jan2000, 12:45	0.99
B2	0.05991	67.0	01Jan2000, 12:50	0.92
B3	0.07709	53.8	01Jan2000, 12:55	0.68
B4	0.01894	9.6	01Jan2000, 13:05	0.63
Culvert A	0.21885	191.9	01Jan2000, 13:00	0.92
Culvert B	0.17304	139.9	01Jan2000, 12:55	0.79
Culvert Y	0.08344	80.7	01Jan2000, 12:55	0.95
C to D	0.30002	182.0	01Jan2000, 13:05	0.87
C to E3	1.04382	820.9	01Jan2000, 13:00	0.94
C1	0.01670	22.7	01Jan2000, 12:45	0.99
C1 to C2	0.01670	22.1	01Jan2000, 12:45	0.99
C2	0.06274	88.4	01Jan2000, 12:45	1.06
C2 to C3	0.07944	104.5	01Jan2000, 12:55	1.04
C3	0.16979	97.0	01Jan2000, 13:15	0.86
C4	0.01564	8.7	01Jan2000, 13:00	0.63
C4 to C5	0.01564	8.4	01Jan2000, 13:05	0.63
C5	0.03515	19.1	01Jan2000, 13:00	0.63
C5 to C3	0.05079	26.6	01Jan2000, 13:05	0.63
D to E3	0.74380	654.3	01Jan2000, 13:00	0.96

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1	0.59389	540.9	01Jan2000, 13:00	0.99
D1 to D2	0.59389	537.5	01Jan2000, 13:00	0.99
D2	0.14991	132.9	01Jan2000, 12:55	0.86
E1	1.32193	456.4	01Jan2000, 14:00	0.99
E1 to E2	1.32193	456.3	01Jan2000, 14:00	0.99
E2	0.03210	35.4	01Jan2000, 12:50	0.92
E2 to E3	1.35403	456.7	01Jan2000, 14:05	0.99
E3	0.11796	58.6	01Jan2000, 13:05	0.63
E3 to E4	3.02244	1317.2	01Jan2000, 13:05	0.94
E4	0.07629	31.7	01Jan2000, 13:00	0.50
F to E3	0.14378	134.7	01Jan2000, 12:55	0.89
F1	0.06707	70.4	01Jan2000, 12:55	0.99
F1 to F2	0.06707	69.9	01Jan2000, 12:55	0.99
F2	0.07671	73.2	01Jan2000, 12:50	0.79
Gap Wash	3.09873	1348.4	01Jan2000, 13:05	0.93
G to E3	0.34168	249.4	01Jan2000, 13:05	0.94
G1	0.28835	232.1	01Jan2000, 13:05	0.99
G1 to G2	0.28835	231.6	01Jan2000, 13:05	0.99
G2	0.05333	41.6	01Jan2000, 12:50	0.63
H1	0.02117	22.7	01Jan2000, 12:50	0.99
J-A	0.21885	191.9	01Jan2000, 13:00	0.92
J-AY	0.36066	321.4	01Jan2000, 12:55	0.92
J-B	0.07701	88.1	01Jan2000, 12:45	0.94
J-B3	0.17304	140.3	01Jan2000, 12:50	0.79
J-CD	1.04382	828.6	01Jan2000, 13:00	0.94
J-C2	0.07944	110.5	01Jan2000, 12:45	1.05
J-C3	0.30002	182.6	01Jan2000, 13:00	0.87
J-C5	0.05079	26.8	01Jan2000, 13:05	0.63
J-D2	0.74380	655.1	01Jan2000, 13:00	0.96
J-E2	1.35403	457.8	01Jan2000, 14:00	0.99
J-E3	3.02244	1331.5	01Jan2000, 13:00	0.95

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	135.0	01Jan2000, 12:50	0.89
J-G2	0.34168	250.6	01Jan2000, 13:05	0.93
J-Y	0.08344	81.3	01Jan2000, 12:55	0.95
X to Box	0.02243	27.5	01Jan2000, 12:50	0.99
X1	0.02243	28.2	01Jan2000, 12:45	0.99
X2	0.03258	29.0	01Jan2000, 12:50	0.74
Y1	0.06908	72.2	01Jan2000, 12:55	0.99
Y1 to Y2	0.06908	71.7	01Jan2000, 12:55	0.99
Y2	0.01436	13.3	01Jan2000, 12:45	0.74

Project: The Lakes Master Simulation Run: Post 100-24

Start of Run: 01Jan2000, 12:00 Basin Model: Post
End of Run: 03Jan2000, 00:30 Meteorologic Model: 100-24hr
Compute Time: 30Aug2016, 13:55:01 Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
A to Box	0.36066	237.5	02Jan2000, 00:00	1.70
A1	0.14214	107.9	02Jan2000, 00:00	1.79
A1 to A2	0.14214	97.7	02Jan2000, 00:00	1.80
A2	0.07671	50.0	02Jan2000, 00:00	1.54
A3	0.05837	40.1	02Jan2000, 00:00	1.62
Box Canyon	0.58871	374.8	02Jan2000, 00:00	1.65
B to B3	0.07701	50.9	02Jan2000, 00:00	1.73
B1	0.01710	13.0	02Jan2000, 00:00	1.79
B1 to B2	0.01710	12.0	02Jan2000, 00:00	1.80
B2	0.05991	43.3	02Jan2000, 00:00	1.70
B3	0.07709	44.8	02Jan2000, 00:00	1.39
B4	0.01894	9.5	02Jan2000, 00:00	1.32
Culvert A	0.21885	147.5	02Jan2000, 00:00	1.71
Culvert B	0.17304	101.2	02Jan2000, 00:00	1.54
Culvert Y	0.08344	57.5	02Jan2000, 00:00	1.74
C to D	0.30002	136.8	02Jan2000, 00:30	1.65
C to E3	1.04382	640.6	02Jan2000, 00:00	1.73
C1	0.01670	12.7	02Jan2000, 00:00	1.79
C1 to C2	0.01670	11.8	02Jan2000, 00:00	1.80
C2	0.06274	49.9	02Jan2000, 00:00	1.88
C2 to C3	0.07944	46.4	02Jan2000, 00:00	1.88
C3	0.16979	78.0	02Jan2000, 00:30	1.62
C4	0.01564	8.6	02Jan2000, 00:00	1.32
C4 to C5	0.01564	6.8	02Jan2000, 00:00	1.33
C5	0.03515	19.0	02Jan2000, 00:00	1.32
C5 to C3	0.05079	24.4	02Jan2000, 00:00	1.33
D to E3	0.74380	528.7	02Jan2000, 00:00	1.76

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
D1	0.59389	451.0	02Jan2000, 00:00	1.79
D1 to D2	0.59389	428.0	02Jan2000, 00:00	1.80
D2	0.14991	103.0	02Jan2000, 00:00	1.62
E1	1.32193	466.2	02Jan2000, 01:00	1.79
E1 to E2	1.32193	462.8	02Jan2000, 01:00	1.79
E2	0.03210	23.2	02Jan2000, 00:00	1.70
E2 to E3	1.35403	455.6	02Jan2000, 01:00	1.79
E3	0.11796	57.3	02Jan2000, 00:00	1.32
E3 to E4	3.02244	1069.7	02Jan2000, 00:00	1.74
E4	0.07629	34.5	02Jan2000, 00:00	1.12
F to E3	0.14378	83.8	02Jan2000, 00:00	1.67
F1	0.06707	50.9	02Jan2000, 00:00	1.79
F1 to F2	0.06707	47.8	02Jan2000, 00:00	1.80
F2	0.07671	50.0	02Jan2000, 00:00	1.54
Gap Wash	3.09873	1104.2	02Jan2000, 00:00	1.73
G to E3	0.34168	209.4	02Jan2000, 00:00	1.72
G1	0.28835	192.0	02Jan2000, 00:00	1.79
G1 to G2	0.28835	188.3	02Jan2000, 00:00	1.79
G2	0.05333	29.2	02Jan2000, 00:00	1.32
H1	0.02117	16.1	02Jan2000, 00:00	1.79
J-A	0.21885	147.6	02Jan2000, 00:00	1.71
J-AY	0.36066	245.0	02Jan2000, 00:00	1.70
J-B	0.07701	55.3	02Jan2000, 00:00	1.72
J-B3	0.17304	105.2	02Jan2000, 00:00	1.53
J-CD	1.04382	652.6	02Jan2000, 00:00	1.73
J-C2	0.07944	61.8	02Jan2000, 00:00	1.86
J-C3	0.30002	145.1	02Jan2000, 00:00	1.64
J-C5	0.05079	25.8	02Jan2000, 00:00	1.32
J-D2	0.74380	530.9	02Jan2000, 00:00	1.76
J-E2	1.35403	467.6	02Jan2000, 01:00	1.79
J-E3	3.02244	1162.8	02Jan2000, 00:00	1.74

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J-F2	0.14378	97.7	02Jan2000, 00:00	1.66
J-G2	0.34168	217.5	02Jan2000, 00:00	1.72
J-Y	0.08344	59.8	02Jan2000, 00:00	1.74
X to Box	0.02243	16.0	02Jan2000, 00:00	1.79
X1	0.02243	17.0	02Jan2000, 00:00	1.79
X2	0.03258	20.1	02Jan2000, 00:00	1.46
Y1	0.06908	52.5	02Jan2000, 00:00	1.79
Y1 to Y2	0.06908	51.0	02Jan2000, 00:00	1.79
Y2	0.01436	8.8	02Jan2000, 00:00	1.46

Worksheet for Culvert 1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	36	in
Discharge	80.70	ft^3/s

Results

Normal Depth	2.29	ft
Flow Area	5.79	ft^2
Wetted Perimeter	6.38	ft
Hydraulic Radius	0.91	ft
Top Width	2.55	ft
Critical Depth	2.78	ft
Percent Full	76.4	%
Critical Slope	0.00750	ft/ft
Velocity	13.93	ft/s
Velocity Head	3.02	ft
Specific Energy	5.31	ft
Froude Number	1.63	
Maximum Discharge	93.27	ft^3/s
Discharge Full	86.70	ft^3/s
Slope Full	0.00866	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.36	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 1

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.29	ft
Critical Depth	2.78	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00750	ft/ft

Worksheet for Culvert 2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	48	in
Discharge	191.90	ft³/s

Results

Normal Depth	3.39	ft
Flow Area	11.35	ft²
Wetted Perimeter	9.35	ft
Hydraulic Radius	1.21	ft
Top Width	2.88	ft
Critical Depth	3.82	ft
Percent Full	84.7	%
Critical Slope	0.00917	ft/ft
Velocity	16.91	ft/s
Velocity Head	4.44	ft
Specific Energy	7.83	ft
Froude Number	1.50	
Maximum Discharge	200.86	ft³/s
Discharge Full	186.73	ft³/s
Slope Full	0.01056	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.70	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 2

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.39	ft
Critical Depth	3.82	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00917	ft/ft

Worksheet for Culvert 3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	36	in
Discharge	88.10	ft^3/s

Results

Normal Depth	2.50	ft
Flow Area	6.31	ft^2
Wetted Perimeter	6.91	ft
Hydraulic Radius	0.91	ft
Top Width	2.23	ft
Critical Depth	2.83	ft
Percent Full	83.5	%
Critical Slope	0.00893	ft/ft
Velocity	13.97	ft/s
Velocity Head	3.03	ft
Specific Energy	5.54	ft
Froude Number	1.46	
Maximum Discharge	93.27	ft^3/s
Discharge Full	86.70	ft^3/s
Slope Full	0.01032	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.50	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 3

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.50	ft
Critical Depth	2.83	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00893	ft/ft

Worksheet for Culvert 4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	42	in
Discharge	139.90	ft³/s

Results

Normal Depth	3.18	ft
Flow Area	9.18	ft²
Wetted Perimeter	8.85	ft
Hydraulic Radius	1.04	ft
Top Width	2.01	ft
Critical Depth	3.35	ft
Percent Full	90.9	%
Critical Slope	0.00995	ft/ft
Velocity	15.23	ft/s
Velocity Head	3.61	ft
Specific Energy	6.79	ft
Froude Number	1.26	
Maximum Discharge	140.69	ft³/s
Discharge Full	130.79	ft³/s
Slope Full	0.01144	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.89	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 4

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.18	ft
Critical Depth	3.35	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00995	ft/ft

Worksheet for Culvert 5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	42	in
Discharge	104.50	ft³/s

Results

Normal Depth	2.37	ft
Flow Area	6.92	ft²
Wetted Perimeter	6.76	ft
Hydraulic Radius	1.02	ft
Top Width	3.28	ft
Critical Depth	3.12	ft
Percent Full	67.6	%
Critical Slope	0.00567	ft/ft
Velocity	15.10	ft/s
Velocity Head	3.54	ft
Specific Energy	5.91	ft
Froude Number	1.83	
Maximum Discharge	140.69	ft³/s
Discharge Full	130.79	ft³/s
Slope Full	0.00638	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.60	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 5

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.37	ft
Critical Depth	3.12	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00567	ft/ft

Worksheet for Culvert 6

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	84	in
Discharge	654.30	ft³/s

Results

Normal Depth	4.68	ft
Flow Area	27.37	ft²
Wetted Perimeter	13.41	ft
Hydraulic Radius	2.04	ft
Top Width	6.59	ft
Critical Depth	6.43	ft
Percent Full	66.9	%
Critical Slope	0.00539	ft/ft
Velocity	23.91	ft/s
Velocity Head	8.88	ft
Specific Energy	13.57	ft
Froude Number	2.07	
Maximum Discharge	893.31	ft³/s
Discharge Full	830.44	ft³/s
Slope Full	0.00621	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.91	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 6

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.68	ft
Critical Depth	6.43	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00539	ft/ft

Worksheet for Culvert 7

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	84	in
Discharge	810.00	ft³/s

Results

Normal Depth	5.59	ft
Flow Area	32.94	ft²
Wetted Perimeter	15.47	ft
Hydraulic Radius	2.13	ft
Top Width	5.62	ft
Critical Depth	6.73	ft
Percent Full	79.8	%
Critical Slope	0.00830	ft/ft
Velocity	24.59	ft/s
Velocity Head	9.40	ft
Specific Energy	14.99	ft
Froude Number	1.79	
Maximum Discharge	893.31	ft³/s
Discharge Full	830.44	ft³/s
Slope Full	0.00951	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.83	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 7

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.59	ft
Critical Depth	6.73	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00830	ft/ft

Worksheet for Culvert 8

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	72	in
Discharge	456.70	ft³/s

Results

Normal Depth	4.17	ft
Flow Area	20.98	ft²
Wetted Perimeter	11.83	ft
Hydraulic Radius	1.77	ft
Top Width	5.52	ft
Critical Depth	5.55	ft
Percent Full	69.5	%
Critical Slope	0.00596	ft/ft
Velocity	21.77	ft/s
Velocity Head	7.37	ft
Specific Energy	11.54	ft
Froude Number	1.97	
Maximum Discharge	592.21	ft³/s
Discharge Full	550.53	ft³/s
Slope Full	0.00688	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	69.51	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 8

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.17	ft
Critical Depth	5.55	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00596	ft/ft

Worksheet for Culvert 9

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	42	in
Discharge	134.70	ft^3/s

Results

Normal Depth	2.97	ft
Flow Area	8.71	ft^2
Wetted Perimeter	8.21	ft
Hydraulic Radius	1.06	ft
Top Width	2.50	ft
Critical Depth	3.33	ft
Percent Full	84.9	%
Critical Slope	0.00919	ft/ft
Velocity	15.46	ft/s
Velocity Head	3.72	ft
Specific Energy	6.69	ft
Froude Number	1.46	
Maximum Discharge	140.69	ft^3/s
Discharge Full	130.79	ft^3/s
Slope Full	0.01061	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.95	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 9

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.97	ft
Critical Depth	3.33	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00919	ft/ft

Worksheet for Culvert 10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	60	in
Discharge	249.40	ft^3/s

Results

Normal Depth	3.19	ft
Flow Area	13.23	ft^2
Wetted Perimeter	9.25	ft
Hydraulic Radius	1.43	ft
Top Width	4.81	ft
Critical Depth	4.42	ft
Percent Full	63.8	%
Critical Slope	0.00486	ft/ft
Velocity	18.85	ft/s
Velocity Head	5.52	ft
Specific Energy	8.72	ft
Froude Number	2.00	
Maximum Discharge	364.19	ft^3/s
Discharge Full	338.56	ft^3/s
Slope Full	0.00543	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	63.82	%
Downstream Velocity	Infinity	ft/s

Worksheet for Culvert 10

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.19	ft
Critical Depth	4.42	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00486	ft/ft

Exhibit D

Executive Geotechnical Summary

July 5, 2005 1286-04-ZC

City of St. George
175 East 200 North
St. George, Utah 84790

Attn: Hillside Review Committee

Subject: Executive Summary
Geotechnical Site Evaluation
Lakes At St. George Development

Gentlemen:

Introduction

The purpose of this letter is to provide a summary of the general geologic and soil conditions at the subject site, and general geotechnical requirements for development. The project site (previously known as the Plantations Development site), is approximately 730 acres in area and is located within and along a relatively small valley west of the Green Valley and Sunbrook developments in St. George, Utah. Development of the site will be in phases and will consist of a 9-hole golf course, three to four lakes, and residential construction.

Previous geotechnical investigations conducted on the project site were referenced for this summary. The following geotechnical reports were reviewed.

2001 Geotechnical Investigation
Plantations at St. George, Phase 1
Residential Pods 12A, 12B & 15
Rosenberg Associates Project No. 95-1198-01

1995 Geotechnical Investigation
The Plantations, Phase 1
Black, Miller & Associates Project No. 95-1198-01

1992 Preliminary Geotechnical Site Assessment
730-Acre Plantations Project
Kleinfelder Project No. 31-800570

General Geologic Conditions

The majority of the site consists of a northwest trending valley flanked by a broad, shallow dip slope to the west and a plateau to the east. The southern-most portion of the site occupies a smaller, east-west trending valley separated from the remaining portion of the site by a south trending spur. The northern third of the site drains to the northeast through a series of subparallel tributary washes that join and exit the site in the northeast corner. The southern two-thirds of the site drains to the southwest from the west through a major tributary wash which enters the site through a feature known as "The Gap". The main wash flows to the south and then to the east, meandering back and forth across the southern site boundary.

Geologic deposits ranging in age from Triassic to Recent are found at the site (see Drawing No. 1 enclosed at the end of this letter). Bedrock consists chiefly of the Triassic Chinle Formation. The lower Shinarump Member consisting of sandstones and conglomerates outcrops extensively on the western portion of the site. The upper Petrified Forest Member (locally known as "Blue Clay"), underlies most of the central alluvial basin deposits and which outcrops on the eastern side of the site. Quaternary deposits consisting of Older gravels, Recent alluvial deposits, and possible landslide deposits are also present on the site as shown on Drawing No. 1 (Christenson and Deen, 1983).

General Subsurface Soil Conditions

For the purpose of this letter, we have separated the subject site into the four (4) general areas based on soil type (see Drawing No. 1). The subsurface conditions encountered on the western portion of the site (see orange colored area on Drawing No. 1), generally consisted of ½ to 1½ feet of loose, surficial silty sand or soft sandy clay soils overlying moderately hard to hard sandstone bedrock. Although generally jointed and fractured, the sandstones have a high shear strength, are relatively incompressible, and provide favorable foundation support characteristics.

The subsurface conditions at the base of the western slopes in the central and along the low ridges of the eastern portion of the site generally consist of varying thicknesses of alluvial soils (soft to stiff clayey soils, or loose to medium dense gravelly soils) overlying red-brown and green-gray highly plastic clays and mudstone bedrock associated with the Petrified Forest Member of the Chinle Formation (see the purple areas on Drawing No. 1). The Petrified Forest Member, or clay soils derived from erosion of this unit, generally have a high to critical swell potential with changes in moisture content, are of relatively low strength, and experience considerable reductions in strength when exposed to moisture.

In the northern portion of the site (see gray colored area on Drawing No. 1), the subsurface conditions generally consist predominantly of green-gray shales. The red-brown and purple mudstones, locally known as "Blue Clay" were not encountered within this area.. Clayey soils derived from the green-gray shales generally have low to moderate swell potentials.

On the plateau area to the east, the subsurface conditions are expected to consist of slightly to very well indurated (naturally cemented) sands, gravels, and cobbles associated with an Older Quaternary gravel formation. The sand and gravel deposits (see the green area on Drawing No. 2) generally provide favorable subgrade characteristics.

Groundwater was encountered during the 1992 preliminary assessment performed by Kleinfelder in the southeastern portion of the property at depths of about 4 to 12½ feet below the existing ground surface.

General Geotechnical Requirements

Based on the subsurface conditions encountered during at the site, and our experience with similar soil conditions, it is our opinion (from a geotechnical view point) that with proper preparation and design the subject site can be utilized for the proposed developments.

In the northern and western portions of the site (see orange and gray colored areas on Drawing No. 1), site grading will generally consist of reworking the existing surficial soils. The proposed structures should receive adequate support from conventional spread footings founded on competent undisturbed medium dense to dense native soils, on properly placed and compacted structural fill, or entirely on undisturbed non-expansive bedrock. The main geotechnical constraint within this area is the presence of moderately hard to hard bedrock. Rock excavating techniques should be anticipated where these materials are encountered during site grading and utility trench excavation. Steel reinforcing is recommended for footings and floor slabs constructed within the gray area due to the localized presence of low to moderately expansive soils.

Where the Petrified Forest Member of the Chinle Formation is present (see purple colored areas on Drawing No. 1), the most significant constraints to the development are related to the overall instability and generally poor foundation support characteristics this formation. Where this formation is present within slopes, the integrity of the slopes can be impaired by grading activities as well as loading and the introduction of water. Special grading and foundation considerations will be required where the Petrified Forest Member will be present within 15 feet of the planned rough pad elevations. We recommend that the structures be supported by a deep foundation systems with grade beams to support wall loads, and a raised structural floor system. Where conventional foundation systems are desired within expansive clay areas, any expansive clay soils or bedrock located within 15 feet of the final building pad elevations would require overexcavation and replacement with approved structural fill materials. Within exterior flatwork and street improvement areas, expansive native materials present within 3 feet of the planned subgrade elevation should be overexcavated and replaced with structural fill.

Older Quaternary gravels at the site (see green colored areas in the southeast portion of the site) occur primarily as a cap overlying the Petrified Forest Member in the plateau areas to the east. These materials consist of slightly to very well cemented sands, gravels, and cobbles. The sand and gravel deposits are generally anticipated to provide favorable foundation support

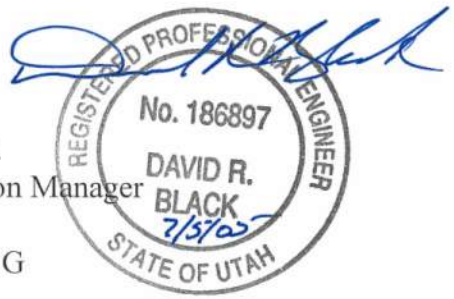
characteristics. However, in the vicinity of slopes, overall stability anticipated to be a consideration for portions of the development within this area due to the underlying presence of the Petrified Forest Member.

Closure

It is our pleasure to be of continued service on this project. If you have any questions concerning the information contained in this letter, please contact us at your convenience.

Sincerely,

ROSENBERG ASSOCIATES

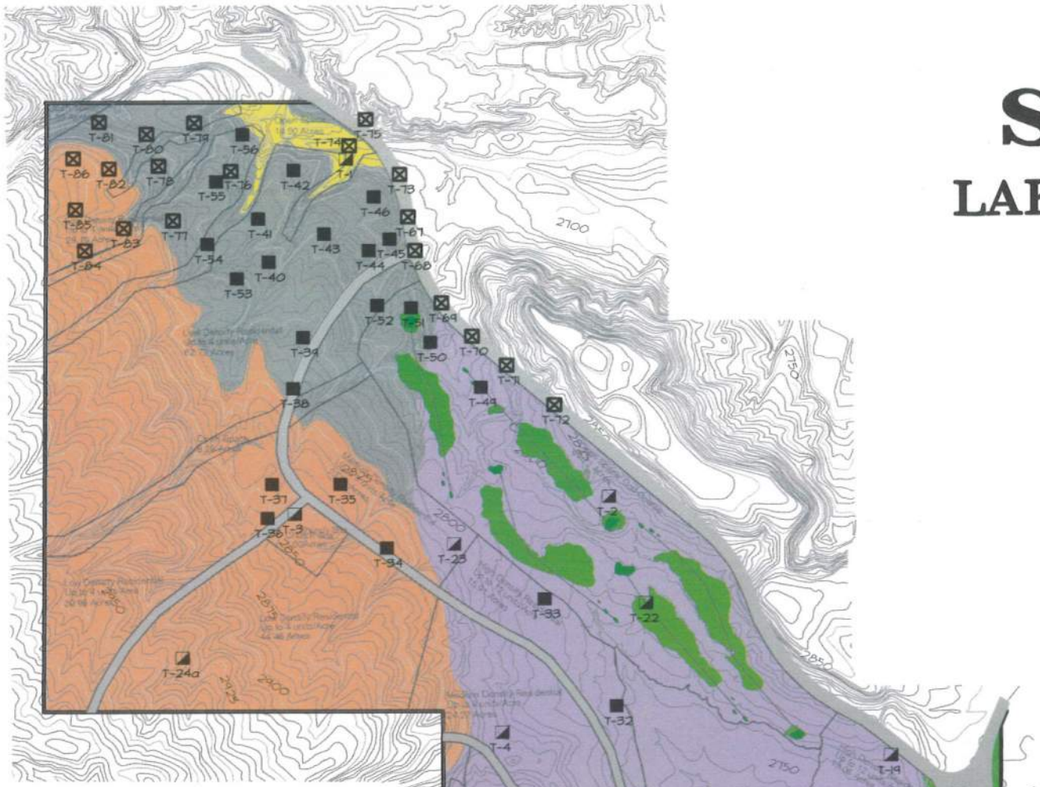


David R. Black, P.E.
Geotechnical Division Manager

DRB/RTR/05R-137.G

SOILS MAP

LAKES AT ST. GEORGE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2450
2500
2550
2600
2650
2700
2750
2800
Open Space
2.62 Acres
Open Space
3.9 Acres
Open Space
4.3 Acres
Open Space
14.79 Acres
Open Space
4.3 Acres
Open Space
4.3 Acres
Open Space
4.3

Agenda Date: 11/16/2023 **Agenda Item Number:** 06

Subject:

Consider approval of Ordinance No. 2023-037 amending the city zoning map by extending approvals for the zoning on the subject property of R-1-20 (Residential Single Family 20,000 square feet minimum lot size) on approximately 18.62 acres located approximately at the Southeast corner of 1580 South 3000 East for a project to be known as The Grove. Case No. 2023-ZC-015

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Dave Nasal

Reference Number: 2023-ZC-015

Address/Location:

Generally located on the southeast corner of 1580 South and 3000 East

Item History (background/project status/public process):

The zoning on the subject property was approved in 2022. Due to language in the ordinance, the zoning would expire after a year without reapproving the zoning. The Planning Commission held a public hearing on the request and recommended approval with a 7-0 vote and no conditions.

Staff Narrative (need/purpose):

The extension of approval of the zoning is necessary in that a plat has not yet been recorded on the subject property. The property was previously zoned A-1 but has been changed to R-1-20.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

The Planning Commission held a public hearing on the request and recommends approval of the zoning extension with a 7-0 vote and no conditions.

St.George
Community Development

ZONE CHANGE

PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT: **11/16/2023**

ZONE CHANGE
The Grove
Case No. 2023-ZC-015

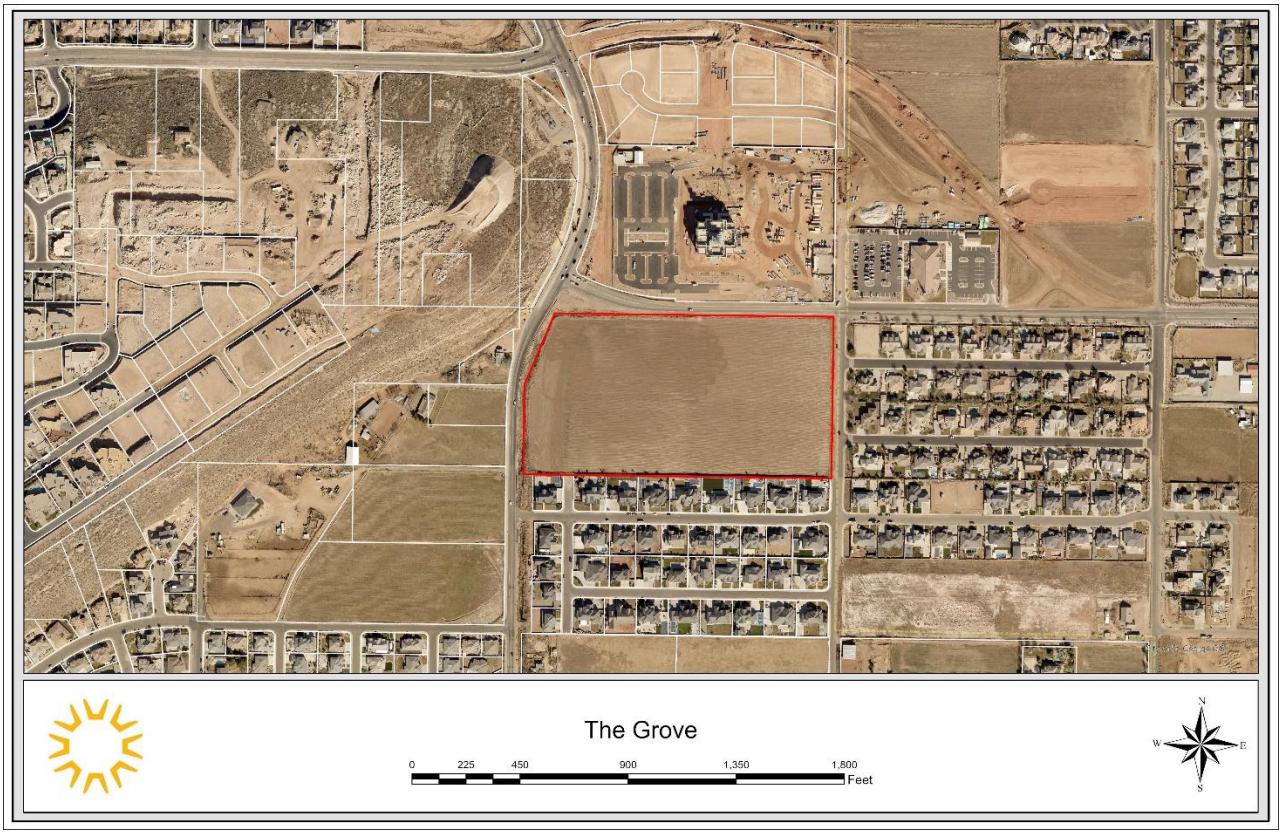
Request: The request at hand is to extend the time frame allowed under ordinance 2022-10-005 which required a final plat to be recorded within a year's time. In essence, the zone would not change but would remain R-1-20 as was approved last year.

Representative: Dave Nasal

Parcel Number: SG-5-3-3-142

Location: The property is approximately 18.62 acres, located on the southeast corner of 1580 South and 3000 East.

Total Acreage: Approximately 18.62 acres



Existing Zoning: R-1-20 (Residential, single-family 20,000 ft² minimum lot size)

General Plan: LDR (Low Density Residential).

Adjacent zones: North – A-1 (Temple)
West – A-20
East – R-1-15 (Washington City)
South – RE-20

Background & Analysis: In October of 2022, the City Council approved a zone change on the property from A-1, an agricultural zoning designation, to R-1-20, which is a single-family zoning designation requiring 20,000 ft² per lot. When the city code was amended in 2022 to account for greater water regulations, a portion of the re-write was to require that a zone change not take affect until a plat or site plan was approved. That language was taken out of the code change for single-family zones but was mistakenly placed in the ordinance that approved this particular zoning map amendment. As such, the legal department has determined that the ordinance takes precedence, and the property will revert back to the A-1 zoning if not extended. In an effort to be transparent and allow the public an opportunity to weigh in on the request, staff is taking this application through the process for Planning Commission's consideration. A notice was issued to neighboring properties as required for a zone change.

Water: The accompanying plat is proposed to contain 14 lots which would meet the requirements of the previous A-1 zone with the exception of lots 1 & 2 which don't meet the lot size requirements of A-1 but do meet the R-1-20 requirements. As far as density is concerned, the proposed plat would not elevate the demand on water higher than would have been allowed under the A-1 requirements.

PC Recommendation: On October 24, 2023, the Planning Commission held a public hearing in order receive public input on the request. There was no public comment and the Planning Commission voted 7-0 to recommend approval of the application.

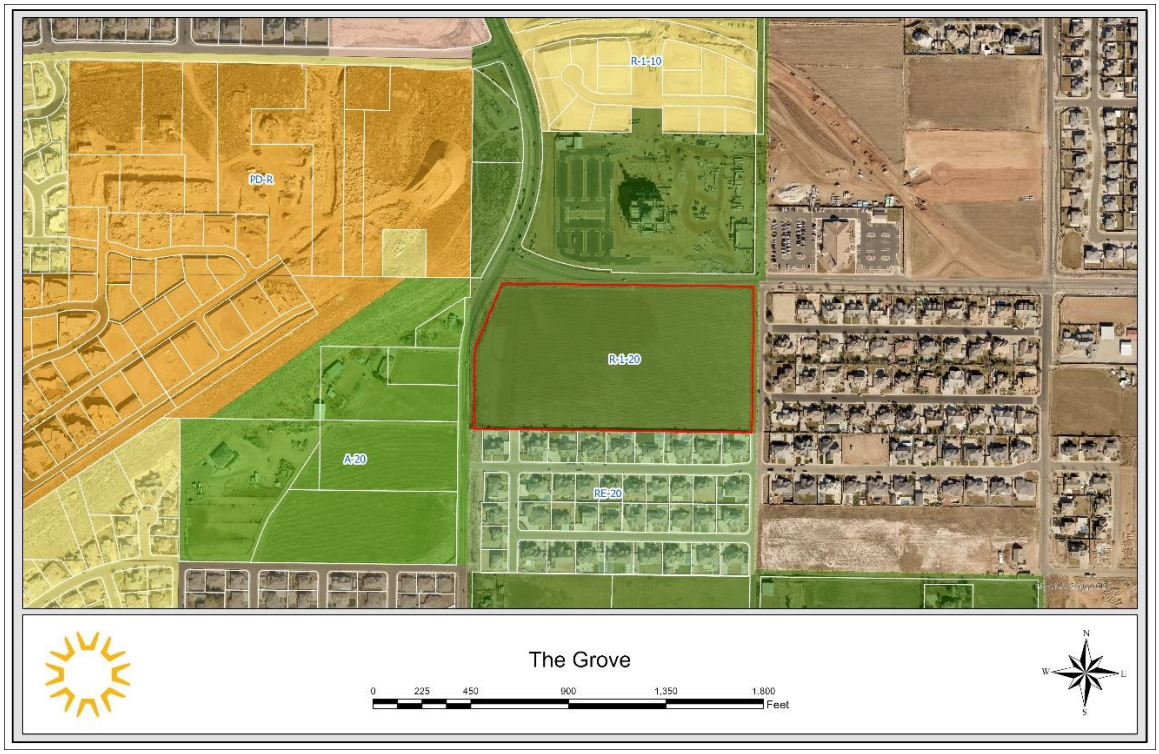
Alternatives:
1. Approve as presented.
2. Deny the application.
3. Continue the proposed zone change extension to a later date.

Sample Motion: **"**I move that we approve The Grove zone change extension request, application number 2023-ZC-015, based on the findings noted in the staff report."

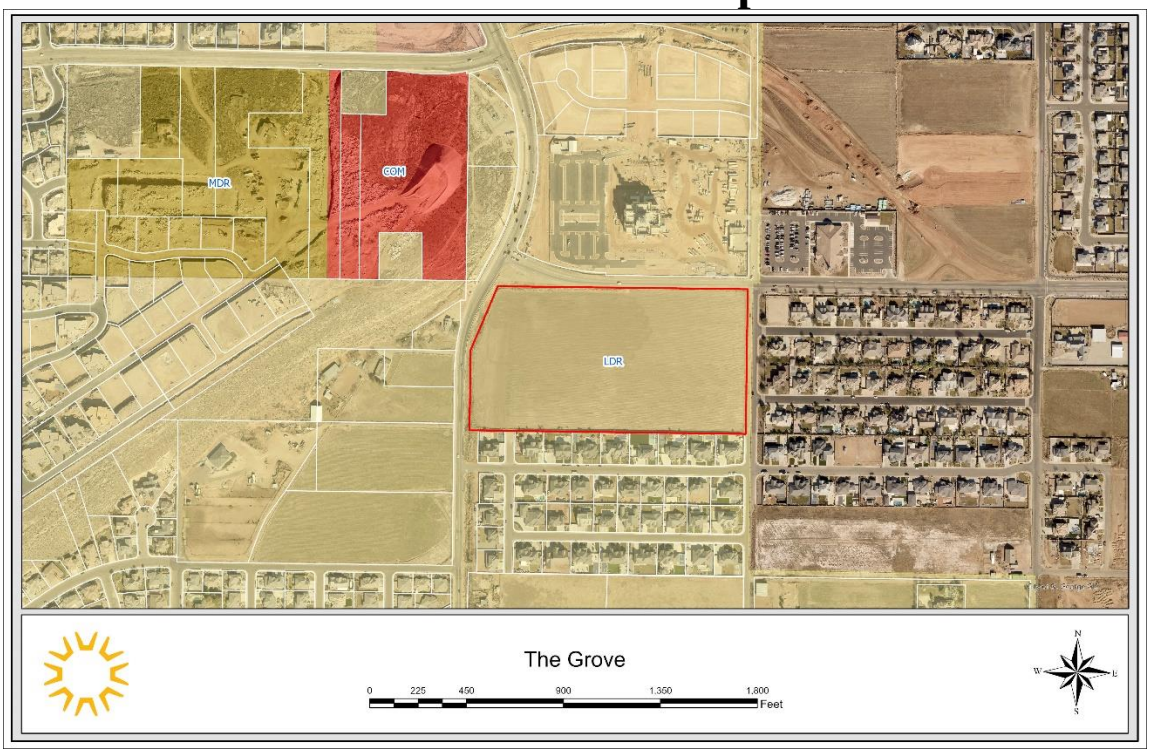
Possible Findings:

1. That R-1-20 zoning, and single family homes are consistent with a low density designation as recommended by the general plan and as indicated on the general plan map.
2. That there is consistent zoning in the general vicinity to the proposed R-1-20 zoning.
3. That this application is accompanied by a plat consistent with the R-1-20 zone to divide the property.
4. That development in the area to the north and south is consistent with the proposed zone change.
5. That this request is an extension of an approval granted in 2022.

Zoning Map



General Plan Map



Applicant's Narrative

Narrative (Initially used to change Zone)
1580 S and 3000 E
18.62 acres

We are requesting a zone change from A-1 to R-1-20 on the property directly south from the new temple in the fields. The property is bordered by the following:
North- 1580 South and temple
East- 3210 East, Washington City boundary. Cobblestone subdivision (third acre lots)
West- 3000 East, few houses and fields, A-20
South- Crimson Meadows Subdivision, RE-20

This will be a large lot subdivision that is low density and fits in well with the surrounding areas and existing development. Utility capacity in the area is sufficient for this development.

Extension Request:
We are requesting an extension of the zone. The current zone is R-1-20 and we request that it be continued for 12 months.

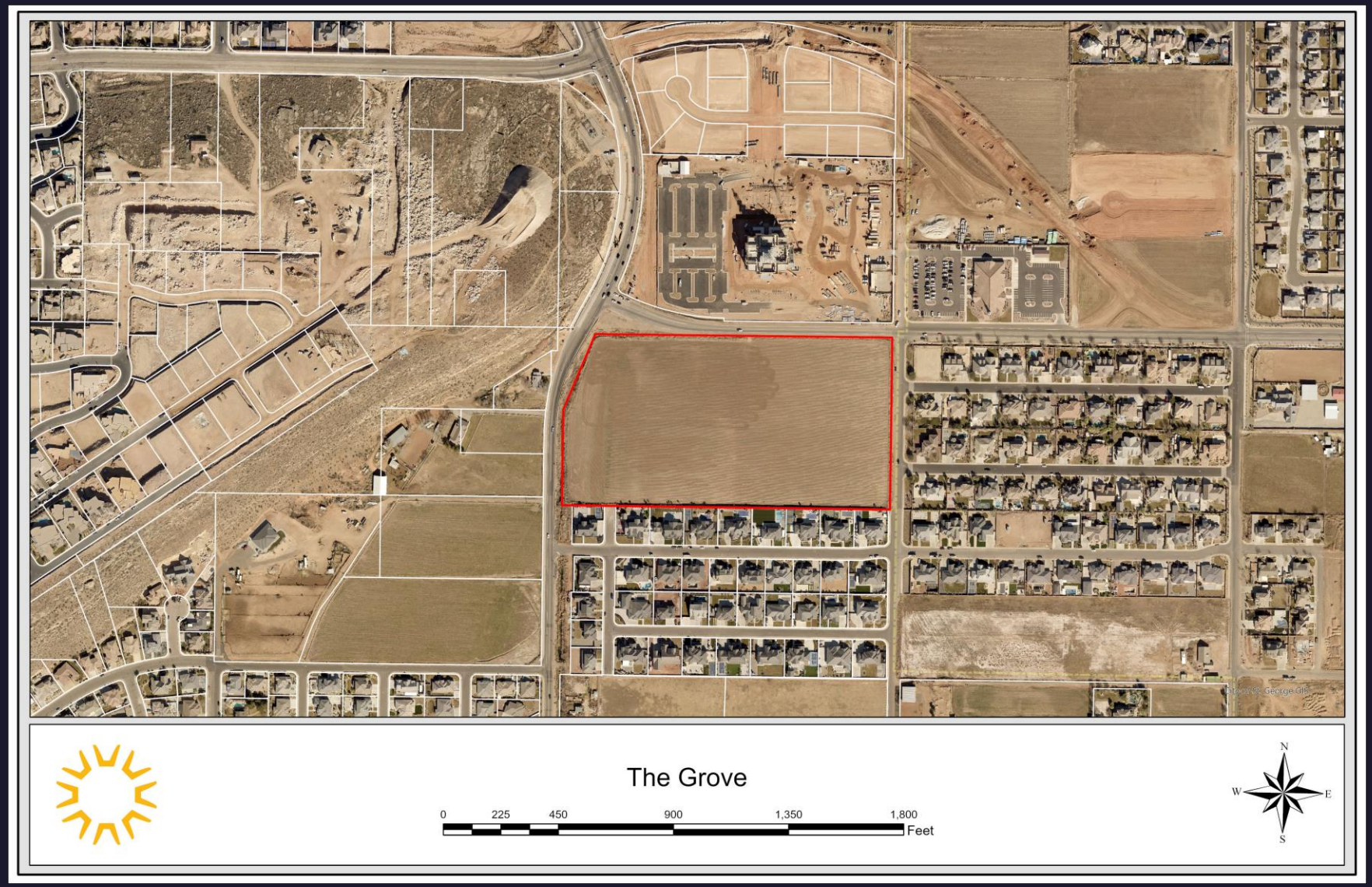
Presentation

The Grove Zone Change Extension

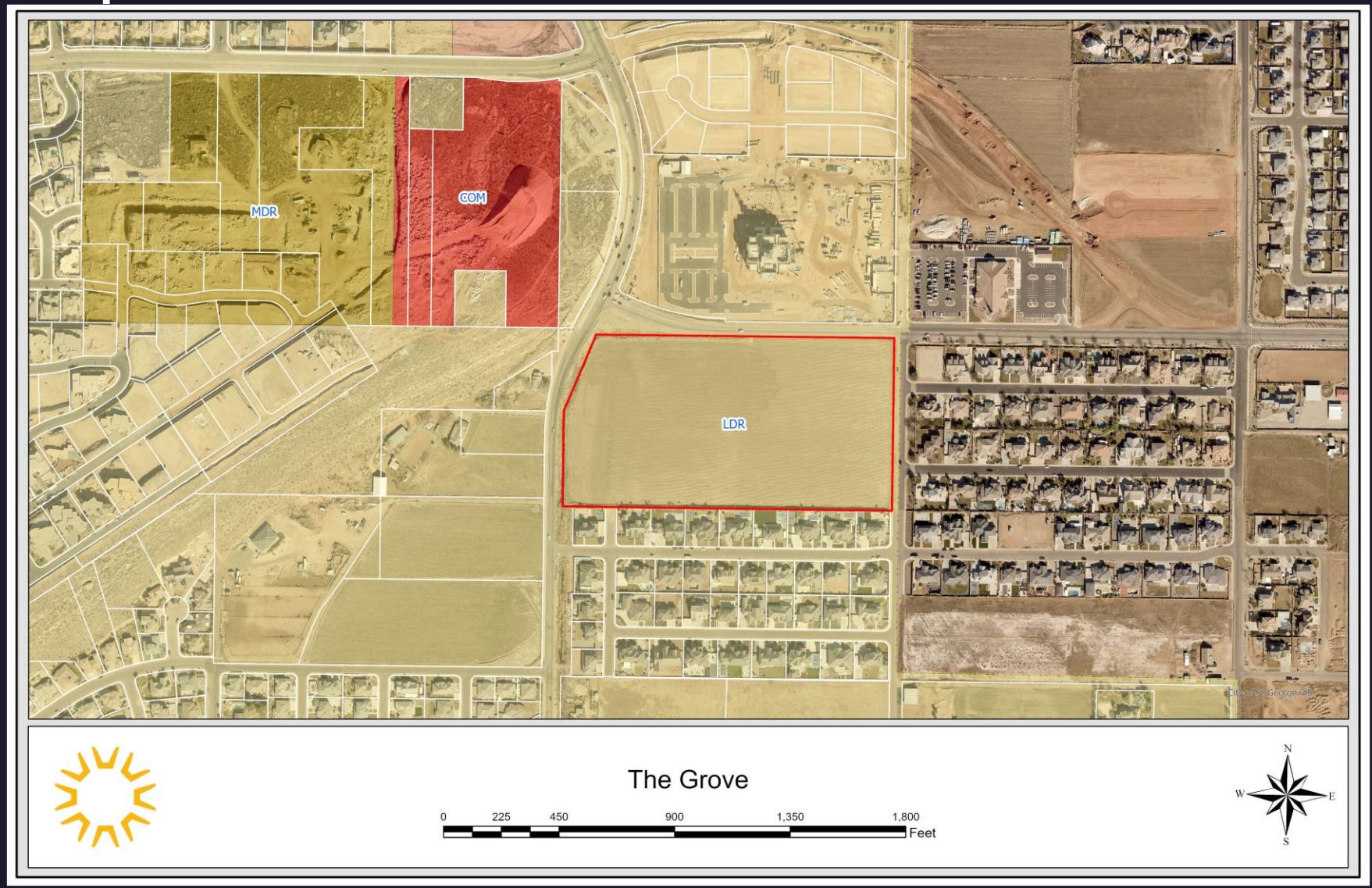
2023-ZC-015



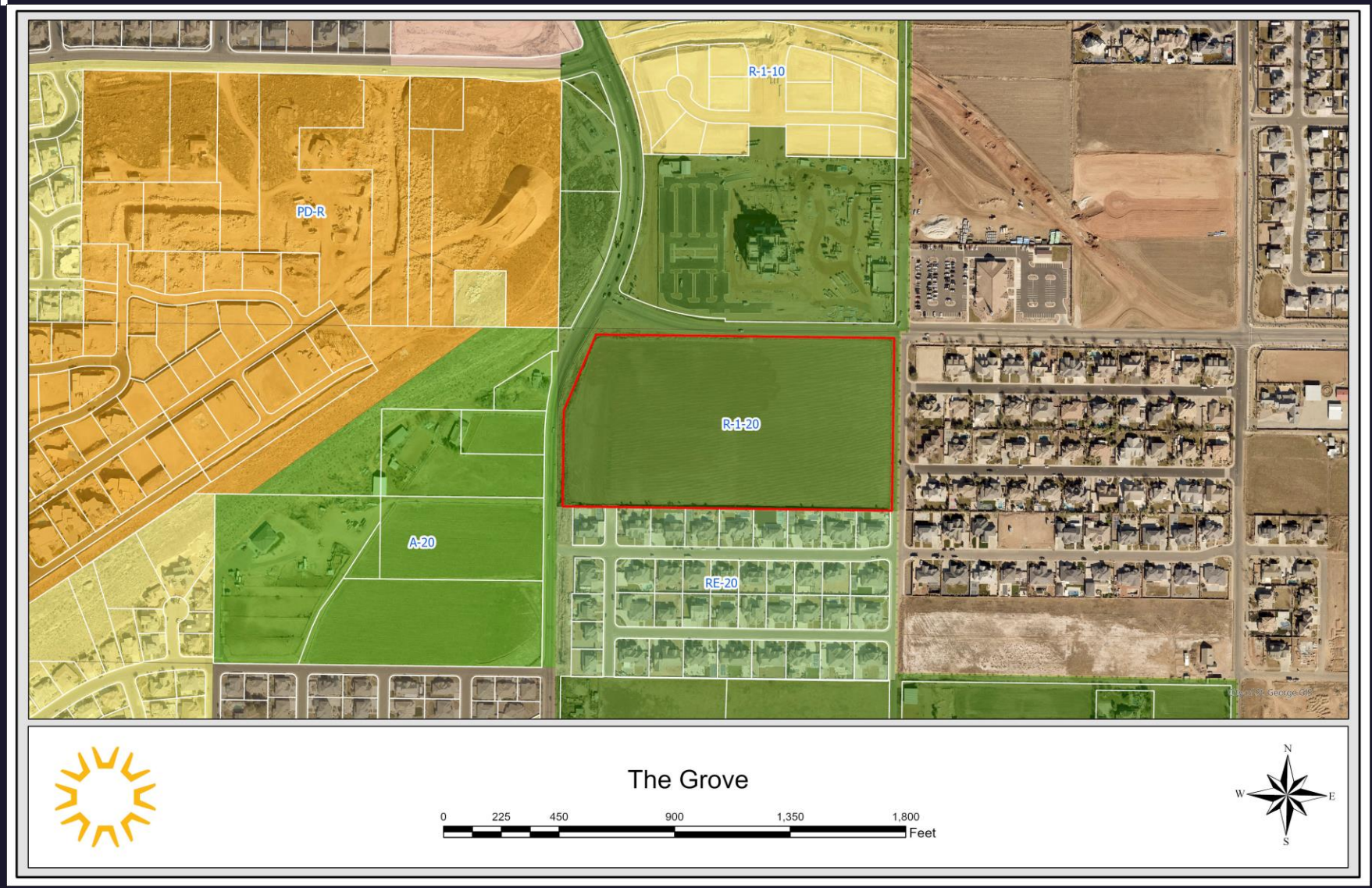
Aerial Map



Land Use Map



Zoning Map


R-1-10
PD-R
R-1-20
A-20
RE-20
The Grove
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225
450
900
1,350
1,800
Feet
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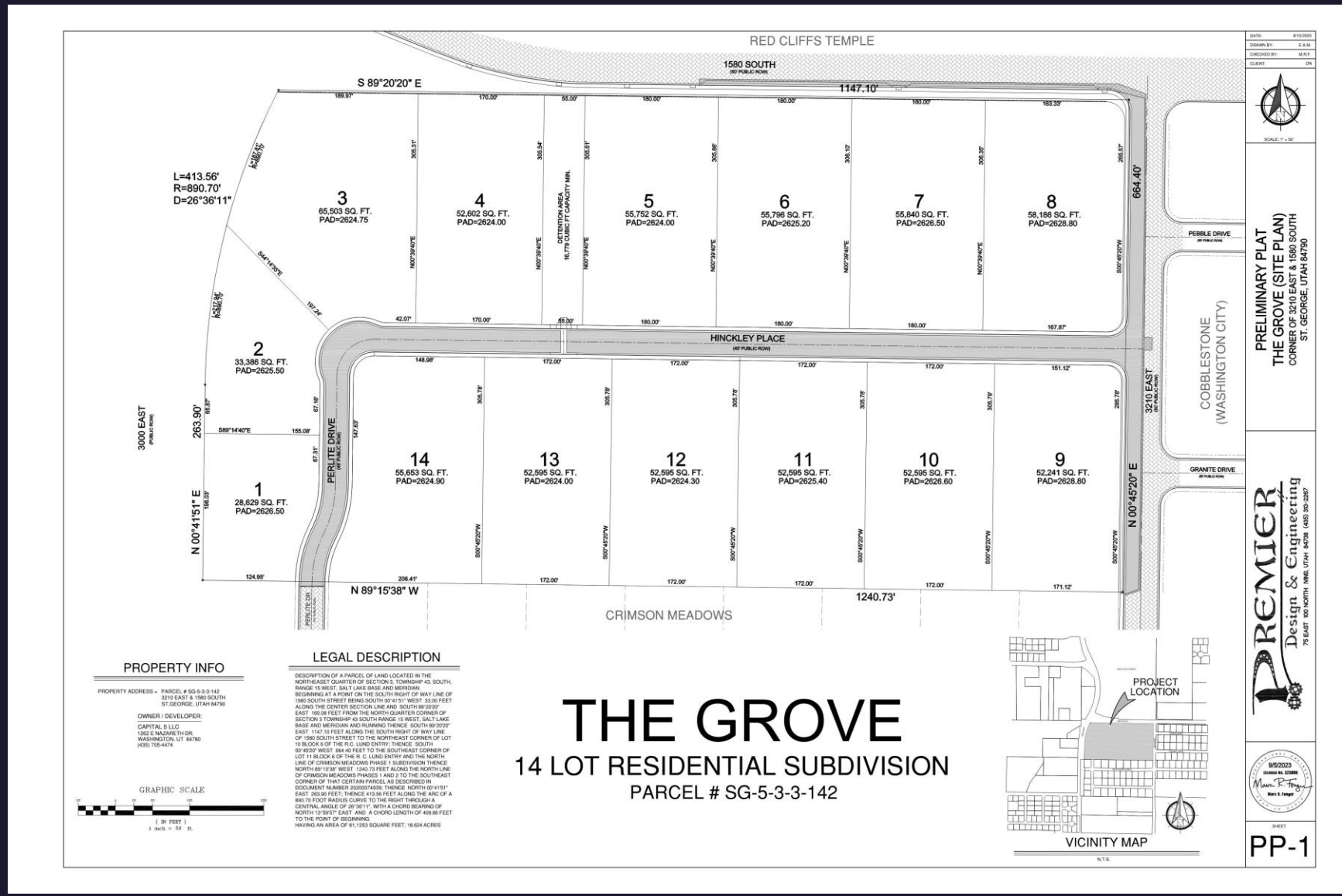
W
E
S

Proposed Plat



ORDINANCE NO._____

AN ORDINANCE AMENDING THE CITY ZONING MAP BY EXTENDING APPROVALS FOR THE ZONING ON THE PROPERTY OF R-1-20 (RESIDENTIAL SINGLE FAMILY 20,000 SQ FT MINIMUM LOT SIZE) ON APPROXIMATELY 18.62 ACRES LOCATED APROXIMATELY AT THE SOUTH-EAST CORNER OF 1580 S 3000 E FOR A PROJECT TO BE KNOW AS THE GROVE.

(The Grove)

WHEREAS, the property owner has requested an extension of the approvals for a zone change from the A-1 (Agriculture 1-acre minimum lot size) to R-1-20 (Residential Single Family 20,000 sq ft minimum lot size) on approximately 18.62 acres, to allow for the construction of Single-Family Residential development; located approximately at 1580 S 3000 E that was granted in 2022; and

WHEREAS, the City Council held a public meeting on this request on November 16, 2023; and

WHEREAS, the Planning Commission held a public hearing on October 24, 2023, and thereafter forwarded a recommendation for approval of the requested zone change to the City Council without conditions; and

WHEREAS, the City Council has determined that the requested zone change to the Zoning Map is consistent with the goals and objectives of the General Plan, does not create an undue burden or hardship on the city, and is in the best interest of the health, safety, and welfare of the citizens of the City of St. George.

NOW, THEREFORE, BE IT ORDAINED, by the St. George City Council, as follows:

Section 1. Repealer. Any provision of the St. George City Code found to be in conflict with this Ordinance is hereby repealed.

Section 2. Adoption. The City Zoning Map shall be amended upon the Effective Date of this ordinance to reflect the zone change extension from A-1 to R-1-20. The location is more specifically described on the attached property legal description, incorporated herein as Exhibit “A” and parcel exhibit, incorporated herein as Exhibit “B”. The project must comply with all conditions, requirements, and restrictions as approved by City Council.

Section 3. Severability. If any provision of this Ordinance is declared to be invalid by a court of competent jurisdiction, the remainder shall not be affected thereby.

Section 4. Effective Date. This Ordinance shall take effect immediately on the date executed below, and upon publication and/or posting in the manner required by law.

ST. GEORGE CITY:

_____
Michele Randall, Mayor

ATTEST:

_____
Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____

VOTING OF CITY COUNCIL:

Councilmember Hughes _____
Councilmember McArthur _____
Councilmember Larkin _____
Councilmember Larsen _____
Councilmember Tanner _____

Exhibit “A”

Legal Description

DESCRIPTION OF A PARCEL OF LAND LOCATED IN THE NORTHEASET QUARTER OF SECTION 3, TOWNSHIP 43, SOUTH, RANGE 15 WEST, SALT LAKE BASE AND MERIDIAN.

BEGINNING AT A POINT ON THE SOUTH RIGHT OF WAY LINE OF 1580 SOUTH STREET BEING SOUTH 00°41'51" WEST 33.00 FEET ALONG THE CENTER SECTION LINE AND SOUTH 89°20'20" EAST 160.08 FEET FROM THE NORTH QUARTER CORNER OF SECTION 3 TOWNSHIP 43 SOUTH RANGE 15 WEST, SALT LAKE BASE AND MERIDIAN AND RUNNING THENCE SOUTH 89°20'20" EAST 1147.10 FEET ALONG THE SOUTH RIGHT OF WAY LINE OF 1580 SOUTH STREET TO THE NORTHEAST CORNER OF LOT 10 BLOCK 6 OF THE R.C. LUND ENTRY; THENCE SOUTH 00°45'20" WEST 664.40 FEET TO THE SOUTHEAST CORNER OF LOT 11 BLOCK 6 OF THE R. C. LUND ENTRY AND THE NORTH LINE OF CRIMSON MEADOWS PHASE 1 SUBDIVISION THENCE NORTH 89°15'38" WEST 1240.73 FEET ALONG THE NORTH LINE OF CRIMSON MEADOWS PHASES 1 AND 2 TO THE SOUTHEAST CORNER OF THAT CERTAIN PARCEL AS DESCRIBED IN DOCUMENT NUMBER 20200074939; THENCE NORTH 00°41'51" EAST 263.90 FEET; THENCE 413.56 FEET ALONG THE ARC OF A 890.70 FOOT RADIUS CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 26°36'11", WITH A CHORD BEARING OF NORTH 13°59'57" EAST AND A CHORD LENGTH OF 409.86 FEET TO THE POINT OF BEGINNING.

HAVING AN AREA OF 81,1253 SQUARE FEET, 18.624 ACRES

Exhibit “B”

Parcel Exhibit



Agenda Date: 11/16/2023 **Agenda Item Number:** 07

Subject:

Consider approval of a preliminary plat for The Grove subdivision, a 14 lot single-family development located on the south-east corner of 1580 South and 3000 East. Case No. 2023-PP-032

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Dave Nasal

Reference Number: 2023-PP-032

Address/Location:

Located on the southeast corner of 1580 South and 3000 East

Item History (background/project status/public process):

The applicant would like to divide the property into 14 single family building lots. The Planning Commission held a public meeting on the requested preliminary plat on October 24, 2023, and recommend approval of the plat with a 7-0 vote with a condition.

Staff Narrative (need/purpose):

The property is currently zoned R-1-20 (Residential, single-family residential 20,000 ft minimum lot size). The applicant is proposing 14 lots. Lots 3-14 will all exceed 50,000 ft. Lots one and two are smaller due to the road connection into the stubbed road to the south but still exceed 20,000 ft. The road will tie into 3210 East which borders the east side of the property. The Planning Commission recommended approval, with one condition.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

The Planning Commission held a public meeting on the requested preliminary plat on October 24, 2023, and recommend approval of the plat with a 7-0 vote with the following condition:1. That a final plat is recorded within one year after city council approval of this preliminary plat. If a final plat is not recorded within a year, preliminary plat approvals shall be deemed expired and void.

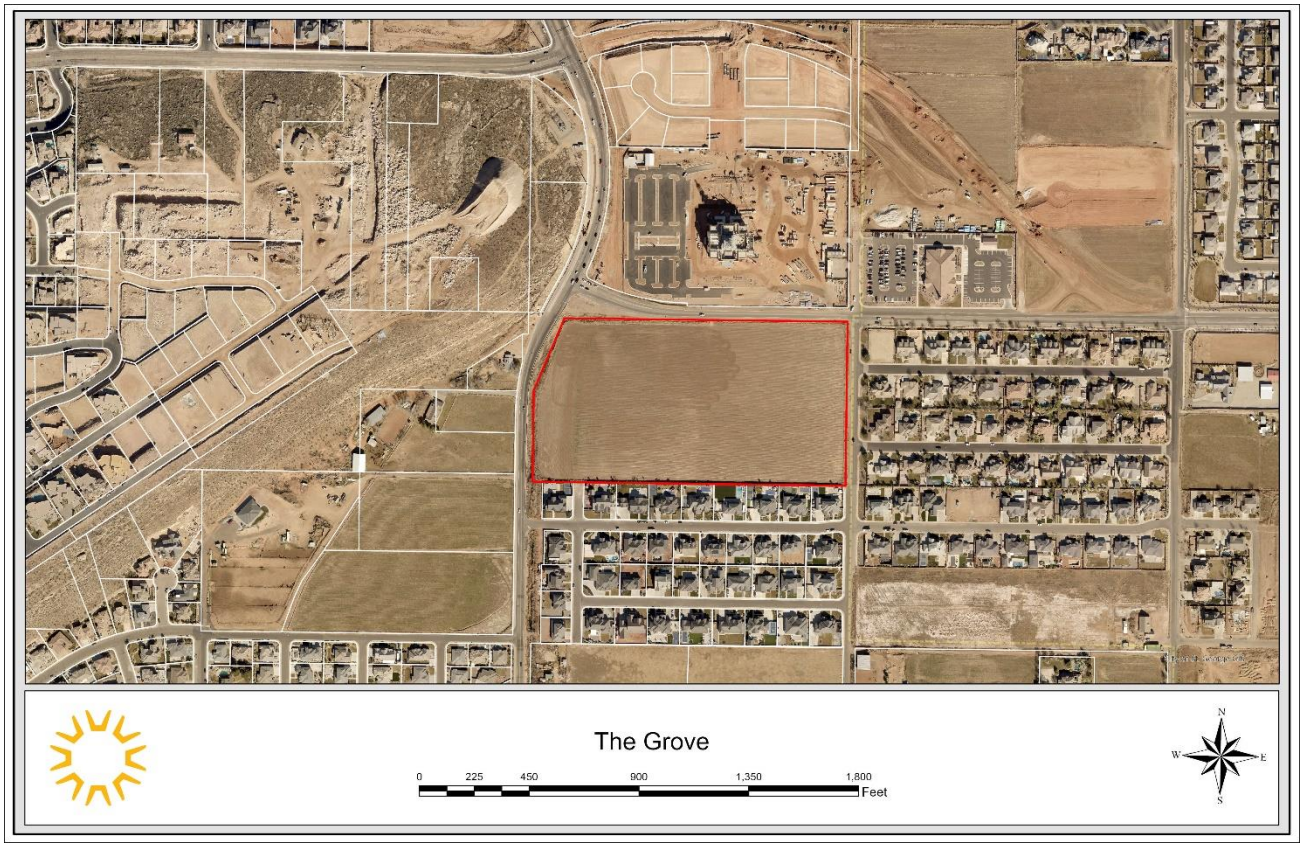
St.George
Community Development

Preliminary Plat

PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT: **11/16/2023**

PRELIMINARY PLAT
The Grove
Case No. 2023-PP-032

Request:	The applicant is requesting approval of a 14 lot, preliminary plat.
Representative:	Dave Nasal
Parcel Number:	SG-5-3-3-142
Location:	The property is located on the southeast corner of 1580 South and 3000 East.
Total Acreage:	Approximately 18.62 acres
Existing Zoning:	R-1-20 (Residential, single-family 20,000 ft² minimum lot size)
General Plan:	LDR (Low Density Residential)



Adjacent zones: North – A-1 (Temple),
West – A-20,
East – R-1-15 (Washington City)
South – RE-20.

Background & Analysis: The property is currently zoned R-1-20 (Residential, single-family residential 20,000 ft² minimum lot size). The applicant is proposing lots 3-14 to all exceed 50,000 ft². Lots one and two are smaller due to the road needing to connect into the stubbed road to the south. As a result, lots one and two are 28,629 ft² and 33,386² respectively. The road will tie into 3210 East which borders the east side of the property.

Recommendation: Planning Commission held a public meeting on the requested preliminary plat on October 24, 2023, and recommend approval of the plat with a 7-0 vote.

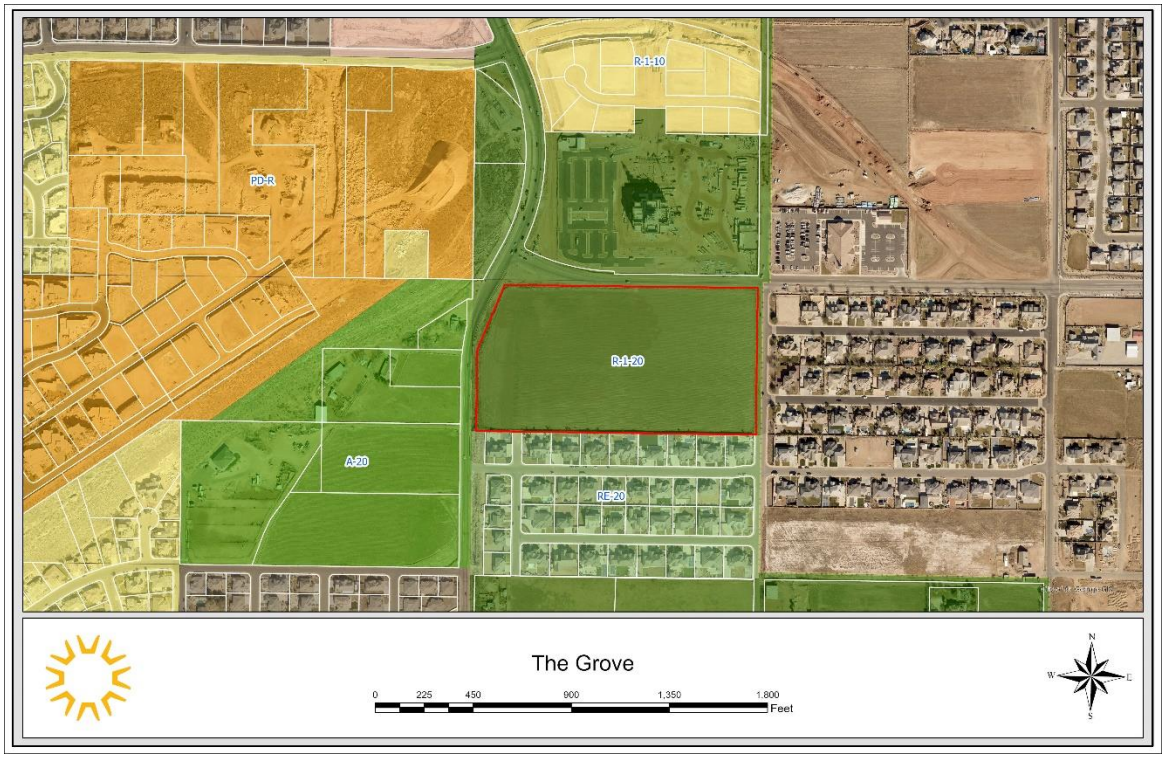
Alternatives:
1. Approve the plat as presented.
2. Approve with conditions
3. Deny the application.
4. Continue the proposed preliminary plat to a later date.

Sample Motion: **"**I move that we approve The Grove Subdivision Preliminary Plat request, application number 2023-PP-032, based on the findings and subject to the conditions noted in the staff report."

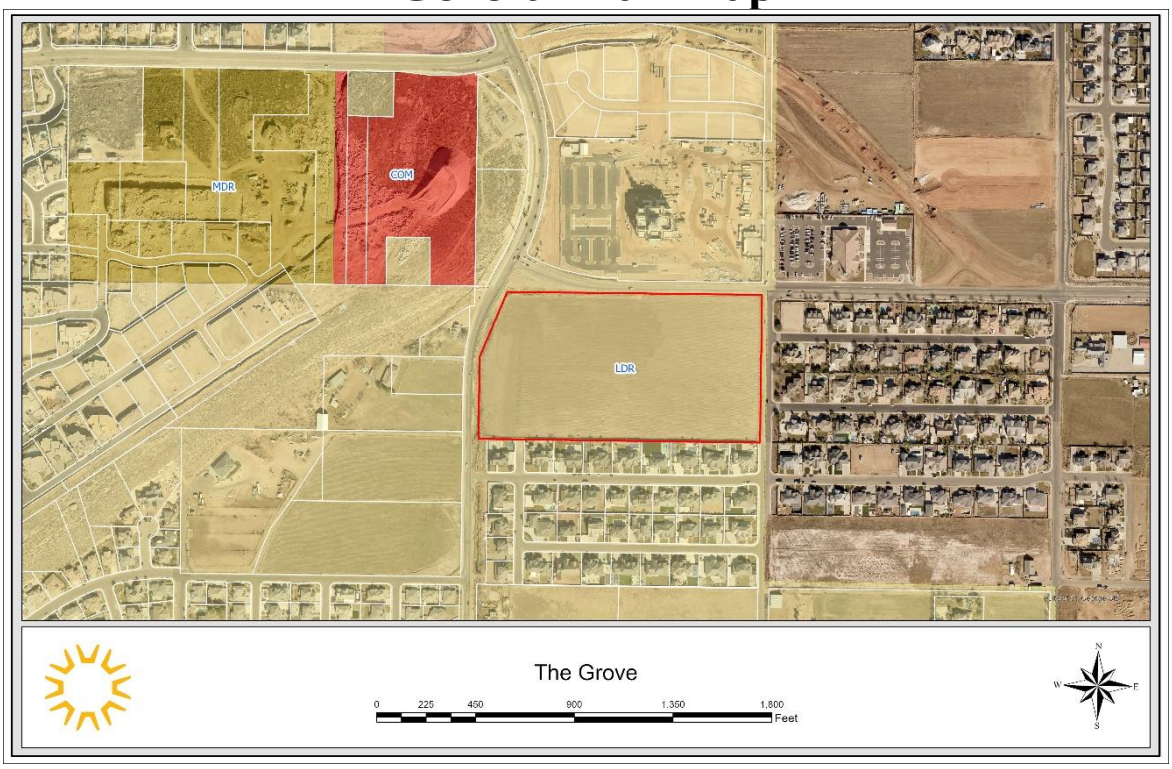
Possible Findings:
1. That the plat is consistent with and compliant to the zoning on the property.
2. That the plat will not leave any remnant property unaccounted for.
3. That development in the area is consistent with the proposed preliminary plat.
4. That the flag lot in this case is compliant with code and is warranted given the shape of the property.

Conditions:
1. That a final plat is recorded within one year after city council approval of this preliminary plat. If a final plat is not recorded within a year, preliminary plat approvals shall be deemed expired and void.

Zoning Map



General Plan Map



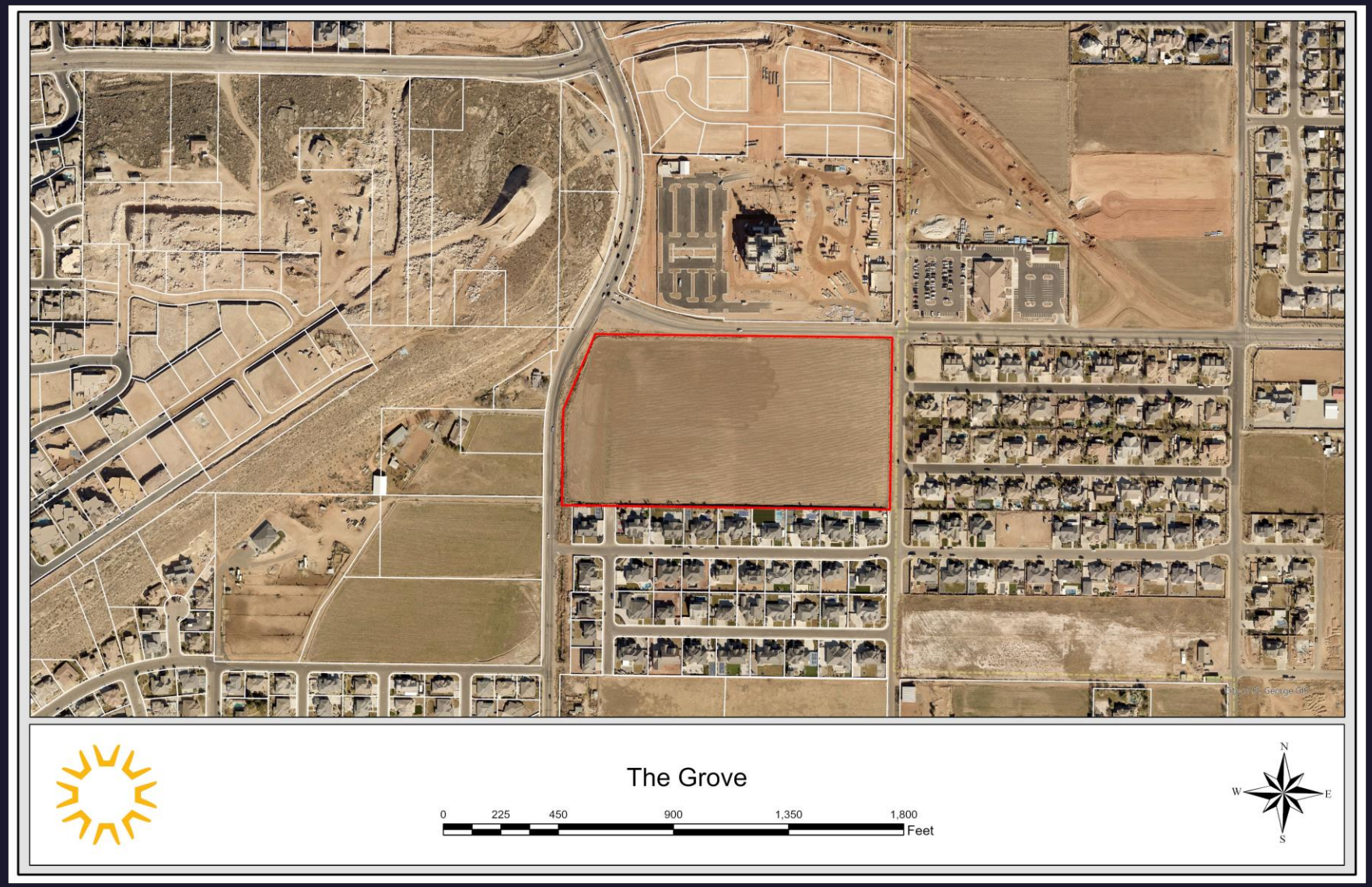
Presentation

The Grove Preliminary Plat

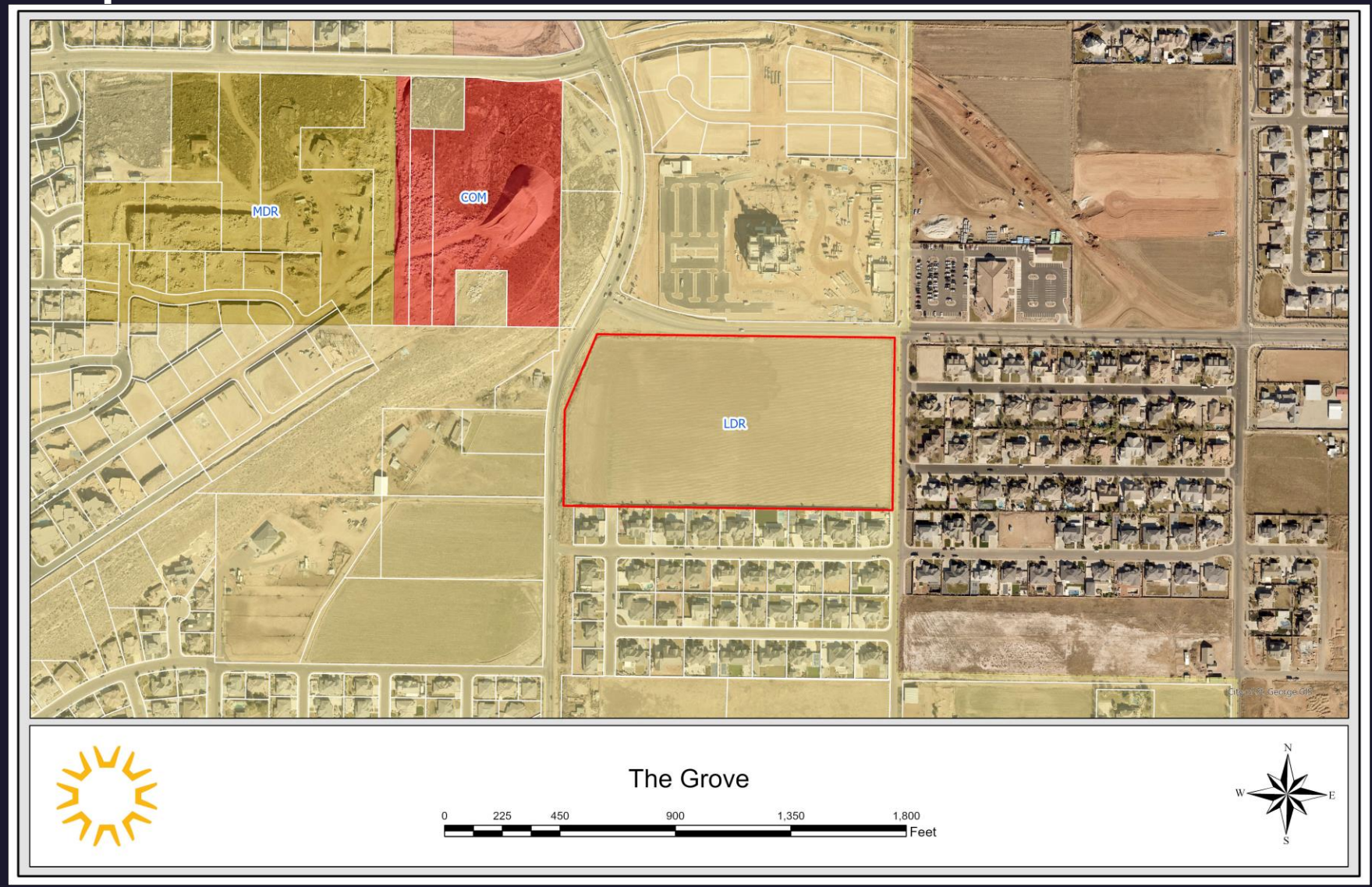
2023-ZC-015



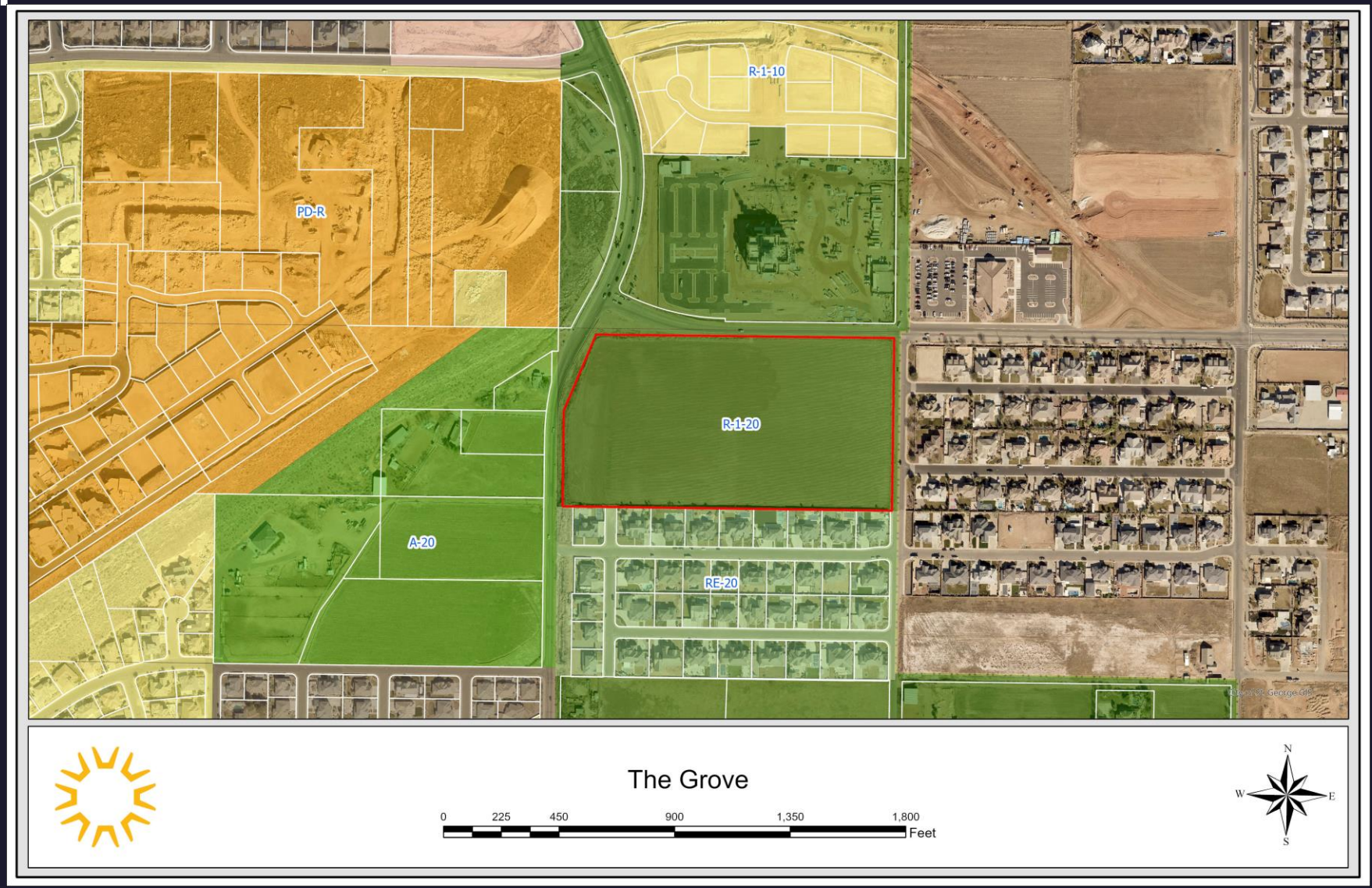
Aerial Map



Land Use Map



Zoning Map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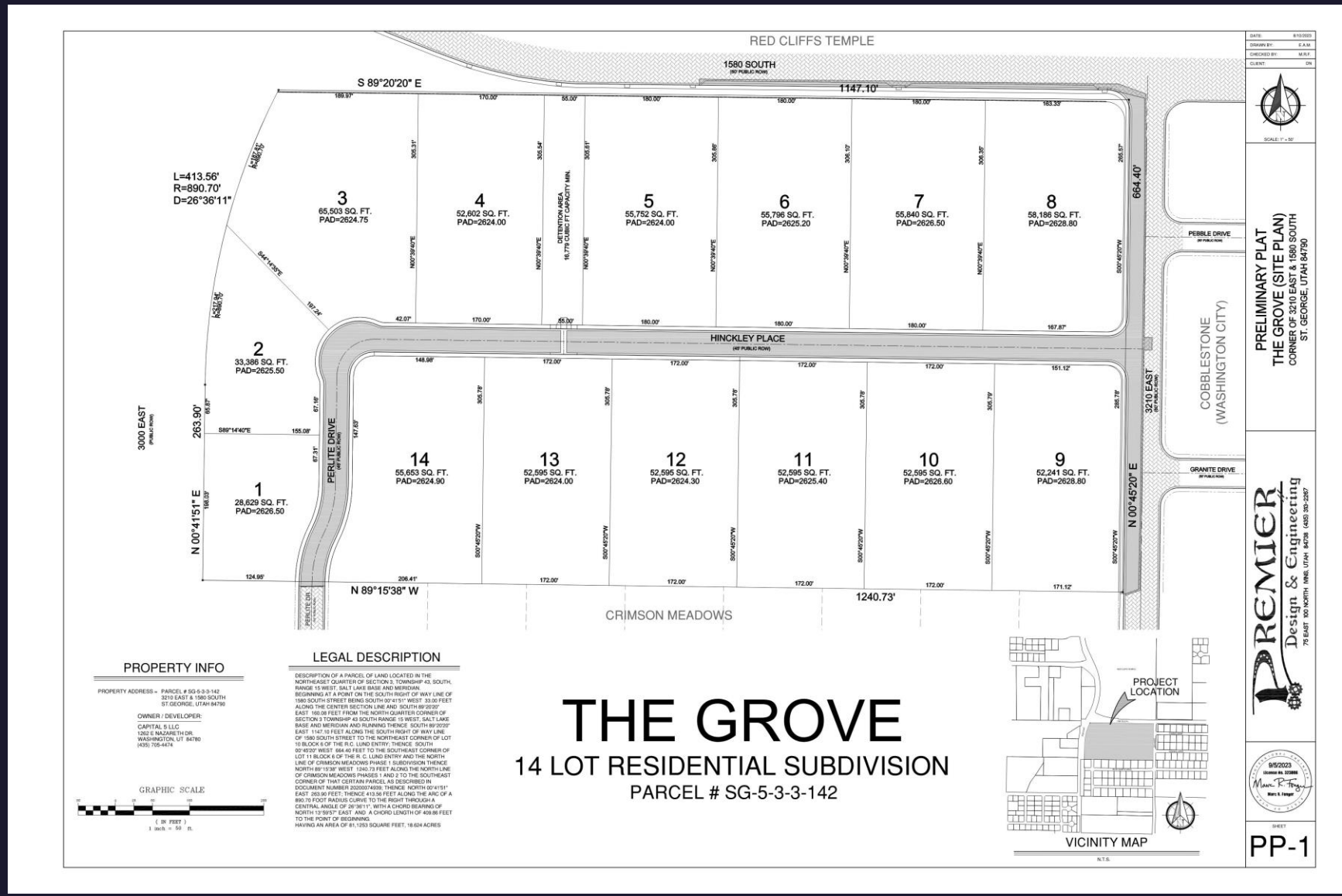
Proposed Plat



Agenda Date: 11/16/2023 **Agenda Item Number:** 08

Subject:

Consider approval of Ordinance No. 2023-038 amending the city zoning map by amending the zone from PD-R (Planned Development Residential) to C-3 (General Commercial) on approximately 3.0 acres generally located on the east side of Riverside Drive at approximately 700 South. Case No. 2023-ZC-014

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Smoothie Kings Holdings, LLC

Reference Number: 2023-ZC-014

Address/Location:

Generally located on the east side of Riverside Drive at approximately 700 South

Item History (background/project status/public process):

The three acres that is proposed to be rezoned is part of a larger 16-acre parcel. In 2021, a PD-R for townhomes was approved on the overall parcel. Though the zoning covered the entire parcel, the townhomes were only planned on the bottom portion (roughly 10 acres) of the property that are flatter than the northern portion of the property. This left approximately six acres not occupied by townhomes. The Planning Commission held a public hearing on the zone change on October 24, 2023, and recommends approval of the application with a 7-0 vote and no conditions.

Staff Narrative (need/purpose):

The property just north of the property is currently zoned C-3 and the owner of that property has expressed interest in building an office building on the site extending down into the subject parcel but would need to change the zoning in order to do so.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

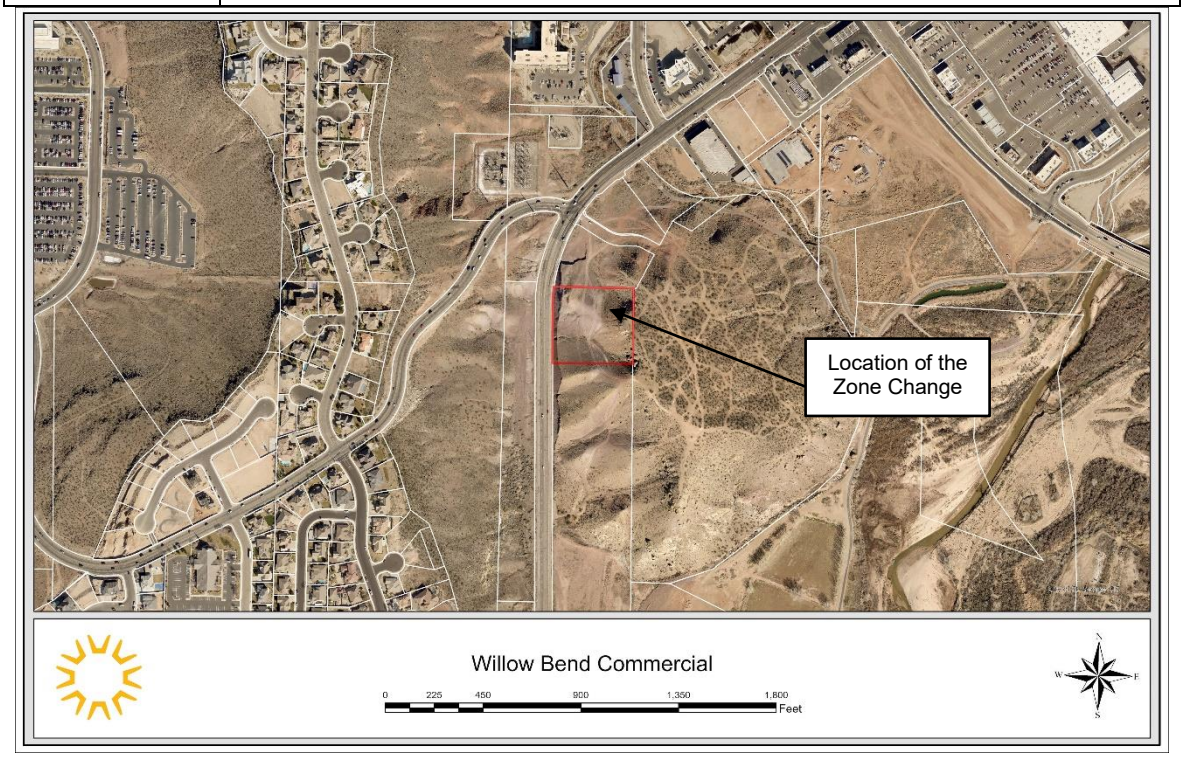
Planning Commission held a public hearing on this zone change request for Willow Bend. No public input was received and the Planning Commission recommended approval of the change with a 7-0 vote and no conditions.

St.George
Community Development

Zone Change

PLANNING COMMISSION AGENDA REPORT: 10/24/2023
CITY COUNCIL AGENDA REPORT: 11/16/2023

Willow Bend Commercial Zone Change Zone Change (Case No. 2023-ZC-014)		
Request:	Consider a request to amend the City Zoning Map by amending the zone from PD-R (Planned Development Residential) to C-3 (General Commercial) on approximately 3.0 acres generally located on the east side of Riverside Drive at approximately 700 S.	
Applicant:	Smoothie Kings Holdings, LLC	
Location:	East side of Riverside Drive at approximately 700 South	
General Plan:	COM (Commercial)	
Existing Zoning:	PD-R (Planned Development Residential)	
Surrounding Zoning:	North	C-3 (General Commercial)
	South	PD-R (Planned Development Commercial)
	East	RE-20 (Residential Estates, 20,000 ft² lot size) OS (Open Space)
	West	Riverside Drive & PD-C (Planned Development Commercial)
Land Area:	Approximately 3.0 acres	



BACKGROUND:
The applicant is proposing a zone change to a portion of a larger parcel from PD-R (Planned Development Residential) to C-3 (General Commercial). The three acres that is proposed to be rezoned is part of a larger 16 acre parcel. In 2021, a PD-R for townhomes was approved on the overall parcel. Though the zoning covered the entire parcel, the townhomes were only planned on the bottom portion (roughly 10 acres) of the property that are flatter than the northern portion of the property. This left approximately six acres not occupied by townhomes.

The property just north of the property is currently zoned C-3 and the owner of that property has expressed interest in building an office building on the site extending down into the subject parcel but would need to change the zoning in order to do so.

Preliminary Plat: as part of the application, the applicant is proposing to divide the property into three lots. The first is the northern property (subject property) and is three acres. The next approximately 3 acres would be a lot that would need to be rezoned in the future but is lot two. Lot three is the larger townhome parcel. By platting the property now, it will allow the applicant to avoid split zoning.

RECOMMENDATION:
Planning Commission held a public hearing on this zone change request for Willow Bend. No public input was received and the Planning Commission recommended approval of the change with a 7-0 vote.

ALTERNATIVES:
1. Approval as presented.
2. Denial of the application.
3. Continue the proposed zone change amendment to a later date.

POSSIBLE MOTION:
“I move we approve the Willow Bend Zone Change, application 2023-ZC-014, based on the finding listed in the staff report.”

FINDINGS FOR APPROVAL:
1. That a zoning map amendment application was filed by the applicant in accordance with section 10-1-8 of the St. George city code.
2. The proposed zoning is consistent with the general plan designations on the property.

Exhibit A
PowerPoint Presentation



Willow Bend Commercial

2023-ZC-014

Aerial Map


Foremaster Drive
Riverside Drive
Willow Bend Commercial
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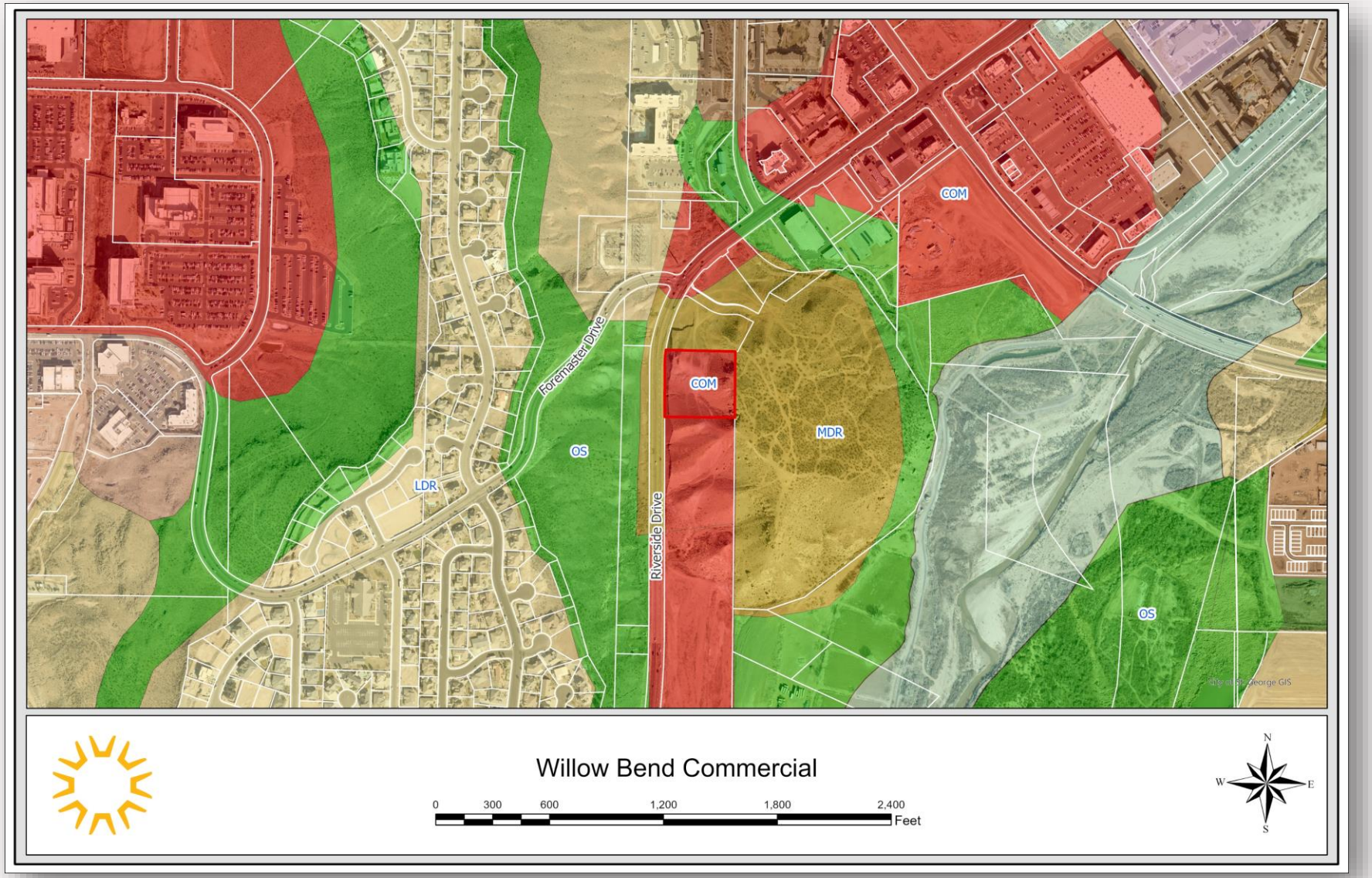
Land Use Map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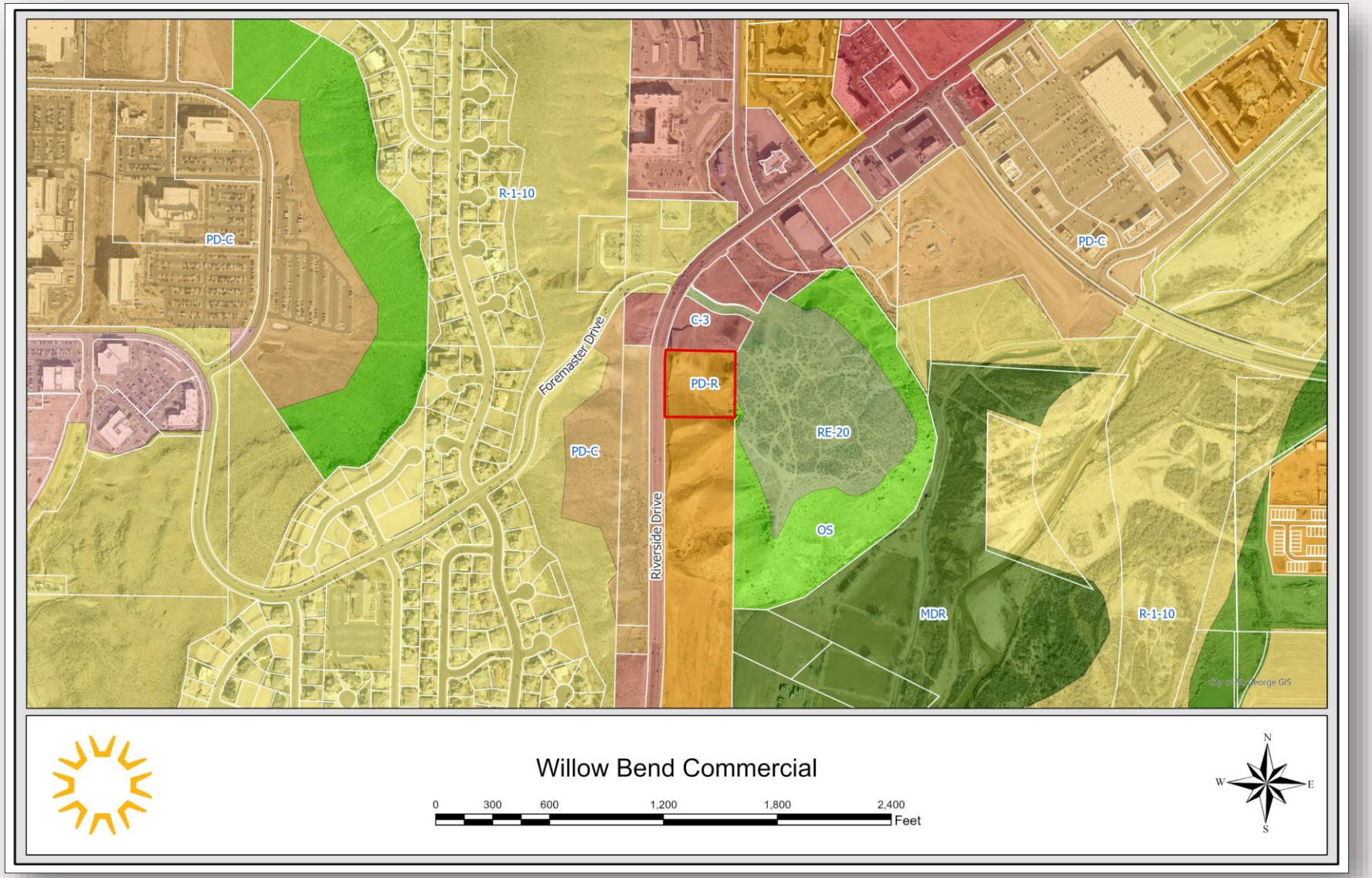
Zoning Map


R-1-10
PD-C
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C-3
PD-R
PD-C
RE-20
Riverside Drive
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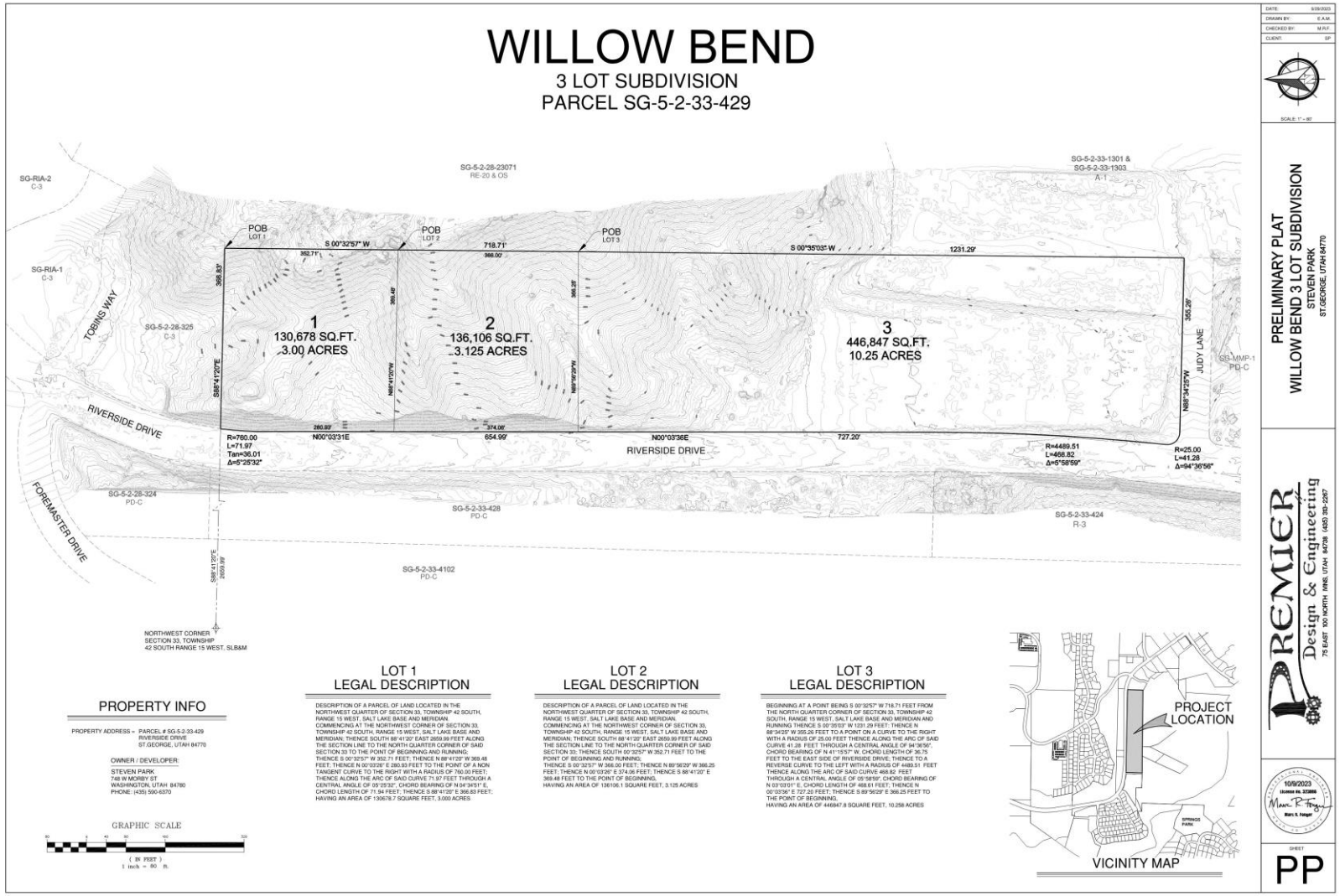
Proposed Plat



ORDINANCE NO. _____

AN ORDINANCE AMENDING THE CITY ZONING MAP BY AMENDING THE ZONE FROM PD-R (PLANNED DEVELOPMENT RESIDENTIAL) TO C-3 (GENERAL COMMERCIAL) ON APPROXIMATELY 3.0 ACRES GENERALLY LOCATED ON THE EAST SIDE OF RIVERSIDE DRIVE AT APPROXIMATELY 700 SOUTH. CASE NO. 2023-ZC-014

(Willow Bend Commercial Zone Change)

WHEREAS, the property owner has requested a zone change from PD-R (Planned Development Residential) to C-3 (General Commercial) on approximately 3.0 acres generally located on the east side of Riverside Drive at approximately 700 South in order to create consistent zoning with the property with the adjacent property to the north; and

WHEREAS, the City Council held a public meeting on this request on November 16, 2023; and

WHEREAS, the Planning Commission held a public hearing on the request on October 24, 2023, and recommended approval with a 7-0 vote; and

WHEREAS, the City Council has determined that the requested amendment to the Zoning Map is justified at this time, and is in the best interest of the health, safety, and welfare of the citizens of the City of St. George.

NOW, THEREFORE, BE IT ORDAINED, by the St. George City Council, as follows:

Section 1. Repealer. Any provision of the St. George City Code found to be in conflict with this Ordinance is hereby repealed.

Section 2. Adoption. The City Zoning Map shall be amended upon the Effective Date of this Ordinance to reflect the zone change from PD-R (Planned Development Residential) to C-3 (General Commercial) on approximately 3.0 acres. The zone amendment and location is more specifically described on the attached property legal description, incorporated herein as Exhibit "A," and parcel exhibit, incorporated herein as Exhibit "B". The project must comply with all conditions, requirements, and restrictions as approved by City Council.

Section 3. Severability. If any provision of this Ordinance is declared to be invalid by a court of competent jurisdiction, the remainder shall not be affected thereby.

Section 4. Effective Date. This Ordinance shall take effect immediately on the date executed below, and upon publication and/or posting in the manner required by law.

APPROVED AND ADOPTED by the St. George City Council, this 16th day of November 2023.

ST. GEORGE CITY: ATTEST:

_____ _____

Michele Randall, Mayor Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____
Jami Brackin, Deputy City Attorney

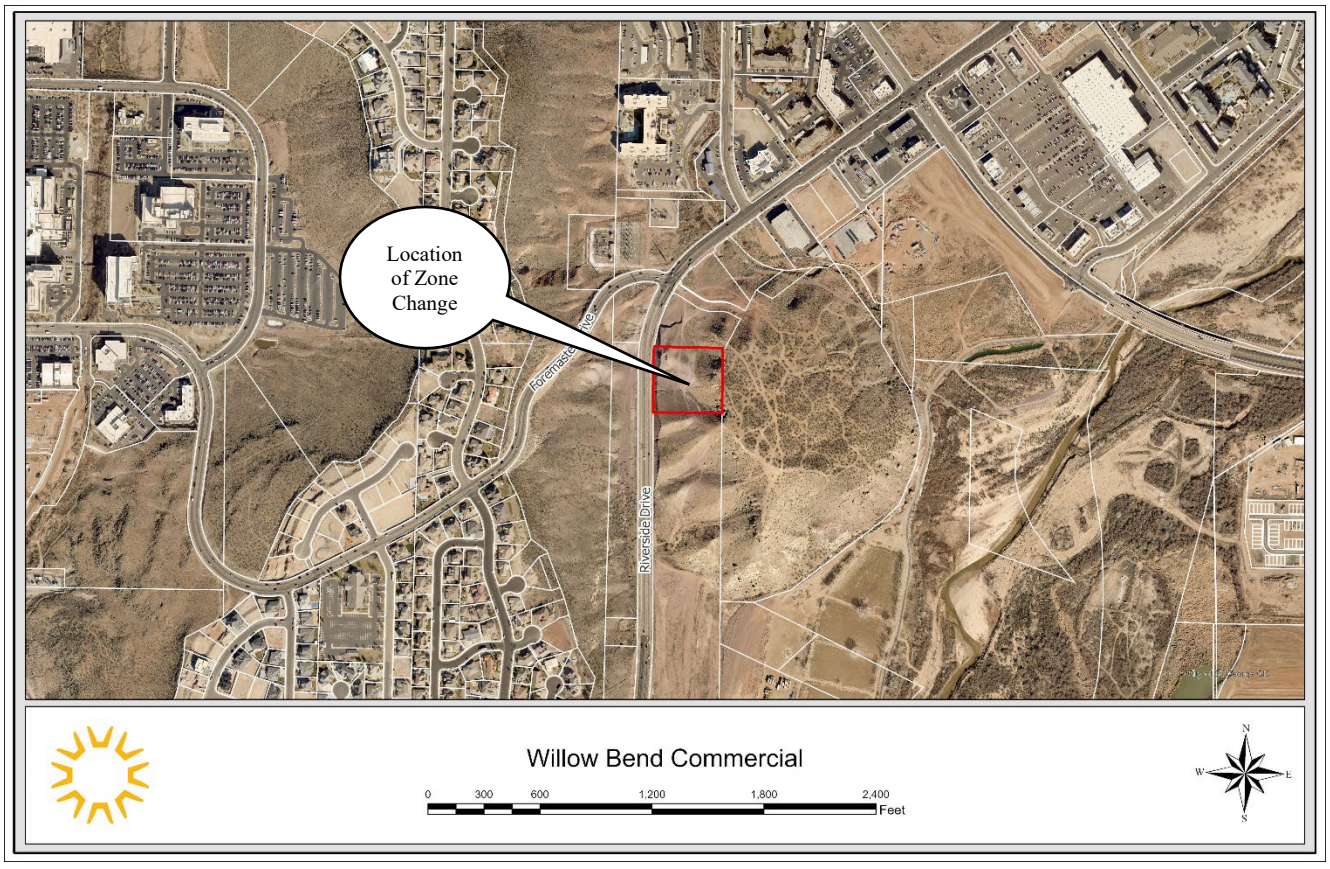
VOTING OF CITY COUNCIL:

Councilmember Hughes _____
Councilmember McArthur _____
Councilmember Larkin _____
Councilmember Larsen _____
Councilmember Tanner _____

Exhibit “A” – Legal Description

DESCRIPTION OF A PARCEL OF LAND LOCATED IN THE NORTHWEST QUARTER OF SECTION 33, TOWNSHIP 42 SOUTH, RANGE 15 WEST, SALT LAKE BASE AND MERIDIAN. COMMENCING AT THE NORTHWEST CORNER OF SECTION 33, TOWNSHIP 42 SOUTH, RANGE 15 WEST, SALT LAKE BASE AND MERIDIAN; THENCE SOUTH 88°41'20" EAST 2659.99 FEET ALONG THE SECTION LINE TO THE NORTH QUARTER CORNER OF SAID SECTION 33 TO THE POINT OF BEGINNING AND RUNNING; THENCE S 00°32'57" W 352.71 FEET; THENCE N 88°41'20" W 369.48 FEET; THENCE N 00°03'26" E 280.93 FEET TO THE POINT OF A NON-TANGENT CURVE TO THE RIGHT WITH A RADIUS OF 760.00 FEET; THENCE ALONG THE ARC OF SAID CURVE 71.97 FEET THROUGH A CENTRAL ANGLE OF 05°25'32", CHORD BEARING OF N 04°34'51" E, CHORD LENGTH OF 71.94 FEET; THENCE S 88°41'20" E 366.83 FEET; HAVING AN AREA OF 130678.7 SQUARE FEET, 3.000 ACRES

Exhibit “B” – Parcel Exhibit



Agenda Date: 11/16/2023 **Agenda Item Number:** 09

Subject:

Consider approval of a preliminary plat for the Willow Bend subdivision, a three lot, 16.37-acre subdivision located on the east side of Riverside Drive between 700 South and Judy Lane. Case No. 2023-PP-035

Item at-a-glance:

Staff Contact: Dan Boles

Applicant Name: Dave Nasal

Reference Number: 2023-PP-035

Address/Location:

Generally located on the east side of Riverside Drive between 700 South and Judy Ln

Item History (background/project status/public process):

This plat is part of a larger application to rezone the property and plat it. If the property is rezoned, this plat will keep the property from being split zoned. Lot one is proposed to be 3.0 acres and is the lot proposed to be rezoned to commercial. The Planning Commission held a public hearing on the request and recommends approval with a 7-0 vote and one condition.

Staff Narrative (need/purpose):

This plat was submitted in conjunction with a zone change for lot one of the proposed plat. The plat will allow the applicant to keep the townhomes approved on proposed lot three separate from the potential commercial uses on lot one and potentially lot two.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

On October 24, 2023, the Planning Commission held a public meeting on the preliminary plat and recommended approval of the application with a 7-0 vote and with the following condition:1. That a final plat is recorded within one year after city council approval of this preliminary plat. If a final plat is not recorded within a year, all approvals shall be deemed expired and void.

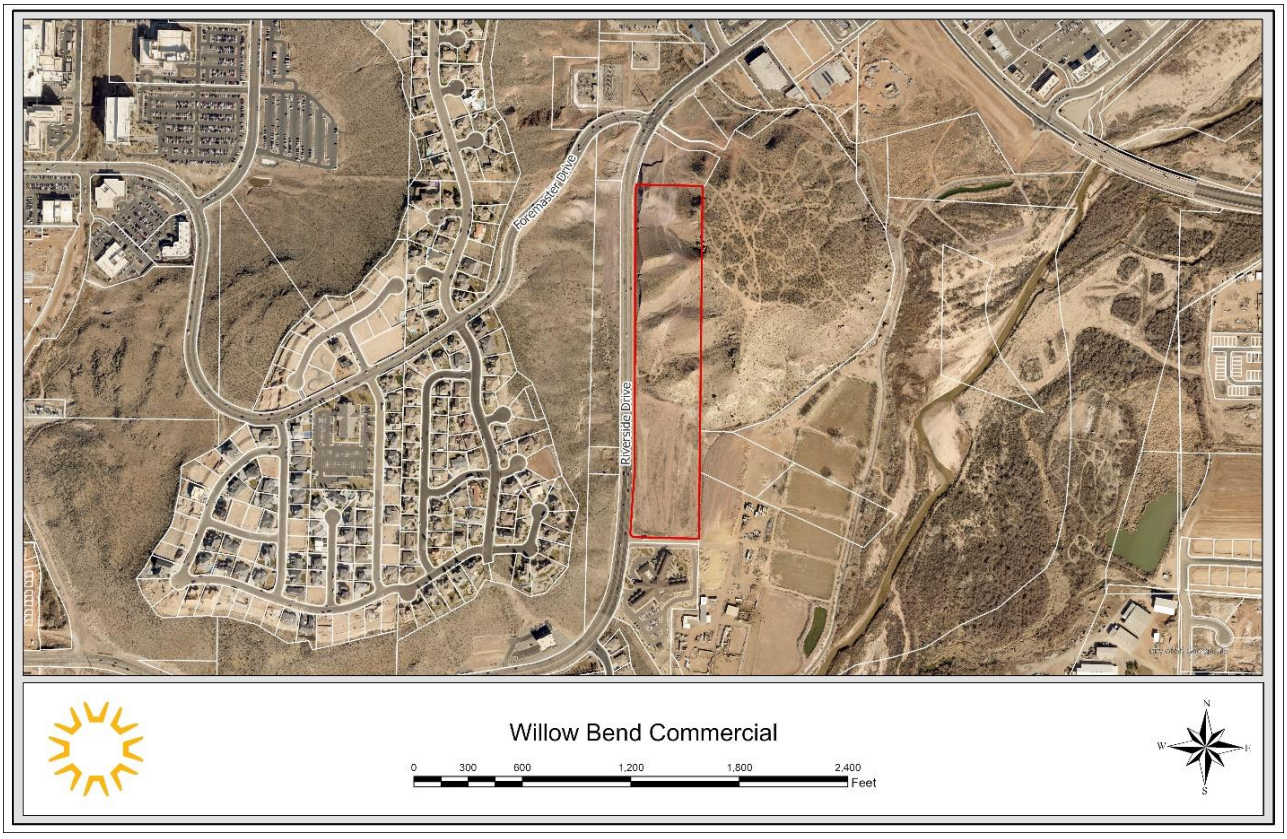
St.George
Community Development

Preliminary Plat

PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT: **11/16/2023**

PRELIMINARY PLAT
Willow Bend 3 Lot Subdivision
Case No. 2023-PP-035

Request:	The applicant is requesting approval of a 3 lot, preliminary plat.
Representative:	Dave Nasal
Location:	The property is located on the east side of Riverside Drive between 700 South and Judy Ln.
Total Acreage:	Approximately 16.37 acres
Existing Zoning:	PD-R (Planned Development Residential) – Proposed C-3 (General Commercial)
General Plan:	COM (Commercial)



Adjacent zones:

North – C-3 (General Commercial)
South – PD-C (Planned Development Commercial)
West – PD-C (Planned Development Commercial) & R-3 (Residential Multi-Family)
East – A-1 (Agricultural), OS (Open Space) & RE-20 (Residential Estates 20,000 ft² lots size)

Background & Analysis:

This plat is part of a larger application to rezone the property and plat it. If the property is rezoned, this plat will keep the property from being split zoned. Lot one is proposed to be 3.0 acres and is the lot proposed to be rezoned to commercial. Lot two is proposed 3.125 acres and would remain PD-R for now. Lot 3 is proposed 10.25 acres and would contain the Willow Bend Townhomes.

PC Recommendation:

On October 24, 2023, the Planning Commission held a public meeting on the preliminary plat and recommended approval of the application with a 7-0 vote.

Alternatives:

1. Approval as presented.
2. Approval with conditions.
3. Denial of the application.
4. Continue the proposed preliminary plat to a later date.

Sample Motion:

"I move that we approve The Willow Bend Three Lot Subdivision Preliminary Plat request, application number 2023-PP-035, based on the findings and subject to the conditions noted in the staff report."

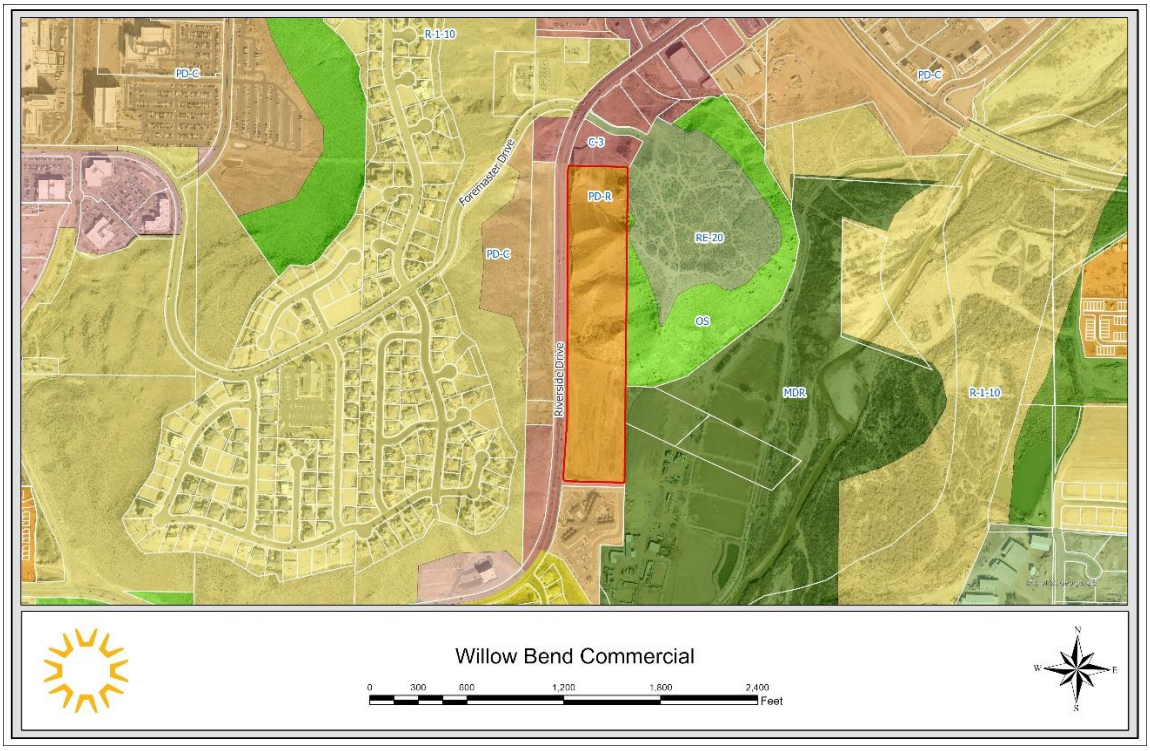
Possible Findings:

1. That the plat is consistent with and compliant to the zoning on the property and the proposed zoning.
2. That the plat will not leave any remnant property unaccounted for.
3. That development in the area is consistent with the proposed preliminary plat.
4. That the flag lot in this case is compliant with code and is warranted given the shape of the property.

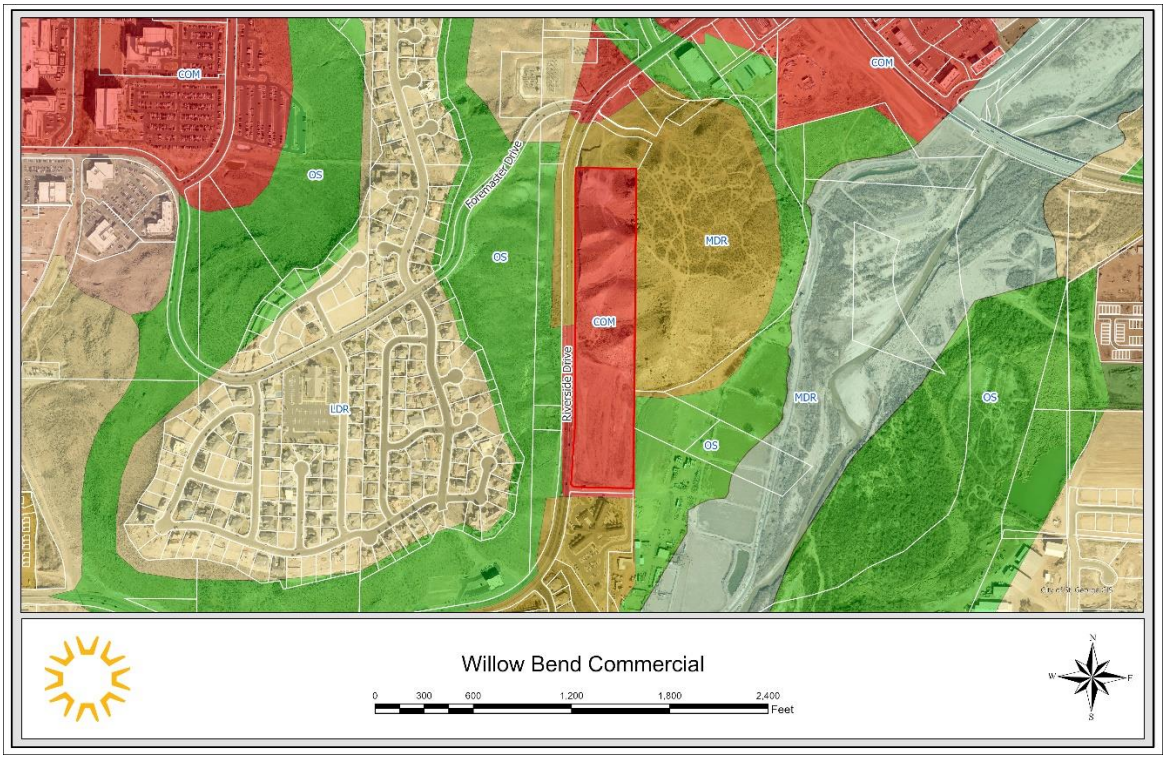
Conditions:

1. That a final plat is recorded within one year after city council approval of this preliminary plat. If a final plat is not recorded within a year, all approvals shall be deemed expired and void.

Zoning Map



General Plan Map



Presentation



Willow Bend Three Lot Subdivision

Preliminary Plat

2023-PP-035

Aerial Map


Foremaster Drive
Riverside Drive
Willow Bend Commercial
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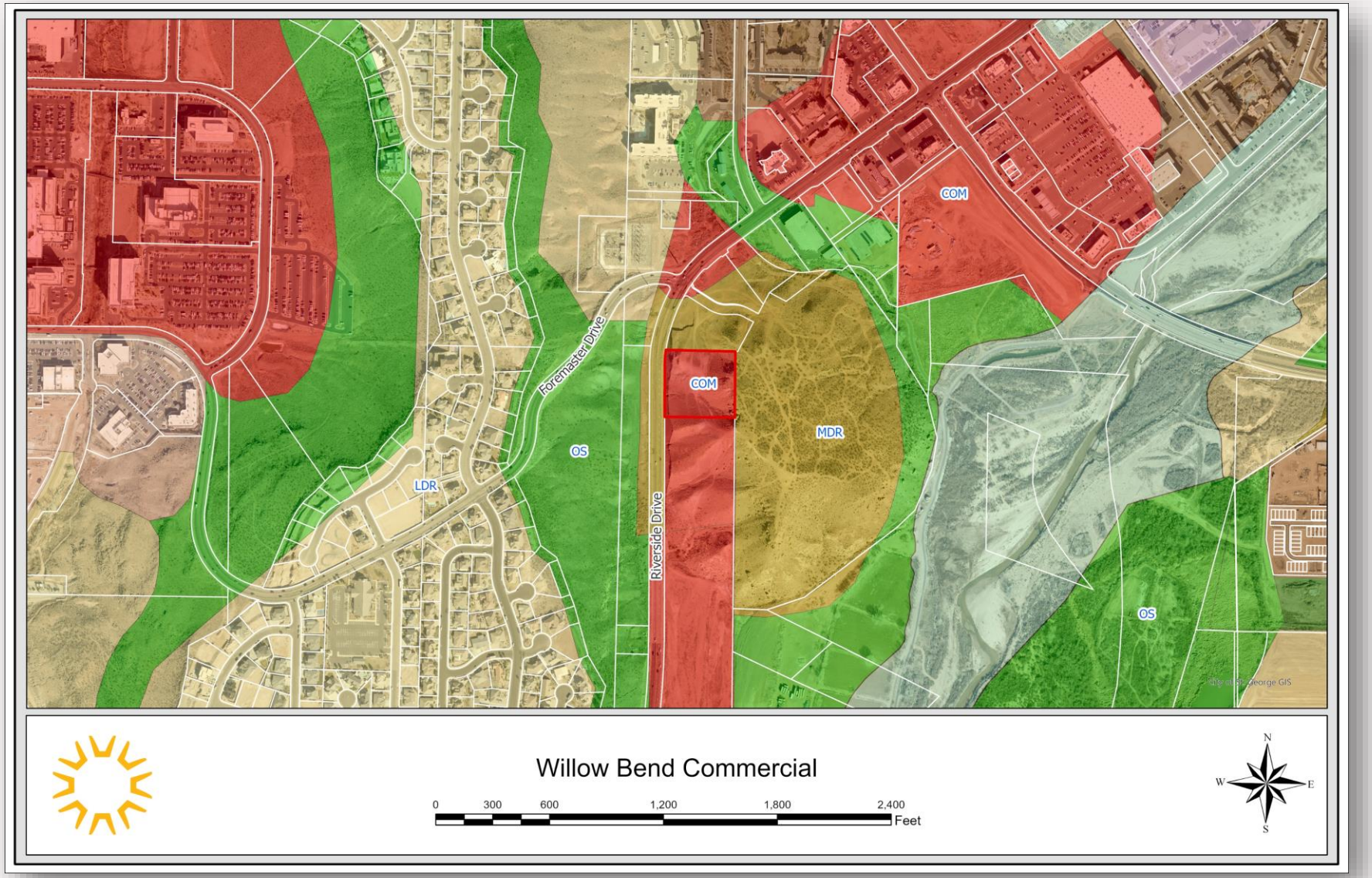
Land Use Map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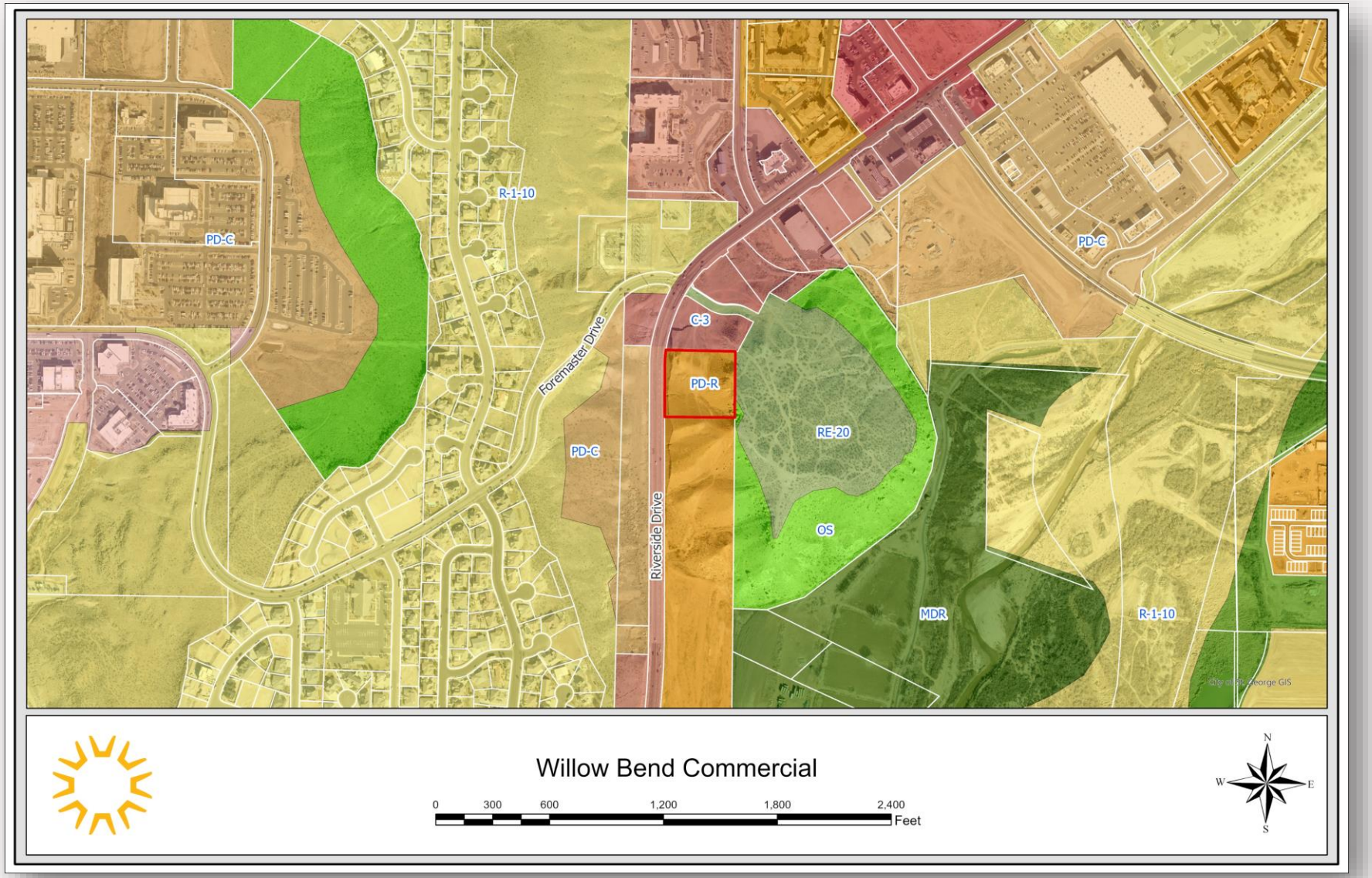
Zoning Map


R-1-10
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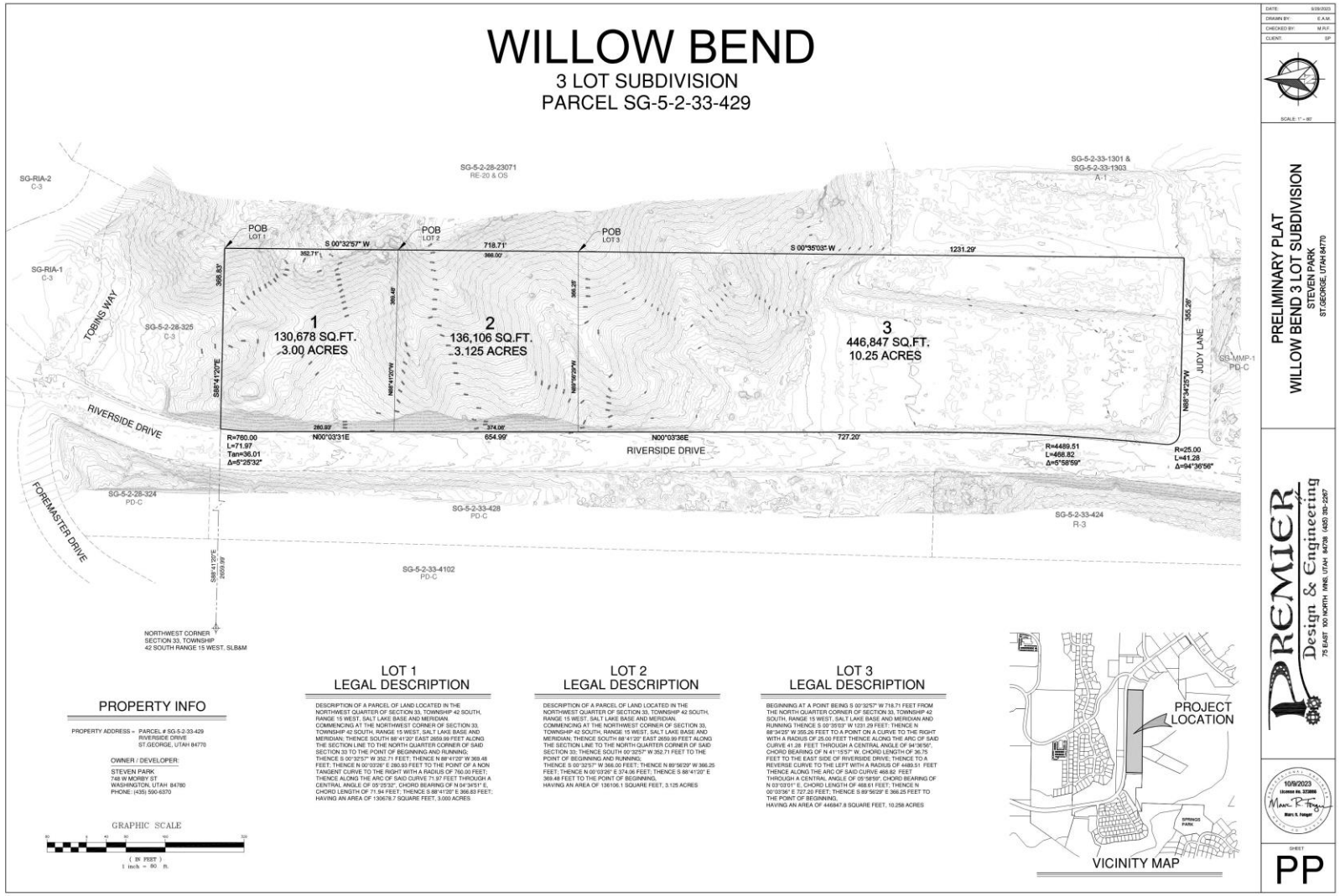
Proposed Plat



Agenda Date: 11/16/2023 **Agenda Item Number:** 10

Subject:

Consider a request for approval of a Hillside Development Permit to allow disturbance of areas in the 20% plus slope areas on an approximately 12.63 acre site generally located north of Snow Canyon Pkwy and east of the existing Paradise Canyon subdivision. Case No. 2023-HS-008.

Item at-a-glance:

Staff Contact: Mike Hadley

Applicant Name: Bob Hermandson

Reference Number: 2023-HS-008

Address/Location:

Located east of existing Paradise Canyon subdivision and north of Snow Canyon Pkwy

Item History (background/project status/public process):

The applicant would like to develop a six-lot subdivision. A portion of the area lies within the Hillside Overlay Zone (HOZ). The project will be completed in one phase. Desert landscaping will be used on the project and there will be minimal impact to the hillside areas on the site. The Chuckwalla Estates went to the Hillside committee on August 23, 2023. There was much discussion with the committee. A lot of the discussion took place on the access road to the lots. The hillside committee discussed making the walls and appearance of the access road to blend and match the colors and texture of the surrounding areas materials. The site does include a archeological site . The proposed lots do not disturb the historical site. At their meeting held on October 24, 2023, the Planning Commission recommended approval with the conditions in the staff report with a vote of 7-0.

Staff Narrative (need/purpose):

The Chuckwalla subdivision will provide six single family residential lots to the area. The hillside permit will allow the applicant to develop in the 20% and above slopes for the subdivision and the road accessing the development. The applicant is planning on deeding all of the surrounding open areas to the city as open space.

Name of Legal Dept approver: Jamie Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

With a vote of 7-0 the Planning Commission recommended approval of the hillside permit with the following conditions: 1.The wall type matches the area and looks good aesthetically. The wall is a tight wall and to be constructed with the development of the property lines that need a rock retaining wall so that everything is continuous and looks cohesive. 2.There is not any issue with the disturbance of the 40% slope, its non-contiguous, its insignificant approving that entrance and the rock walls along the entrance roadway.

St.George
Community Development

Hillside Permit

HILLSIDE REVIEW BOARD AGENDA REPORT: **08/23/2023**
PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT: **11/16/2023**

Chuckwalla Hillside Hillside Development Permit (Case No. 2023-HS-008)		
Request:	Consider a request for the development of six new lots for the Chuckwalla subdivision.	
Applicant:	SC Bluff, LLC	
Representative:	Bob Hermandson	
Location:	Located east of the existing Paradise Canyon subdivision.	
General Plan:	LDR (Low Density Residential)	
Existing Zoning:	R-1-10 (Single Family Residential 10,000 sq ft lot minimum)	
Surrounding Zoning:	North	R-1-10 (Single Family Residential 10,000 sq ft lot minimum).
	South	R-1-10 (Single Family Residential 10,000 sq ft lot minimum).
	East	R-1-10 (Single Family Residential 10,000 sq ft lot minimum).
	West	PD-R (Planned Development Residential)



BACKGROUND

This item was originally scheduled for the September 26, 2023, meeting. The item was withdrawn just before the meeting because there was a recorded Archaeological Deed Covenant established in the area for a registered archeological site. The applicant contacted the lead archaeologist at the State Trust Lands, Mr. Joel Boomgarden and had a discussion on the site and the proposed development. Mr. Boomgarden issued a letter (in your packet) that the proposed project boundaries avoid and do not disturb the historical site. The City legal office is satisfied with the submitted letter.

BACKGROUND

The applicant would like to develop a six-lot subdivision. A portion of the area lies within the Hillside Overlay Zone (HOZ). The project will be completed in one phase. Desert landscaping will be used on the project and there will be minimal impact to the hillside areas on the site.

The Chuckwalla Estates went to the Hillside committee on August 23, 2023. There was much discussion with the committee. A lot of the discussion took place on the access road to the lots. The hillside committee discussed making the walls and appearance of the access road to blend and match the colors and texture of the surrounding materials.

RECOMMENDATION

The Hillside committee recommends approval of the Chuckwalla Estates hillside proposal with the following conditions.

1. The wall type matches the area and looks good aesthetically. The wall is a tight wall and to be constructed with the development of the property lines that need a rock retaining wall so that everything is continuous and looks cohesive.
2. There is not any issue with the disturbance of the 40% slope, it's non-contiguous, it's insignificant approving that entrance and the rock walls along the entrance roadway.

PLANNING COMMISSION:

The Planning Commission held a public hearing on October 10, 2023. There were no public comments. The Planning Commission recommended approval with the conditions in the staff report with a vote of 7-0.

EXHIBITS PROVIDED

1. Exhibit A – Maps
   "Exhibit A" in the packet shows the general plan land use map and the zoning map.

2. Exhibit B – Applicable Ordinances
   "Exhibit B" in the packet lists the applicable zoning regulation that apply to this case found in Title 10, Chapter 13B.

3. Exhibit C – Geotech Report -Slope Study/Slope Map

"Exhibit C". in the packet is the slope study and slope map.

4. Exhibit D – Preliminary Drainage Letter – Geotech Report
   "Exhibit D". in the packet is the proposed Geotech report.

5. Exhibit E – Preliminary Drainage
   "Exhibit E" in the packet is a letter concerning the preliminary drainage for the Chuckwalla proposal.

6. Exhibit F – Preliminary Plat
   "Exhibit F". is the proposed preliminary plat.

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7. Exhibit G – Letter State Trust Lands
   "Exhibit G" in the packet is a letter from State Trust Lands.

Exhibit A
MAPS

General Plan - LDR



Zoning - R-1-10 (Single Family Residential 10,000 sq ft min lots)

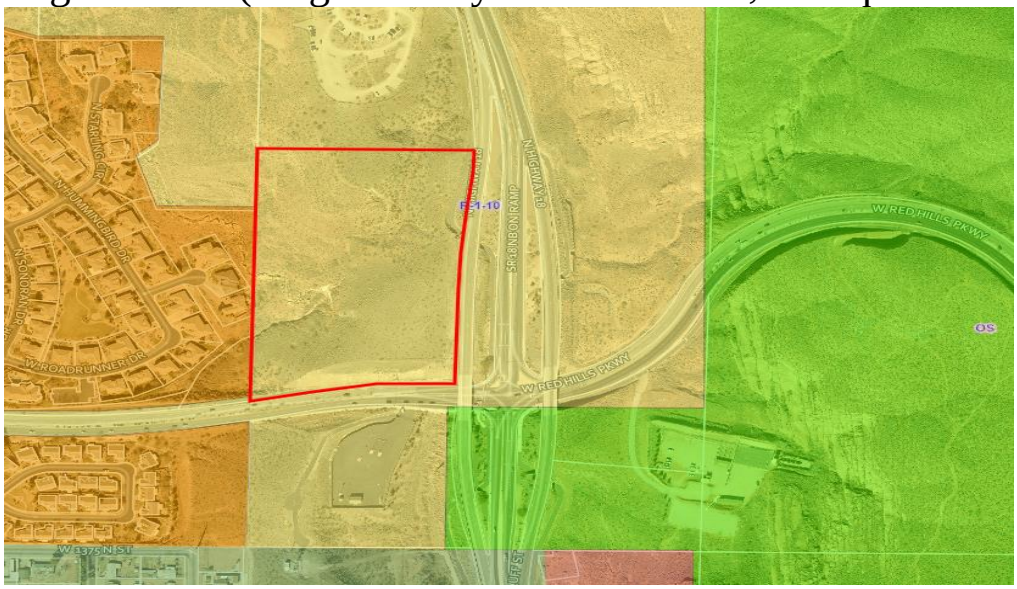


Exhibit B
APPLICABLE ORDINANCES

ARTICLE B. DEVELOPMENT IN GEOLOGIC HAZARD OR ADVERSE CONSTRUCTION CONDITION OVERLAY ZONE

10-13B-1:
GENERAL REQUIREMENTS:

A. *Overlay Areas with Geologic Hazards:* Development is not permitted in overlay areas with geologic hazards without compliance with all requirements in this chapter, and approval of the land use authority. Applications and development that do not meet the requirements of this chapter shall be denied. Geologic hazards include: surface fault rupture, earthquake ground shaking, liquefaction, landslide, and rockfall.

B. *Overlay Areas with Adverse Construction Conditions:* Development is not permitted in overlay areas with adverse construction conditions without compliance with all requirements in this chapter, and approval of the land use authority. Applications and development that do not meet the requirements of this chapter shall be denied. Adverse construction conditions include: expansive soil and rock, collapsible soil, gypsiferous soil and rock, shallow bedrock, caliche, wind-blown sand, breccia pipes and paleokarst, soil piping and erosion, and shallow ground water. The Federal Emergency Management Agency (FEMA), the Utah Department of Natural Resources (DNR) and its Utah Geological Survey (UGS) hazard maps for the St. George area, as amended, are adopted. (Ord. 2019-10-002, 10-10-2019)

10-13B-2:
DEVELOPMENT IN GEOLOGIC HAZARD AREAS (UGS 1 – 4):

A. *Geologic Hazard Areas (UGS 1 – 4: subsections A1 through A4 of this section):* For any development in the city with a geologic hazard listed below, applicant shall submit a report prepared by a qualified, licensed geologist specializing in engineering geology, or a licensed civil engineer, trained and experienced in the practice of geotechnical engineering. Development in the geologic hazard overlay for high category rockfall areas shall be reviewed by the hillside review board.
   1. Surface fault rupture and earthquake: well-defined Holocene, and well-defined fault areas, red and purple lines/categories (extending five hundred feet (500') on the downthrown side and two hundred fifty feet (250') on the upthrown side of each red/purple fault line).
   2. Liquifaction: Very High category.
   3. Landslide: Very High category.
   4. Rockfall: High category.

B. *General Requirements for Development in a Geologic Hazard Area:*

1. Submit a site-specific report prepared by a qualified, licensed geologist specializing in engineering geology, or a licensed civil engineer, trained and experienced in the practice of geotechnical engineering with the following minimum requirements:
   a. Identify all geologic hazard areas (UGS 1 – 4: subsections A1 through A4 of this section);
   b. Identify any other geologic hazards, not listed above (UGS 1 – 4: subsections A1 through A4 of this section), which present an unacceptable risk to development;
   c. Demonstrate which areas of the development are suitable for the proposed use;
   d. Recommend specific measures necessary to make the land suitable for the proposed use;
   e. Recommend the optimal placement of all structures, roadways, utilities, trails and infrastructure in relation to the geologic hazard area;
   f. Slope stability analysis: conclusions and recommendations concerning the effects of material removal, introduction of water, both on and off site, including, where applicable, on mesa tops, seismic activity, and erosion on slope stability;
   g. Foundation investigation: conclusions and recommendations concerning the effects of soil conditions on foundation and structural stability, including bearing capacity, sheer strength, and shrink/swell potential of soils;
   h. Spring location: the location and yield of springs and seeps which shall be shown on the site plan;
   i. Structural features: structural features including any geological limitations;
   j. Surface hazards: existence of surface hazards including potential for rockfalls and toppling failures to cliffs, slopes and overhangs above the subject property; and
   k. Effect of geologic conditions: conclusions and recommendations regarding the effect of geologic conditions on the proposed development, together with recommendations identifying the means proposed to minimize any hazard to life or property, or adverse impact on the natural environment.
2. The city shall review the applicant's report. If the applicant's report is deemed adequate by the city engineer or designee, development may proceed if the report recommendations are followed. If the report is deemed incomplete or inadequate by the city engineer or designee, the development application shall be denied. If denied, the applicant may request an independent review, and the city engineer or designee may order a review by independent, qualified professionals. The professionals selected by the city shall review and prepare written findings and comments on the applicant's report. The cost of the independent, qualified professionals shall be paid to the city by applicant. Applicant may develop if the independent review and written findings and comments are implemented, in addition to any nonconflicting recommendations in the initial report of applicant. The city engineer or designee is the land use authority for the decision. The reports shall be specifically identified on the plat and available to all owners and interested parties.

3. All development shall be outside the geologic hazard areas in subsections A1 through A4 of this section, unless:
   a. The city has accepted applicant's report, prepared by a qualified, licensed geologist specializing in engineering geology or a licensed professional engineer trained and practicing in the field of geotechnical engineering, and it recommends development, and shows hazards can be adequately mitigated for the proposed land use;
   b. If the city has not accepted applicant's report, the applicant also adopts and implements the independent review and writing findings and comments, in addition to any nonconflicting recommendations in applicant's report;
   c. All report recommendations, and HDOZ permit conditions (when required), are adopted by the city and are conditions of development.
4. Hold the city harmless from all claims resulting from any damage related to development within a geologic hazard area by executing a "geologic hazard disclaimer of liability and agreement" and by placing a "notice of hazard" on the final plat.
5. The applicant may appeal a decision in accordance with chapter 3 of this title.

C. *Compliance:* No structure or land shall be constructed, located, extended, converted or altered without full compliance with the terms of this chapter and other applicable regulations.

D. *Abrogation and Greater Restrictions:* This chapter is not intended to repeal, abrogate or impair any existing easement, covenant or deed restriction; however, where this chapter and another ordinance, easement, covenant or deed restriction conflict or overlap, the more stringent restriction shall prevail.

E. *Interpretation:* In the interpretation and application of this chapter, all provisions are minimum requirements in addition to applicable provisions of this title. (Ord. 2019-10-002, 10-10-2019; amd. Ord. 2020-11-011, 11-5-2020)

10-13B-3:
DEVELOPMENT IN ADVERSE CONSTRUCTION CONDITION AREAS:

For any development in the city in an overlay area with an adverse construction condition, applicant shall submit a site-specific report prepared by a qualified, licensed engineer trained and experienced in the practice of geotechnical engineering identifying all adverse construction conditions. The report shall recommend development-design mitigations to prevent damage due to the adverse construction conditions. The city shall review the applicant's report. If the applicant's report is deemed adequate by the city engineer or designee, development may proceed if the report recommendations are followed. If the report is deemed incomplete or inadequate by the city engineer or designee, the development application shall be denied. If denied, the applicant may request an independent review, and the city engineer or designee may order a review by independent, qualified professionals. The professionals selected by the city shall review and prepare written findings and comments on the applicant's report. The cost of the independent, qualified professionals shall be paid to the city by applicant. Applicant may

develop if the independent review and written findings and comments are implemented, in addition to any nonconflicting recommendations in the initial report of applicant. The city engineer or designee is the land use authority for the decision. The report shall be specifically identified on the plat and available to all owners and interested parties. (Ord. 2019-10-002, 10-10-2019)

Exhibit C
Slope Study/Slope Map

Exhibit D
Geotech Report

Exhibit E
Preliminary Drainage Letter

Exhibit F
Preliminary Plat

Exhibit G
Letter from State Trust Lands

LANDMARK
TESTING & ENGINEERING

November 12, 2020

Rize Up
Steve Barnhart
2 West St. George Blvd.
St. George, UT 84770

Subject: Slope Stability Analysis
Chuckwalla Development
St. George, Utah
Landmark Project No. 20814

Steve,

As requested, we have completed our slope stability analysis for the access road to the proposed Chuckwalla Development in St. George, Utah. Our services consisted of a site walk, the excavation of several test pits along the proposed road alignment, laboratory testing, data analysis, and the preparation of this report. A Concept Plan prepared by Kuma Engineering, dated August 2020 was provided for our use. At the time of our field investigation, the centerline of the road alignment had been staked at 100-foot intervals.

Field Investigation

To investigate the subsurface soils along the alignment, we excavated 2 test pits within the proposed right-of-way, near the stakes placed to mark the proposed centerline. Due to the exiting grades, and surface conditions, access with equipment was not practical north of the waterfall. Current grading along the roadway alignment was a safety hazard according to the operator (roll-over hazard), and traversing a safe path around the obstacles would have required walking the excavator through areas which were designated as open space on the Concept Plan.

The Test Pit 1 was excavated at approximately Station 1+75. Subsurface soils consisted of 3 feet of silty sand with gravel (SM), underlain by weathered sandstone to the maximum depth of exploration, 5.0 feet. Refusal in sandstone bedrock was met at 5.0 feet.

Test Pit 2 was excavated at Station 3+50. Subsurface soils consisted of various layers of silty sand with gravel (SM) to the maximum depth of exploration, 12.0 feet.

Soils from Station 4+00 to 5+00 consisted of several layers of slightly to moderately weathered, exposed sandstone bedrock were observed.

We excavated by hand in several locations between 5+00 and 6+00. The soils encountered consisted of sandstone cobbles in a silty sand with gravel matrix. Basalt cobbles and boulders were observed on the surface and within the locations excavated.

Slope Stability Analysis

The following material properties were based on laboratory testing and observations of the material. Properties were selected to be conservative.

Material	Moist Unit Weight (pcf)	Saturated Unit Weight (pcf)	Friction Angle (°)	Cohesion (psf)
Silty Sand w/ gravel (SM)	115.0	135.0	32	0.0
Fill: Native	125.0	135.0	34	0.0
Sandstone	135.0	140.0	25	1500

A load of 0.11g horizontal and 0.05g vertical was used for seismic analysis. Groundwater was not encountered, and therefore not modeled. A 150 psf distributed live load was used for traffic loading as recommended by AASHTO and the NHI. Mirafi Miragrid 5XT was used for reinforcement of the rockery wall; 4 layers of 12-foot long grid were placed at 2-foot intervals.

Three cases were modeled: Shallow bedrock in roadway alignment, 10 feet of silty sand fill in roadway alignment, and cut slope above the roadway. The downhill side of the roadway was designed as a rockery wall retaining 10 feet of structural fill. STEDWin 2.88 using Stabl6h was used to model and analyze the slopes. Static and seismic cases being checked in each case.

Case 1: Shallow Bedrock

The Factor of Safety for the seismic case was 1.21, and for the static case it was 1.52. Both of which are above the generally accepted minimum values of 1.0 and 1.4. The model shows that, as expected, the minimum Factor of Safety (FS) failure surfaces in each case do not pass through the sandstone bedrock. This indicates that the overall stability of the section is dependent upon the depth of the soil above the bedrock, both in the vertical and horizontal directions. Deeper bedrock will not appreciably affect the FS, as the minimum values do not pass through the rock, and shallower bedrock would tend to increase the FS.

Case 2: Deep Bedrock

The Factor of Safety for the seismic case was 1.22, and for the static case it was 1.67. Both of which are above the generally accepted minimum values of 1.0 and 1.4. The model shows that, as expected, the minimum Factor of Safety (FS) failure surfaces in each case do not pass through the sandstone bedrock. This indicates that the overall stability of the section is dependent upon the depth to the bedrock, both in the vertical and horizontal directions. Deeper bedrock will not appreciably affect the FS, as the minimum value do not pass through the rock, and shallower bedrock would tend to increase the FS.

Case 3: Cut Slope

Models indicate that the slope cannot be cut at a grade steeper than 2 horizontal to 1 vertical (2H : 1V) without some form of reinforcement. Failure surfaces indicate that surface sloughing rather than deep seated failure is the mode of failure. The static FS at a 2:1 slope was 1.27, and the Seismic FS was 0.75, assuming deep soils within the slope. The existing slopes do not show

evidence of existing slope failures, indicating a stable existing static state., agreeing with our analysis.

Analysis of the upper slope with a rockery retaining wall was also conducted. An 8-foot rockery wall with 10 feet of geogrid was placed at the back of the curb on the uphill side of the road. The slope was excavated to the end of the geogrid, and replaced with structurally placed soils, as in the downhill side of the roadway. The structurally placed soils extended above the wall at a 2 horizontal to 1 vertical (2H : 1V) slope. The static FS was 1.42 and the seismic FS was 1.22. This assumes deep soils behind the reinforced section.

Details of our analysis are included as the attached Figure 2 through 9.

Findings

Based on our analysis, it appears that the proposed roadway can be constructed in a stable configuration. The roadway can be constructed along the proposed alignment. The following design and construction recommendations and suggestions are provided for the design of the project:

Recommendations

- Rockery retaining walls can be designed for retaining the cut faces and to support the proposed roadway.
- Rockery retaining walls should be designed for a maximum batter of 1 horizontal to 5 vertical (1H : 5V), but should be kept to 1 horizontal to 4 vertical (1H : 4V) if possible.
- Cut slopes in sandstone bedrock can be sloped to 1 horizontal to 2 vertical (1H : 2V). Steeper slopes my be possible based on the quality of the rock encountered in the cut faces.
- Cut slopes in the gravelly silty sands (SM) should be graded to a maximum grade of 2 horizontal to 1 vertical (2H : 1V). Cut slopes should be avoided where possible.
- Unreinforced fill slopes can be graded to a maximum of 1.5 horizontal to 1 vertical (1.5H : 1V). Reinforced fill slops can be graded to a maximum of 1 horizontal to 1 vertical (1H : 1V).

Suggestions

The surficial sands were found to be unstable at grades steeper than 2 horizontal to 1 vertical (2H : 1V). Due to the existing site grades, cut slopes above the roadway will "chase" the existing slope up the face of the slope, leading to long exposed cut faces. Rockery retaining walls will not reduce the cut faces to a great extend due to the slope of the existing hillside. Based on our understanding of the goals of the Hillside Review Board, large, exposed cut faces are strongly discouraged. Therefore, we make the following suggestions for civil design of the project.

- The alignment of the proposed roadway should be moved as far to the west as possible. While this will increase the height of the required rockery retaining walls, it will limit the amount of excavation and exposed area of the cut faces.
- The possibility of an increase in the allowable height of a single tiered rockery wall should be explored with the City of St. George. Rockery walls are typically allowed to have a maximum single wall retained height of 8 feet according to City Code. Higher walls are

feasible, even preferred in some instances, and can be used to offset the amount of exposed cut faces, but will require a variance by the City of St. George, which is difficult. The engineering department does not have authority to allow for this variance.

- The area of the waterfall appears to be a limiting factor in the placement of the roadway, and its attached sidewalk. We understand that the sidewalk may not be required to be directly attached to the pavement section. The possibility of a bridge to cross the wash in the vicinity of the waterfall should be explored, which will allow for a narrower roadway section,

Design level details for construction can be provided once civil design for the project has progressed.

Thank you for allowing us to assist you with this project. Please feel free to contact us if you have any questions or require additional information.

LANDMARK TESTING & ENGINEERNG

John M. Anderson, P.E.
Project Engineer



Steven Wells, P.E.
Geotechnical Manager

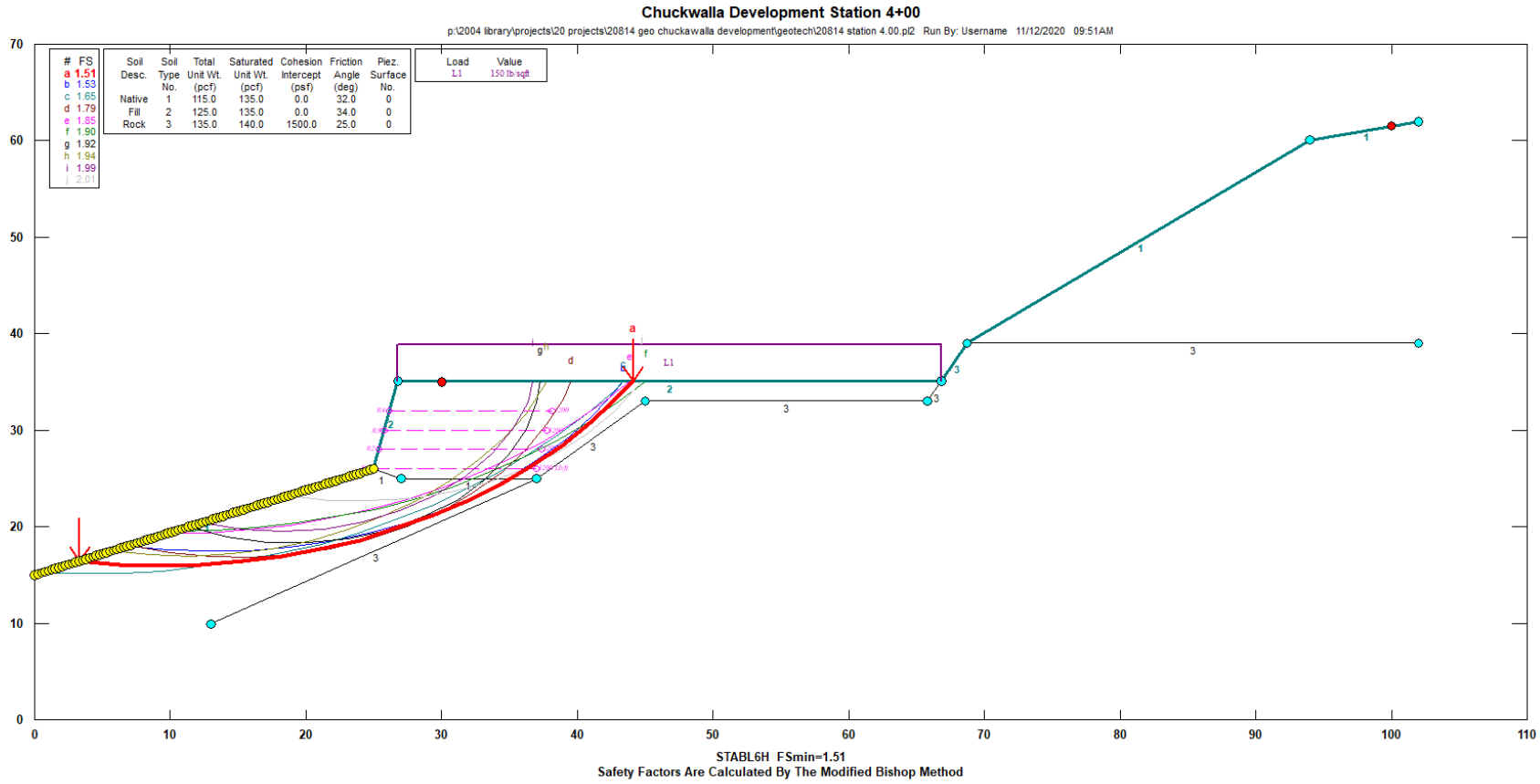


LANDMARK TESTING & ENGINEERING

Site Plan

Landmark Project No 20814

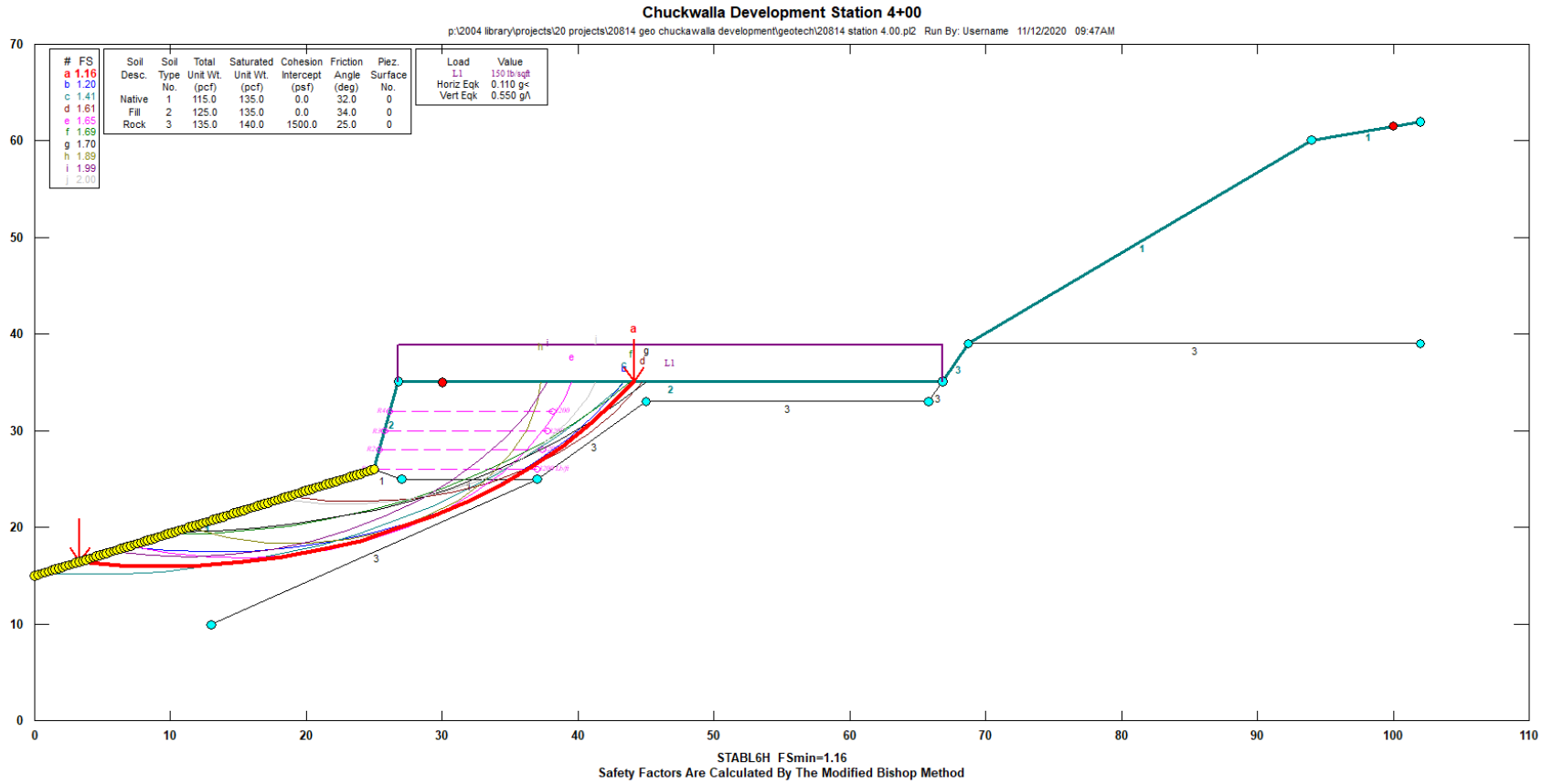
Figure 1



Shallow Bedrock - Static

Landmark Project No 20814

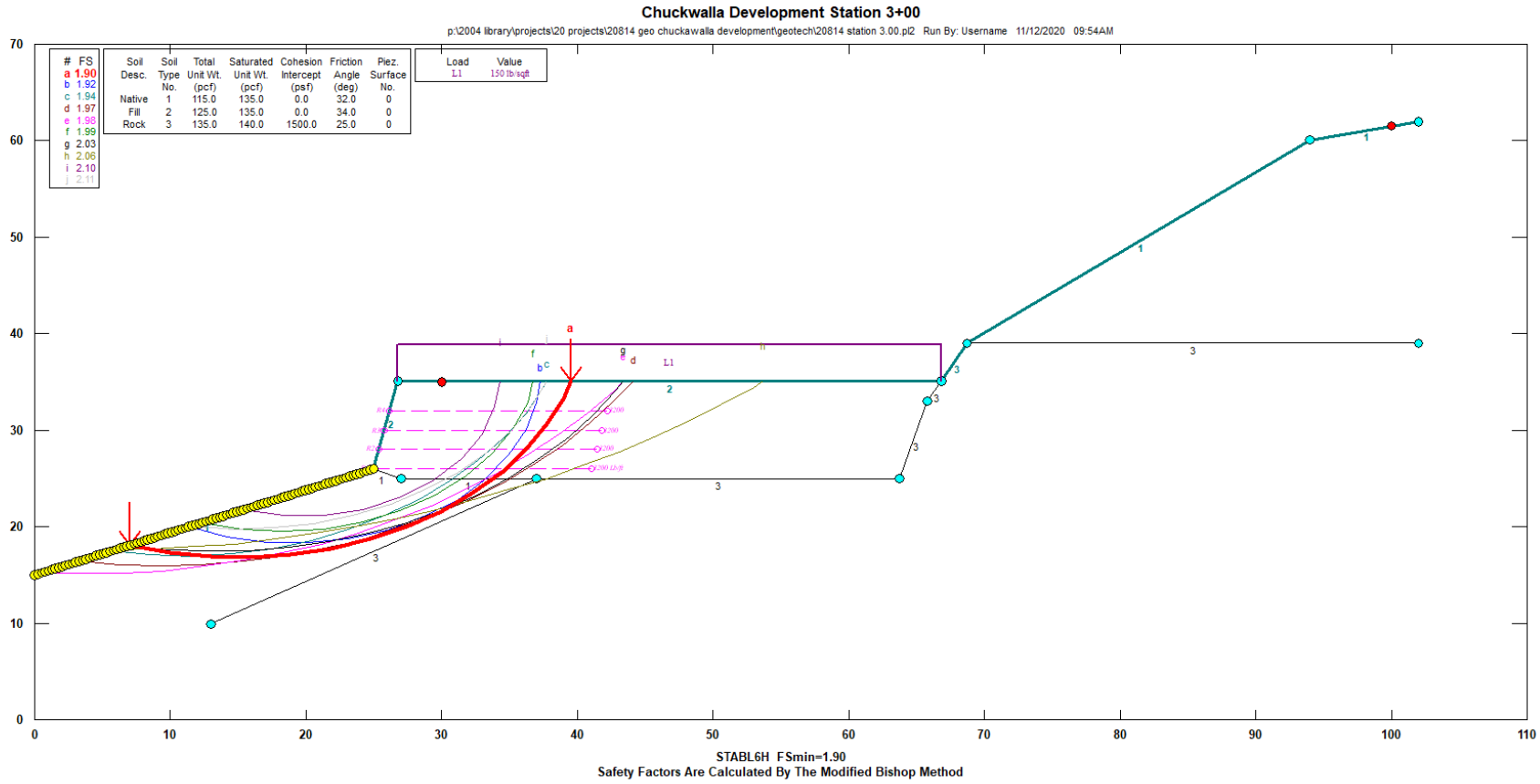
Figure 2



Shallow Bedrock -Seismic

Landmark Project No 20814

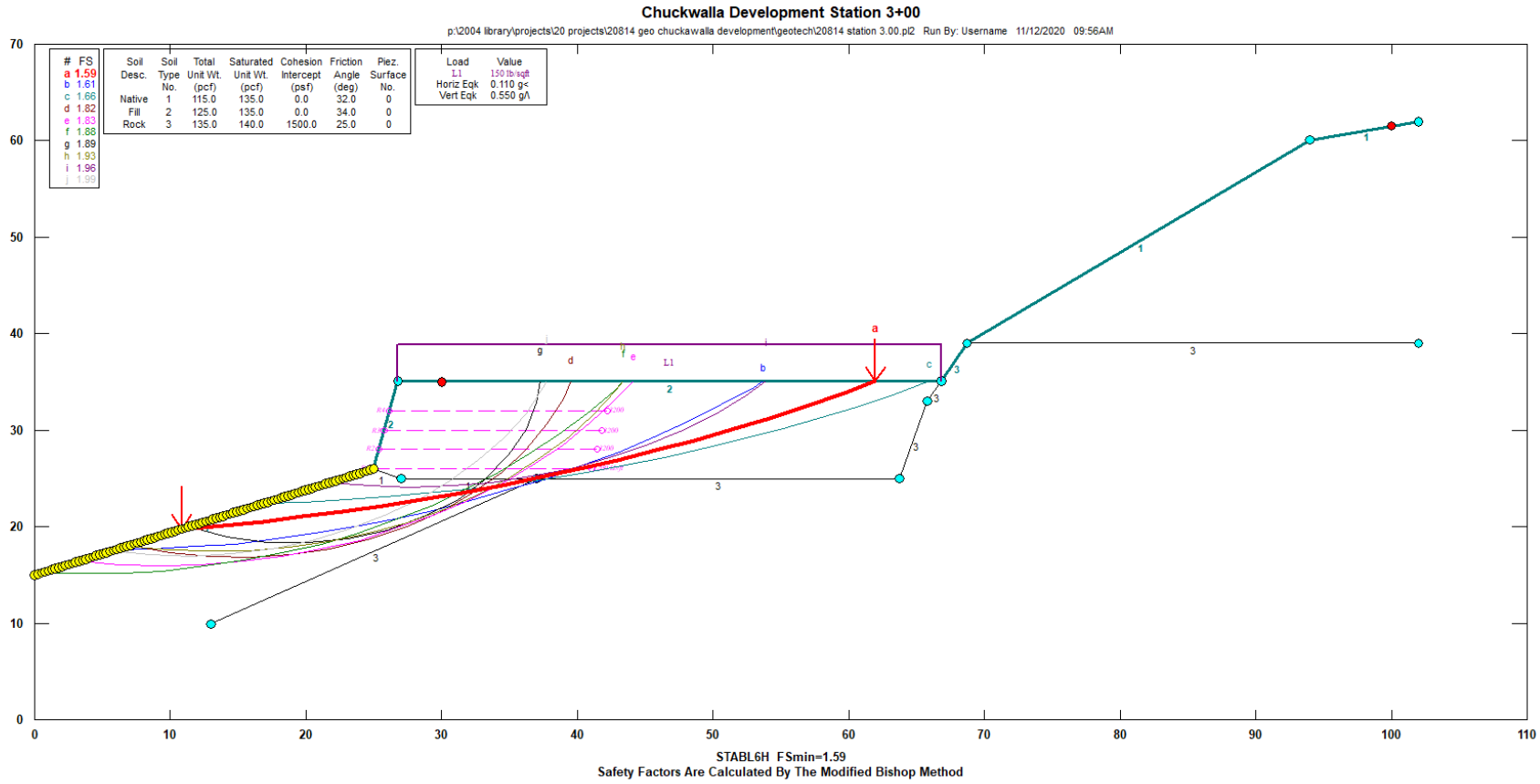
Figure 3



Deep Bedrock - Static

Landmark Project No 20814

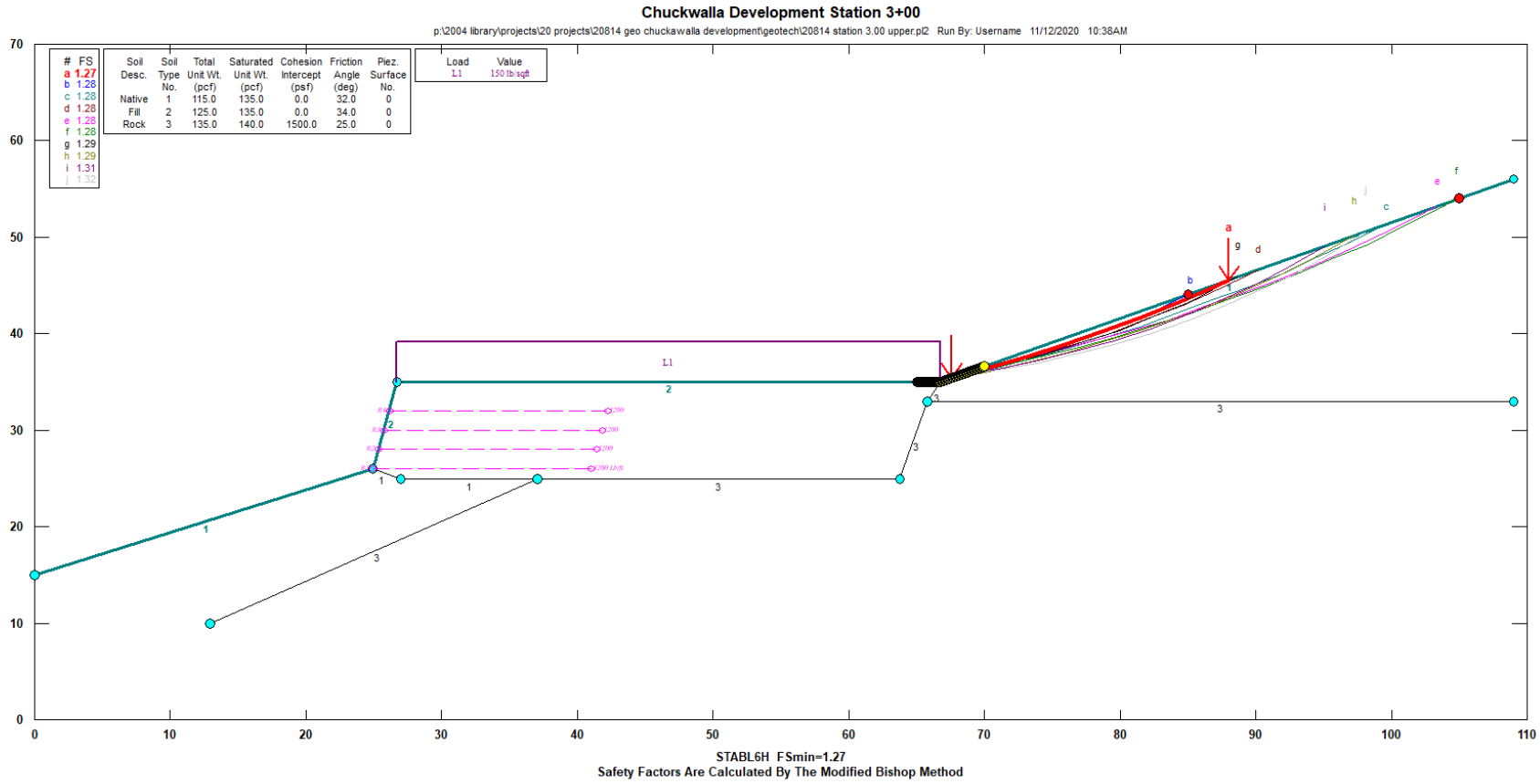
Figure 4



Deep Bedrock - Seismic

Landmark Project No 20814

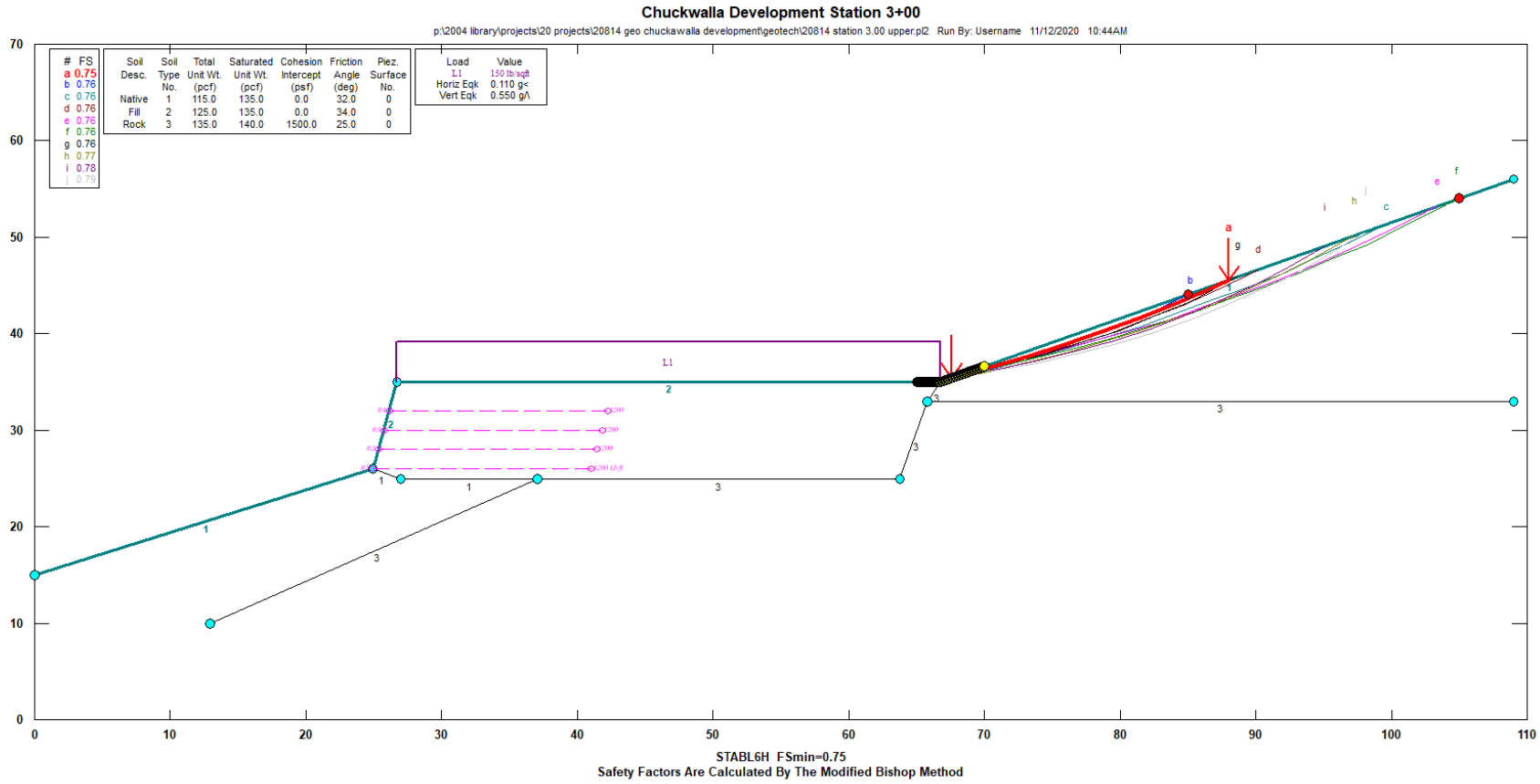
Figure 5



2H: 1V Slope - Static

Landmark Project No 20814

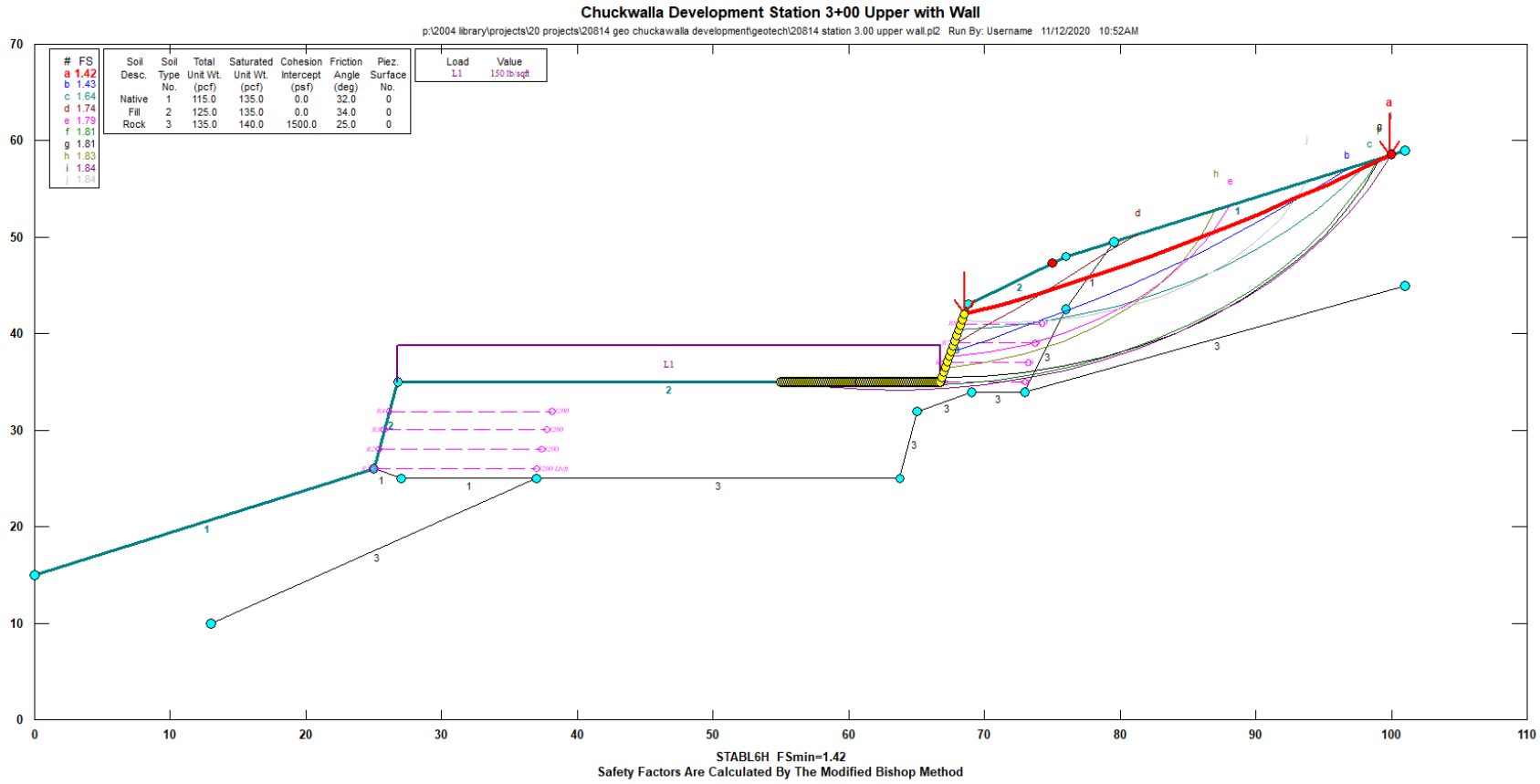
Figure 6



2H: 1V Slope - Seismic

Landmark Project No 20814

Figure 7

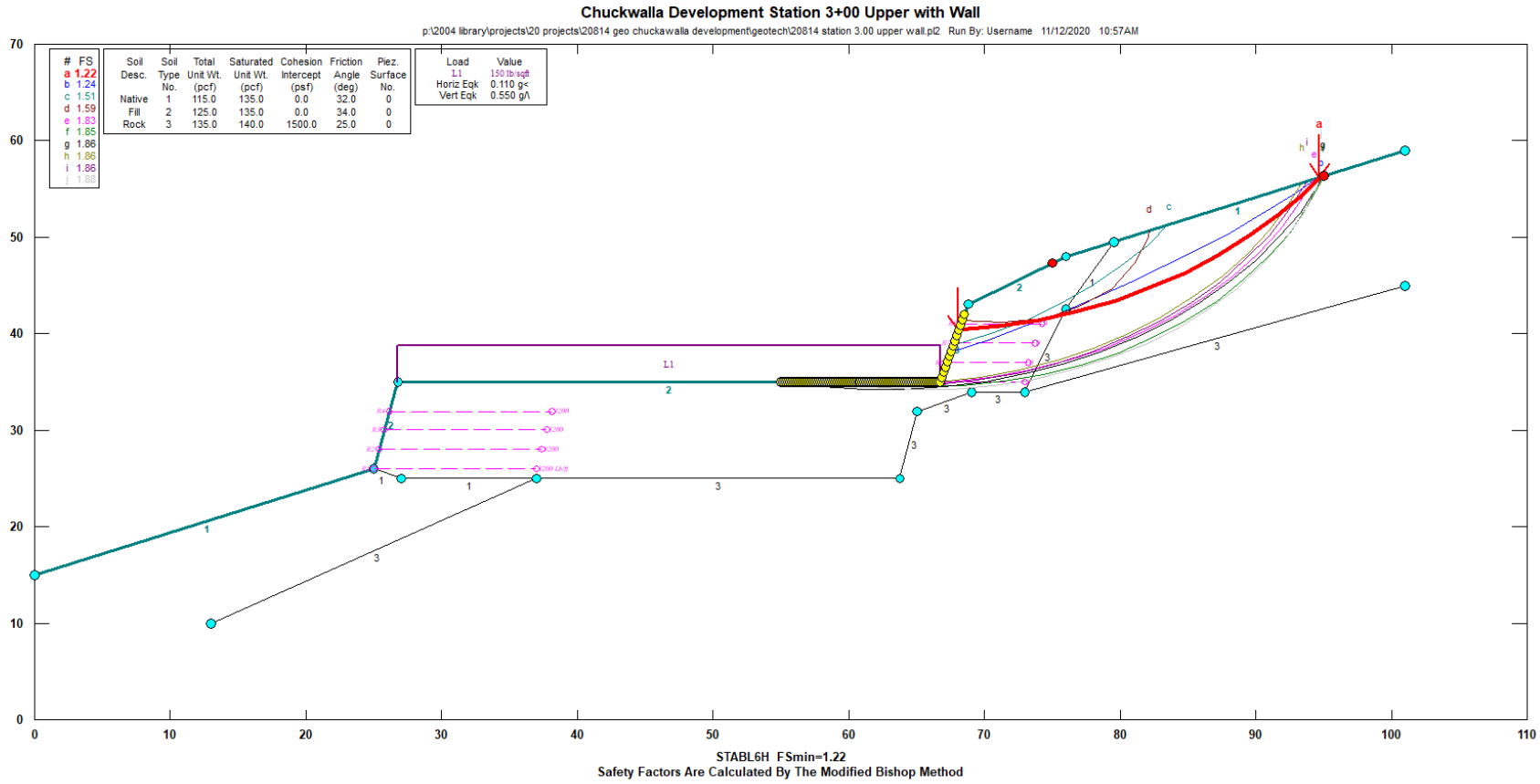


LANDMARK TESTING & ENGINEERING

Upper Wall - Static

Landmark Project No 20814

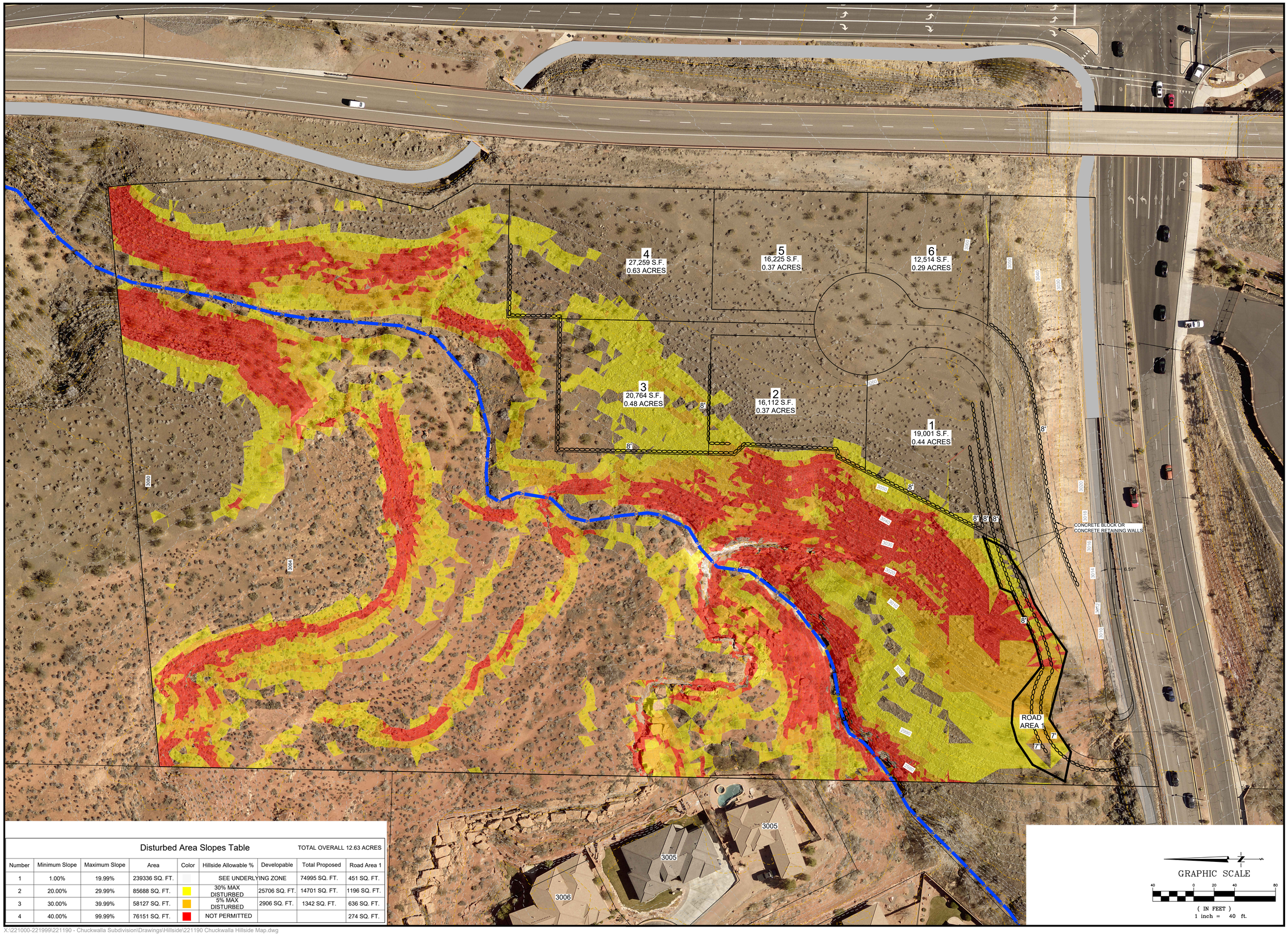
Figure 8



Upper Wall - Seismic

Landmark Project No 20814

Figure 9



Disturbed Area Slopes Table

TOTAL OVERALL 12.63 ACRES

Number	Minimum Slope	Maximum Slope	Area	Color	Hillside Allowable %	Developable	Total Proposed	Road Area 1
1	1.00%	19.99%	239336 SQ. FT.		SEE UNDERLYING ZONE		74995 SQ. FT.	451 SQ. FT.
2	20.00%	29.99%	85688 SQ. FT.		30% MAX DISTURBED	25706 SQ. FT.	14701 SQ. FT.	1196 SQ. FT.
3	30.00%	39.99%	58127 SQ. FT.		5% MAX DISTURBED	2906 SQ. FT.	1342 SQ. FT.	636 SQ. FT.
4	40.00%	99.99%	76151 SQ. FT.		NOT PERMITTED			274 SQ. FT.

PROFESSIONAL ENGINEER
No.5567007
WILLIAM F. MEYER, JR.
07/31/2023
STATE OF UTAH

No.	Date	By	Revision

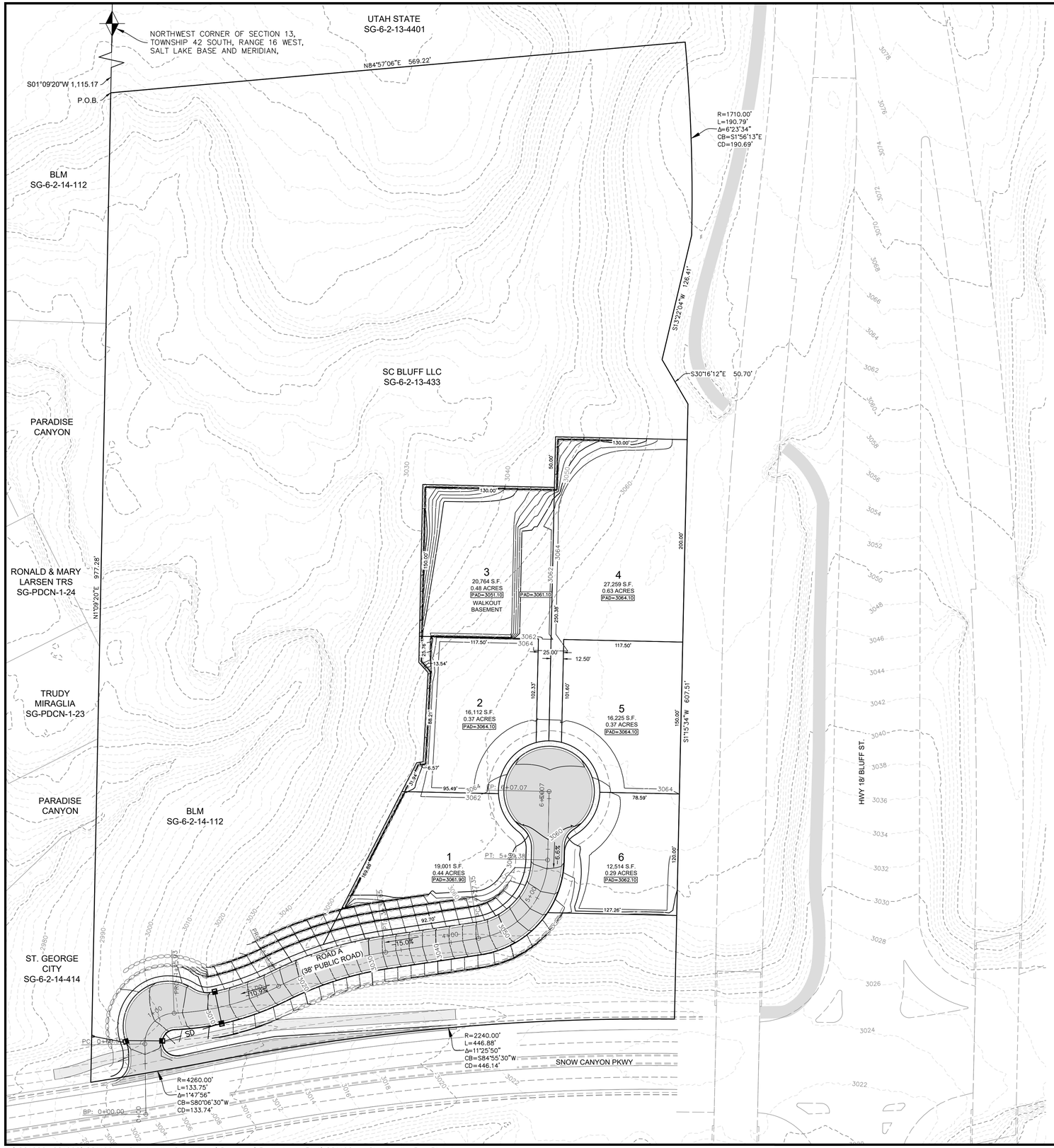
BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
205 East Tabernacle Suite #4
St. George, Utah 84770
Phone (435) 673-2337 / Fax (435) 673-3161
www.bushandgudgell.com

DATE: JULY 2023
DRAWN: CBW
APPROVED: APPROVED
SCALE: 1" = 40'
JOB NO. 221190

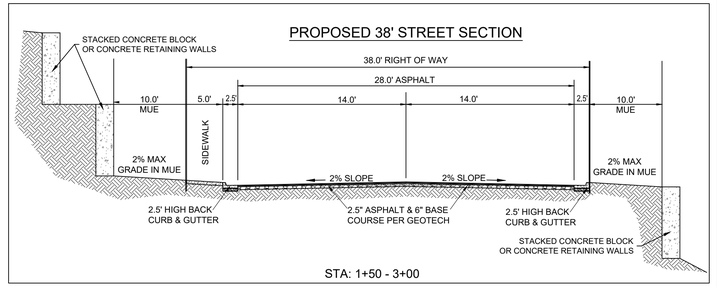
HILLSIDE MAP
CHUCKWALLA SUBDIVISION @ ST. GEORGE, UTAH

SHEET 1 OF 2 SHEETS
FILE: 221190

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Hillside\221190 Chuckwalla Hillside Map.dwg

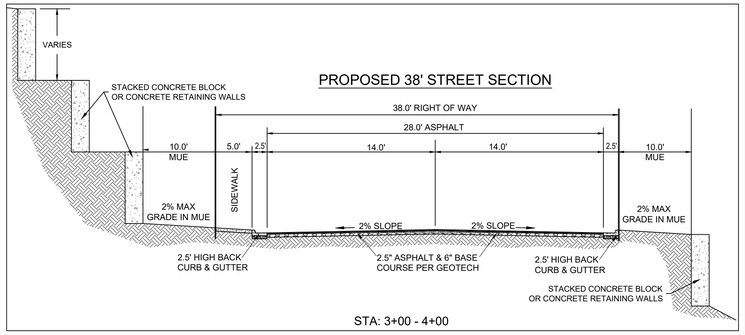


PROPOSED 38' STREET SECTION



STA: 1+50 - 3+00

PROPOSED 38' STREET SECTION



STA: 3+00 - 4+00

LEGEND

- EXISTING RIGHT OF WAY LINE
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED CONCRETE BLOCK OR CONCRETE RETAINING WALL
- DRAINAGE CHANNEL FLOW LINE
- EXISTING FENCING
- EXISTING OVER HEAD POWER
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING WATER
- PROPOSED WATER
- STOP / STREET SIGN
- END OF ROAD MARKERS
- DRAINAGE FLOW DIRECTION
- SECTIONAL MONUMENT (TYPE, LOCATION, ETC AS NOTED IN PLAT)
- PROPOSED ASPHALT
- DEDICATED TO CITY
- EXISTING GROUND CONTOUR
- FINISH GROUND CONTOUR
- DRAINAGE FLOW
- PAD= 00.0 FINISH PAD ELEVATION
- LOCATION ELEVATION SPOT ELEVATION
- SD STORM DRAIN
- (S) SINGLE CURB INLET PER CITY STD. DETAIL 205
- (D) DOUBLE CURB INLET PER CITY STD. DETAIL 205
- LOT LINE
- STORM DRAIN MAN HOLE

OWNER / DEVELOPER

SC BLUFF LLC

JERRY MYAHARA
(949) 279-6824
2 WEST
ST. GEORGE, UTAH 84770

ENGINEERING CONTACT

BUSH AND GUDGELL, INC.
205 EAST TABERNACLE #4
ST GEORGE, UT 84770
RICK MEYER - PROJECT MANAGER
(435)-673-2337

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

PROFESSIONAL ENGINEER
No.5567007
WILLIAM F. MEYER, JR.
07/31/2023
STATE OF UTAH

No	Date	By	Revision

BUSH & GUDGELL, INC.
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205 East Tabernacle Suite #4
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Phone (435) 673-2337 / Fax (435) 673-3161
www.bushandgudgell.com

DATE: JULY 2023
DRAWN: CRW
APPROVED: WFM
SCALE: 1" = 50'
JOB NO.: 221190

GRADING PLAN
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 2 OF 2 SHEETS
FILE: HILLSIDE

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Preliminary Plat\221190 - Chuckwalla Pre Plat.dwg

August 1, 2023

SC Bluff, LLC
2 West St. George, Blvd. #5H
St. George, Utah 84770

Attn: Jerry Miyahara
Email: jerry@rize-up.com

Subject: Hillside Review Consultation
Chuckwalla Subdivision
NWC Snow Canyon Parkway and SR-18
St. George, Utah
AGEC Project No. 2220872

References:

1. Preliminary Plat, prepared by Bush & Gudgell Engineering, dated June 2023, Job No. 221190.
2. Hillside Map, prepared by Bush & Gudgell Engineering, dated June 2023, Job No. 221190.
3. Slope Stability Analysis, prepared by Landmark Testing and Engineering, dated November 12, 2020. Project No. 20814.
4. Hillside Review and Geologic Hazard Assessment and Geotechnical Investigation, by AGEC, dated March 4, 2013, Project No. 2130115.
5. Interim Geologic Map of the Washington Quadrangle, Washington County, UGS-Open File Report-324, 1995, Willis, Higgins
6. Geologic Hazards and Adverse Construction Conditions, St. George-Hurricane Metropolitan Area, Washington County, Utah, Special Study 127, 2008. Lund, Knudsen, Vice and Shaw.

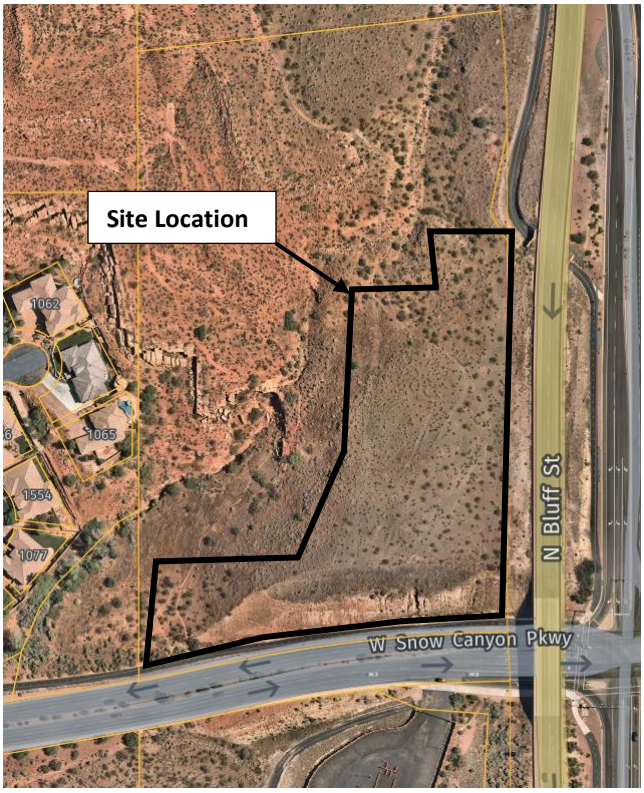
SCOPE OF WORK

AGEC was requested to review the proposed plans for the 6 lot subdivision to be located on the northwest corner (NWC) of Snow Canyon Parkway and SR-18. AGEC has met several times on site with engineers, owner/developer and city staff to discuss the proposed project. Subsequently, the site was designed for the subdivision shown on the

attached site plan. AGEC has reviewed a previous study for a different part of the property along the west side of the site (Ref No. 3) and has also observed the cut slope on Snow Canyon Parkway. AGEC also conducted the In addition, AGEC has reviewed the geologic literature for potential geologic hazards as a part of preparation of this report.

SITE/SUBSURFACE CONDITIONS

The property proposed for development is located on the northwest corner of Snow Canyon Parkway and SR-18 as shown on the map below.



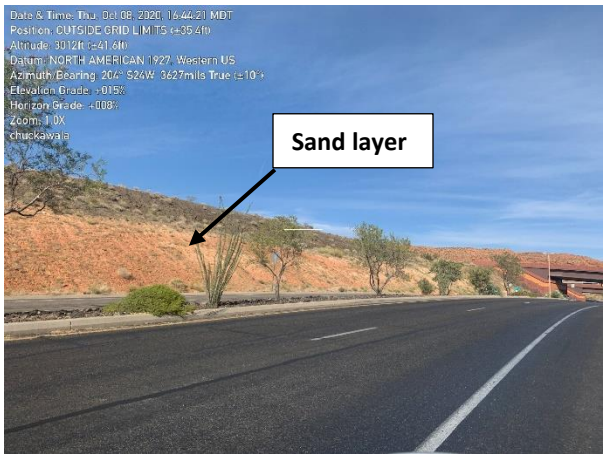
Site Location Map

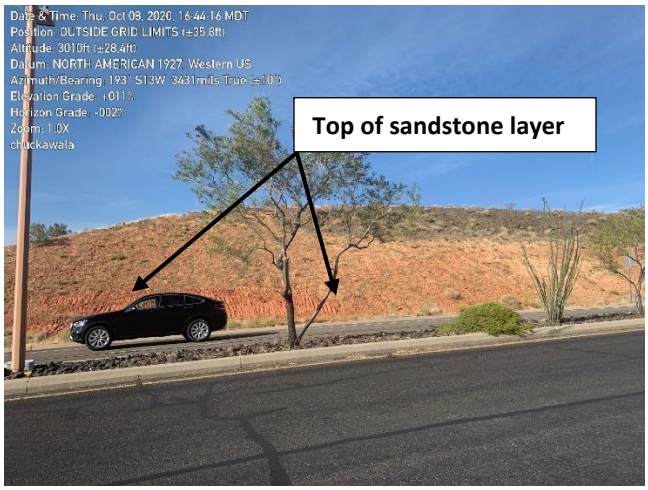
The site is located at the top of a ridge with a wash or gulley to the west and northwest. The site is level on the eastern portion with a downward slope to the northwest. The site is has approximately 30 feet of elevation change from the top of the ridge down to the northwest corner of Lot 3. See attached slope map.

The south edge of the site with a moderately steep cut slope that was created when Snow Canyon Parkway was graded. The slope is approximately 40 feet high with a slight bench

amount mid height or just below the basalt caprock. Several photos are shown below of the cut slope.







The lower portion of the slope is sand and sandstone bedrock (eastern portion) while the top of the slope is capped with basalt cap rock. The basalt is moderately fractured and granular. The sand is medium dense and slightly cemented. The sandstone bedrock is mostly on the eastern portion of the exposed slope as shown in the photos above.

The caprock is underlain by alluvial and colluvial sand deposits that will be underlain by Sandstone.

GEOLOGIC CONDITIONS/HAZARDS

Based on review of the geologic literature (Ref No. 5), the majority of the site is covered with basalt caprock of the Cedar Bench Lava Flow. The caprock is moderately fractured or granular. The thickness varies from approximately 10 to 15 feet on the site. The thickness decreases to the west. The edges of the site have exposed Kayenta Formation siltstone and sandstone.

Based on a review of the geologic hazards mapping (Ref No. 6) the following items are noted from our evaluation and site visit:

1. The eastern edge of the site is mapped as a low hazard for **rockfall.** Based on our field observations, there is not a significant source nor a development below the site that would be a concern.

2. The eastern edge of the site was also mapped as a low hazard for **landslides** or slope stability. Based on our observations and the anticipated grading along with the review of Ref No. 3, we do not anticipate a concern for slope instability. The proposed road access to the south will be retained with rock walls.

3. The mapping also indicates ridge top as a **shallow hard rock** condition and the slope on the west as buried or soft rock condition. Based on our experience during the grading of Snow Canyon Parkway and the Dominion Gas Substation to the south across Snow Canyon Parkway, blasting of the basalt caprock was necessary. The majority of the basalt is fractured and granular.

4. The **erosion and drainage** concerns are mainly along the south and west sides of the site. Bush and Gudgell Engineering has addressed the drainage concerns.

The remaining hazards within Ref no. 5 were reviewed and were not considered for this site to be further discussed or addressed.

PROPOSED CONSTRUCTION

Based on review of Reference No. 1, there are 6 lots as shown on the attached site plan. The access to the site will be along the south side of the property along the north edge of Snow Canyon Parkway as shown on the site plan. The road will require cutting into the slope and exposing approximately 10 to 20 high foot cut slope that will primarily extend the existing cut slope back into the hillside. There will also be a fill slope on the west end of the road of up to approximately 12-16 feet. The roadway will extend up the slope at 10-15 %. The existing trail along Snow Canyon Parkway will need to be slightly realigned.

We anticipate that the residences will be single story with the potential of basements.

The walls shown on the site plan will be of basalt type stacking rock and will be designed as a part of the construction drawings.

We anticipate additional details for the individual homes will be available at the time of construction. AGEC should review the proposed construction for each residence on an individual basis.

CONCLUSIONS

Based on the proposed construction, the anticipated subsurface conditions and our experience in the area, the following conclusions are provided:

1. The site is suitable for the proposed construction.

2. The existing hillside cut will extend deeper into the hillside and we anticipate similar conditions to those exposed at this time.

3. The proposed roadway cut will be retained and will be stable following grading and retaining.

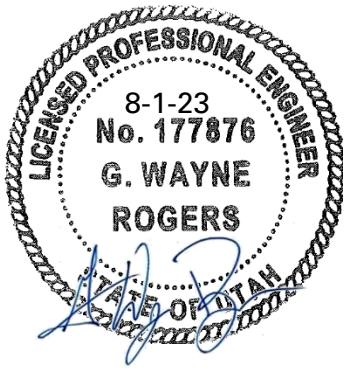
4. The proposed residences will likely be supported on conventional foundations. Additional design recommendations will be provided as we provide a geotechnical report prior to construction.

LIMITATIONS

The conclusions provided within this report are based on our observations of the site conditions, understanding of the proposed construction and our experience in the area. If during construction or further investigation, the conditions are found to be different, AGEC should be contacted to re-evaluate our conclusions and recommendations.

If you have any questions, or if we can be of further service, please call.

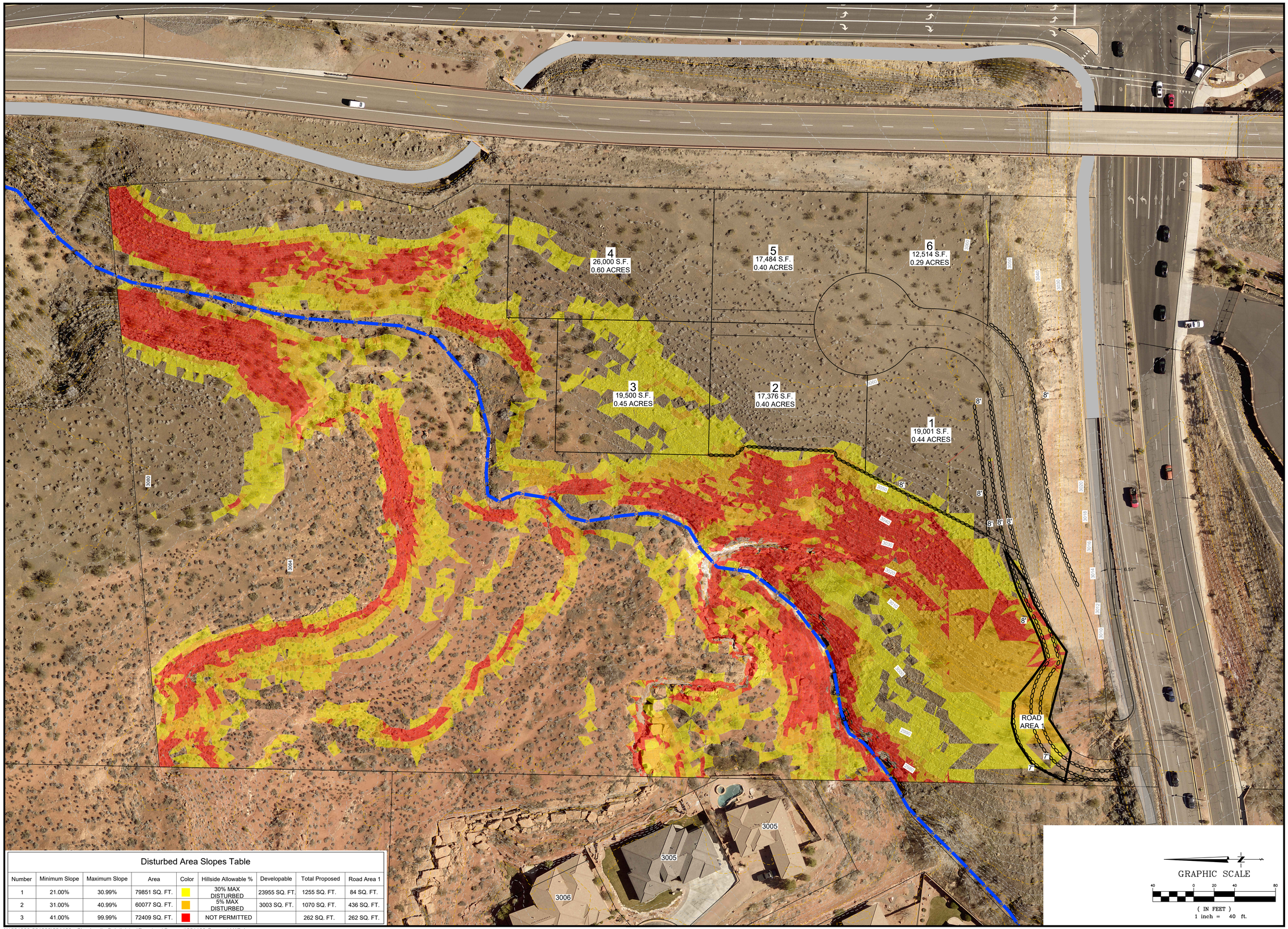
Sincerely,



APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

G. Wayne Rogers, P.E.

P:\2022 Project Files\2220800\2220872 - GT Chuckawalla Development\Hillside Report.docx



Disturbed Area Slopes Table								
Number	Minimum Slope	Maximum Slope	Area	Color	Hillside Allowable %	Developable	Total Proposed	Road Area 1
1	21.00%	30.99%	79851 SQ. FT.		30% MAX DISTURBED	23955 SQ. FT.	1255 SQ. FT.	84 SQ. FT.
2	31.00%	40.99%	60077 SQ. FT.		5% MAX DISTURBED	3003 SQ. FT.	1070 SQ. FT.	436 SQ. FT.
3	41.00%	99.99%	72409 SQ. FT.		NOT PERMITTED		262 SQ. FT.	262 SQ. FT.

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

No.	Date	By	Revision

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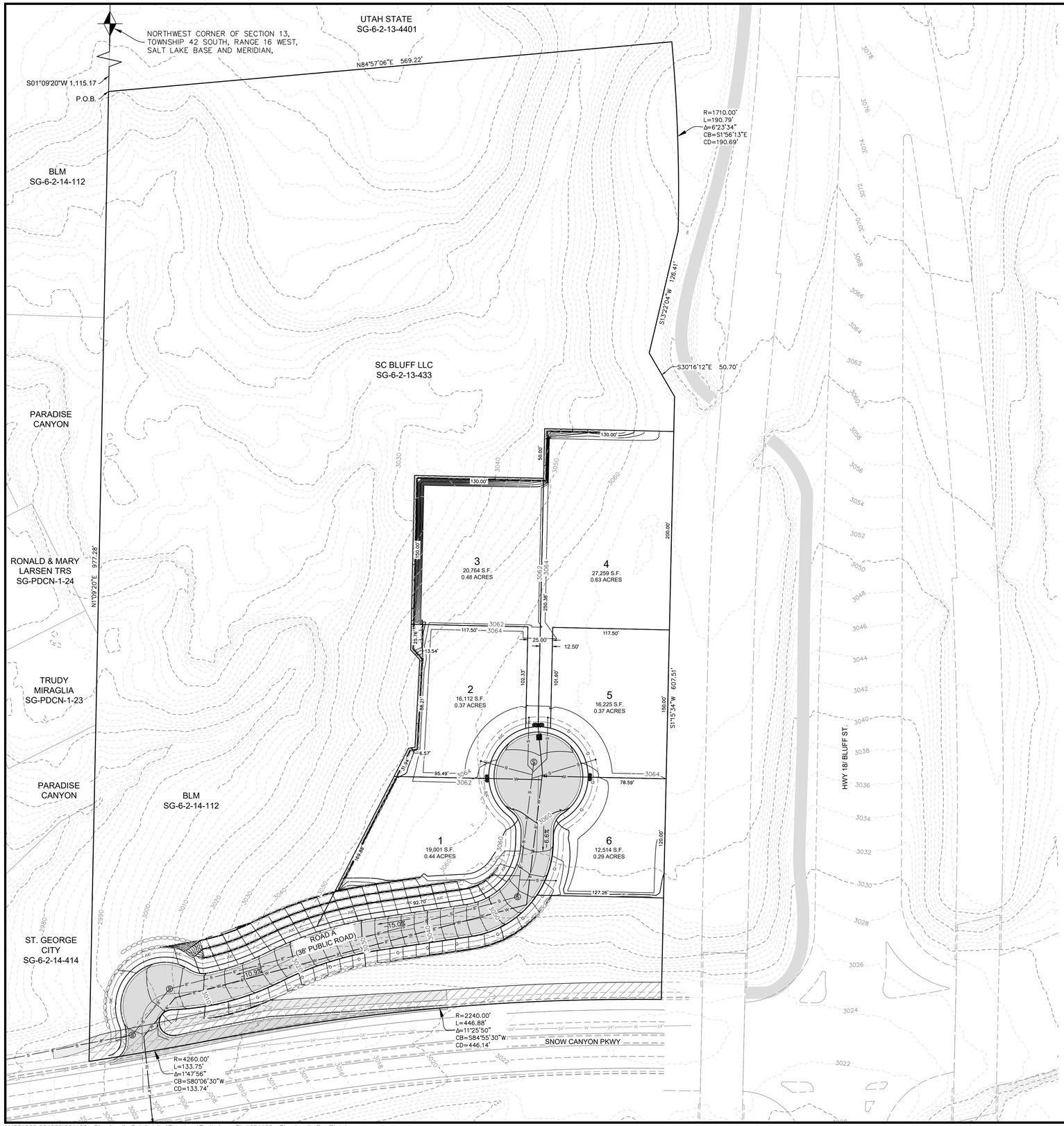
DATE: JUNE 2023
DRAWN: RM
APPROVED: APPROVED
SCALE: 1" = 40'
JOB NO.: 221190

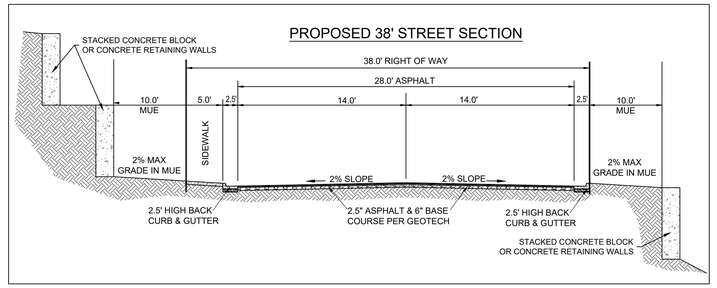
HILLSIDE MAP
CHUCKWALLA SUBDIVISION @ ST. GEORGE, UTAH

SHEET 1 OF 1 SHEETS
FILE: 221190

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Concept\221190 Concept V17.dwg



PROPOSED 38' STREET SECTION



LEGEND

- EXISTING RIGHT OF WAY LINE
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED STACKED ROCK RETAINING WALL
- DRAINAGE CHANNEL FLOW LINE
- EXISTING FENCING
- OHP — EXISTING OVER HEAD POWER
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING WATER
- PROPOSED WATER
- STOP / STREET SIGN
- END OF ROAD MARKERS
- DRAINAGE FLOW DIRECTION
- SECTIONAL MONUMENT (TYPE, LOCATION, ETC AS NOTED IN PLAT)
- PROPOSED ASPHALT
- DEDICATED TO CITY

PROJECT INFORMATION	
ZONING	R-1-10
GENERAL PLAN	LDR
TOTAL AREA	12.63 ACRES
TOTAL UNITS	6
DENSITY	2.11 D.U./ ACRE

OWNER / DEVELOPER

SC BLUFF LLC

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RICK MEYER - PROJECT MANAGER
(435)-673-2337

GRAPHIC SCALE

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(IN FEET)
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No	Date	By	Revision

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DATE: JULY 2023 | DRAWN: CBW | APPROVED: WFM | SCALE: 1" = 50' | JOB NO.: 221190

SITE PLAN
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 2 OF 4 SHEETS

FILE: PRE PLAT

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Preliminary Plat\221190 - Chuckwalla Pre Plat.dwg

Bush and Gudgell, Inc.
Engineers • Planners • Surveyors
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July 31, 2023

Preliminary Drainage Memo
Chuckwalla residential subdivision

Chuckwalla is a proposed 6-lot residential subdivision at the northwest corner of Snow Canyon Parkway and State Route 18 (Bluff Street) in St George. It is located on parcel SG-6-2-13-433. The project includes 12.63 acres of land. The site will be accessed off Snow Canyon Parkway as a right-in, right-out approach.

The project has potential to generate stormwater runoff. The purpose of this letter is to identify the methods that will be used and the discharge location(s) of that runoff.

Site Considerations

A wash runs through the project that enters from the northeast and exits and the southwest corner of the site. This wash has a contributing area of approximately 200 acres. It is tributary to the Halfway Wash to the west of the project. All proposed development for the project will occur south and east of the wash, so no impacts to or wash crossings will be needed.

The site is part of FEMA panel 49053C0788G and is not encumbered by floodplain.

There is significant topographic relief to the property and the project will go through hillside review at the city.

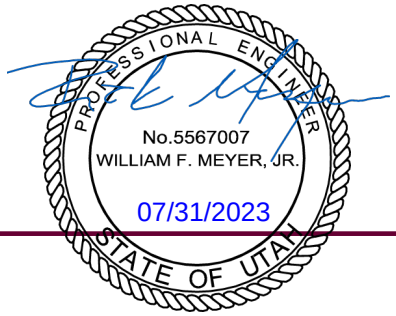
Offsite water entering the site at discrete points was addressed above. It is not anticipated that offsite water will enter the site at non-discrete points (sheet flow).

Methodology

The site hydrology will be analyzed using multiple design storms. The 10-year and 100-year storms will be analyzed using the Farmer-Fletcher distribution (3-hour). Also, the 100-year storm will be analyzed using the SCS Type II (24-hour) distribution. Using the hydrologic results of the analyses a hydraulic analysis will be performed to determine minimum pipe sizing and inlet capture rates in the street.

Conclusions

The proposed Chuckwalla development will comply with all local and state requirements for stormwater runoff. It is not anticipated that a detention pond will be required.



205 East Tabernacle #4
St. George, UT 84770
435-673-2337

B&G PROJECT NUMBER 221190

CHUCKWALLA ESTATES

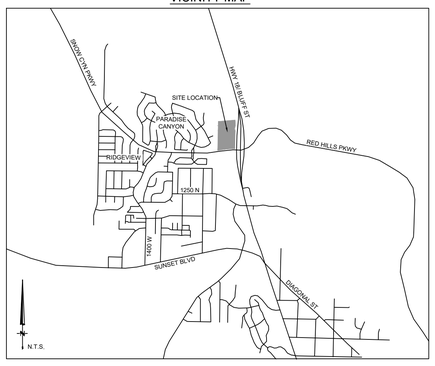
PRELIMINARY PLAT

LOCATED IN ST GEORGE, UTAH

NORTHWEST 1/4 OF SECTION 13, T 42 S, R 16 W, SLB&M

PARCEL # SG-6-2-13-433

VICINITY MAP



LEGAL DESCRIPTION

BEGINNING AT A POINT ON THE SECTION LINE, SAID POINT BEING SOUTH 01°09'20" WEST 1,115.17 FEET ALONG SAID SECTION LINE FROM THE NORTHWEST CORNER OF SECTION 13, TOWNSHIP 42 SOUTH, RANGE 16 WEST, SALT LAKE BASE & MERIDIAN, AND RUNNING; THENCE NORTH 84°57'06" EAST 569.22 FEET TO THE WESTERLY LINE OF STATE HIGHWAY 18; THENCE SOUTHERLY THE FOLLOWING (4) COURSES ALONG SAID WESTERLY LINE OF STATE HIGHWAY 18; THENCE SOUTHERLY 190.80 FEET ALONG AN ARC OF A 1,710.10 FOOT RADIUS CURVE TO THE RIGHT (CENTER BEARS SOUTH 84°52'00" WEST, LONG CHORD BEARS SOUTH 01°56'13" EAST 190.70 FEET WITH A CENTRAL ANGLE OF 06°23'34"); THENCE SOUTH 13°22'04" WEST 126.41 FEET; THENCE SOUTH 30°16'12" EAST 50.70 FEET; THENCE SOUTH 01°15'34" WEST 607.51 FEET TO THE NORTHERLY LINE OF SNOW CANYON PARKWAY; THENCE WESTERLY THE FOLLOWING (2) COURSES ALONG SAID NORTHERLY LINE OF SNOW CANYON PARKWAY; THENCE WESTERLY 446.88 FEET ALONG AN ARC OF A 2,240.00 FOOT RADIUS CURVE TO THE LEFT (CENTER BEARS SOUTH 00°38'25" WEST, LONG CHORD BEARS SOUTH 84°55'31" WEST 446.14 FEET WITH A CENTRAL ANGLE OF 11°25'50"); THENCE WESTERLY 133.75 FEET ALONG AN ARC OF A 4,260.00 FOOT RADIUS CURVE TO THE RIGHT (CENTER BEARS NORTH 10°47'26" WEST, LONG CHORD BEARS SOUTH 80°06'30" WEST 133.74 FEET WITH A CENTRAL ANGLE OF 01°47'56") TO THE SECTION LINE; THENCE NORTH 01°09'20" EAST 977.28 FEET ALONG SAID SECTION LINE TO THE POINT OF BEGINNING.

CONTAINS 12.63 ACRES

PROJECT INFORMATION	
ZONING	R-1-10
GENERAL PLAN	LDR
TOTAL AREA	12.63 ACRES
TOTAL UNITS	6
DENSITY	2.11 D.U./ ACRE

PROJECT MAP



GENERAL NOTES

1) CONTRACTOR IS RESPONSIBLE TO VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO COMMENCEMENT OF WORK IN ANY ZONE.
2) ALL WORK AND MATERIALS SHALL COMPLY WITH ST. GEORGE CITY STANDARD SPECIFICATIONS.
3) PROJECTS SHALL INSTALL AN INFORMATIONAL SIGN ON SITE BEFORE CONSTRUCTION BEGINS. THIS SIGN WILL HAVE A MINIMUM SIZE, PLACEMENT LOCATION AND CONTENT INFORMATION WITH THE COMPANY NAME, PHONE CONTACT AND GRADING PERMIT NUMBER.
4) PROJECTS SHALL SUBMIT A DUST CONTROL PLAN WITH DETAILS ON EQUIPMENT, SCHEDULING AND REPORTING OF DUST CONTROL ACTIVITIES.
5) A MANDATORY PRE-CONSTRUCTION MEETING WILL BE REQUIRED ON ALL PROJECTS PRIOR TO ANY GRUBBING, GRADING OR CONSTRUCTION ACTIVITIES. THE PERMIT HOLDER WILL BE REQUIRED TO NOTIFY ALL DEVELOPMENT SERVICE INSPECTORS.
6) FOLLOW APPENDIX 'J' STANDARDS FOUND IN THE IBC.
7) ALL OBJECTS SHALL BE KEPT OUT OF THE SIGHT DISTANCE CORRIDORS THAT MAY OBSTRUCT THE DRIVER'S VIEW.

DUST CONTROL

THESE DUST CONTROL MEASURES MUST BE OBSERVED AT ALL TIMES:

EARTH MOVING ACTIVITIES:

1) APPLY WATER BY MEANS OF TRUCKS, HOSES AND/OR SPRINKLERS AT SUFFICIENT FREQUENCY AND QUANTITY, PRIOR TO CONDUCTING, DURING AND AFTER EARTHMOVING ACTIVITIES.
2) PRE-APPLY WATER TO THE DEPTH OF THE PROPOSED CUTS OR EQUIPMENT PENETRATION.
3) APPLY WATER AS NECESSARY AND PRIOR TO EXPECTED WIND EVENTS.
4) OPERATE HAUL VEHICLES APPROPRIATELY IN ORDER TO MINIMIZE FUGITIVE DUST AND APPLY WATER AS NECESSARY DURING LOADING OPERATIONS.

DISTURBED SURFACE AREAS OR INACTIVE CONSTRUCTION SITES:

1) WHEN ACTIVE CONSTRUCTION OPERATIONS HAVE CEASED, APPLY WATER AT SUFFICIENT FREQUENCY AND QUANTITY TO DEVELOP A SURFACE CRUST AND PRIOR TO EXPECTED WIND EVENTS.
2) INSTALL FENCE BARRIER AND/OR "NO TRESPASSING" SIGNS TO PREVENT ACCESS TO DISTURBED SURFACE AREAS.

JULY 2023

BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
205 East Tabernacle #4
St. George, Utah 84770
Phone (435) 673-2337

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OWNER / DEVELOPER

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JERRY MYAHARA
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2 WEST
ST. GEORGE, UTAH 84770

ENGINEERING CONTACT

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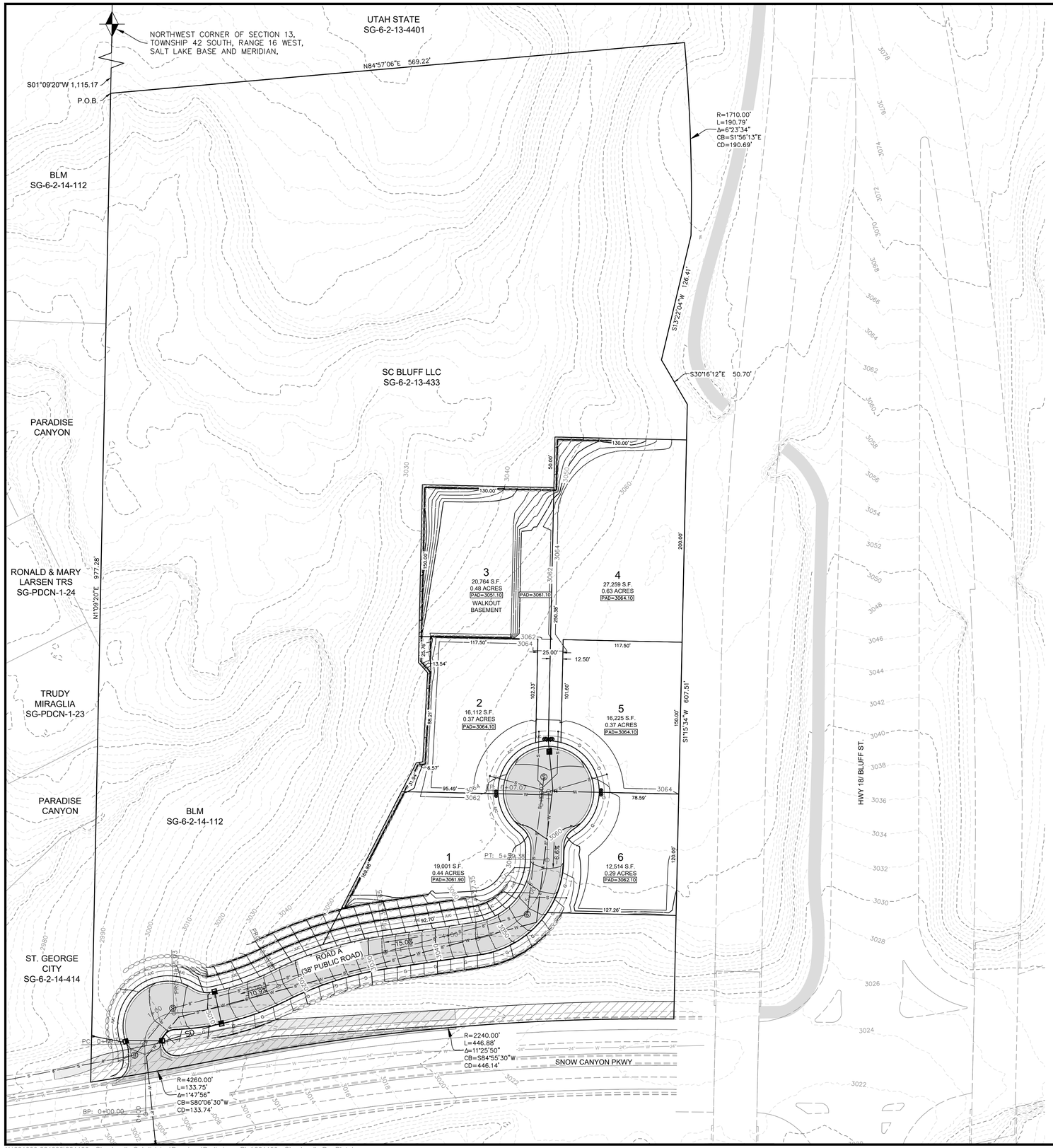
No.	Date	By	Revision

DATE: JULY 2023
DRAWN: CBW
APPROVED: WFM
SCALE: NOTED
JOB NO.: 221190

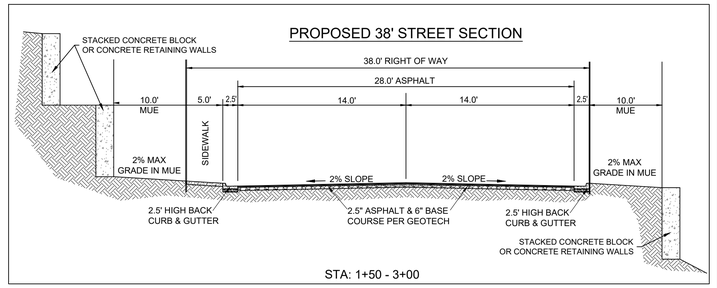
PRELIMINARY PLAT
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 1 OF 4 SHEETS
FILE: PRE PLAT

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Preliminary Plat\221190 - Chuckwalla Pre Plat.dwg

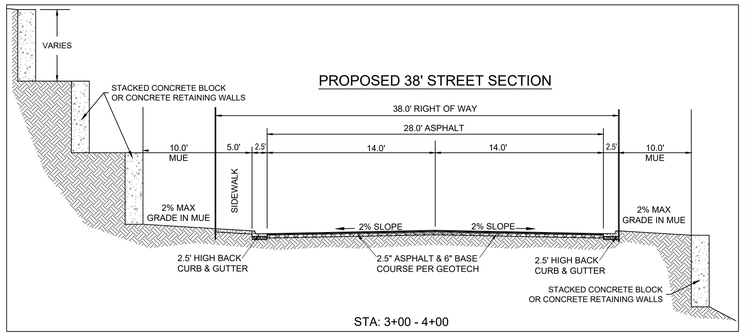


PROPOSED 38' STREET SECTION



STA: 1+50 - 3+00

PROPOSED 38' STREET SECTION



STA: 3+00 - 4+00

LEGEND

- EXISTING RIGHT OF WAY LINE
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED CONCRETE BLOCK OR CONCRETE RETAINING WALL
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GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

No	Date	By	Revision

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SITE PLAN
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 2 OF 4 SHEETS

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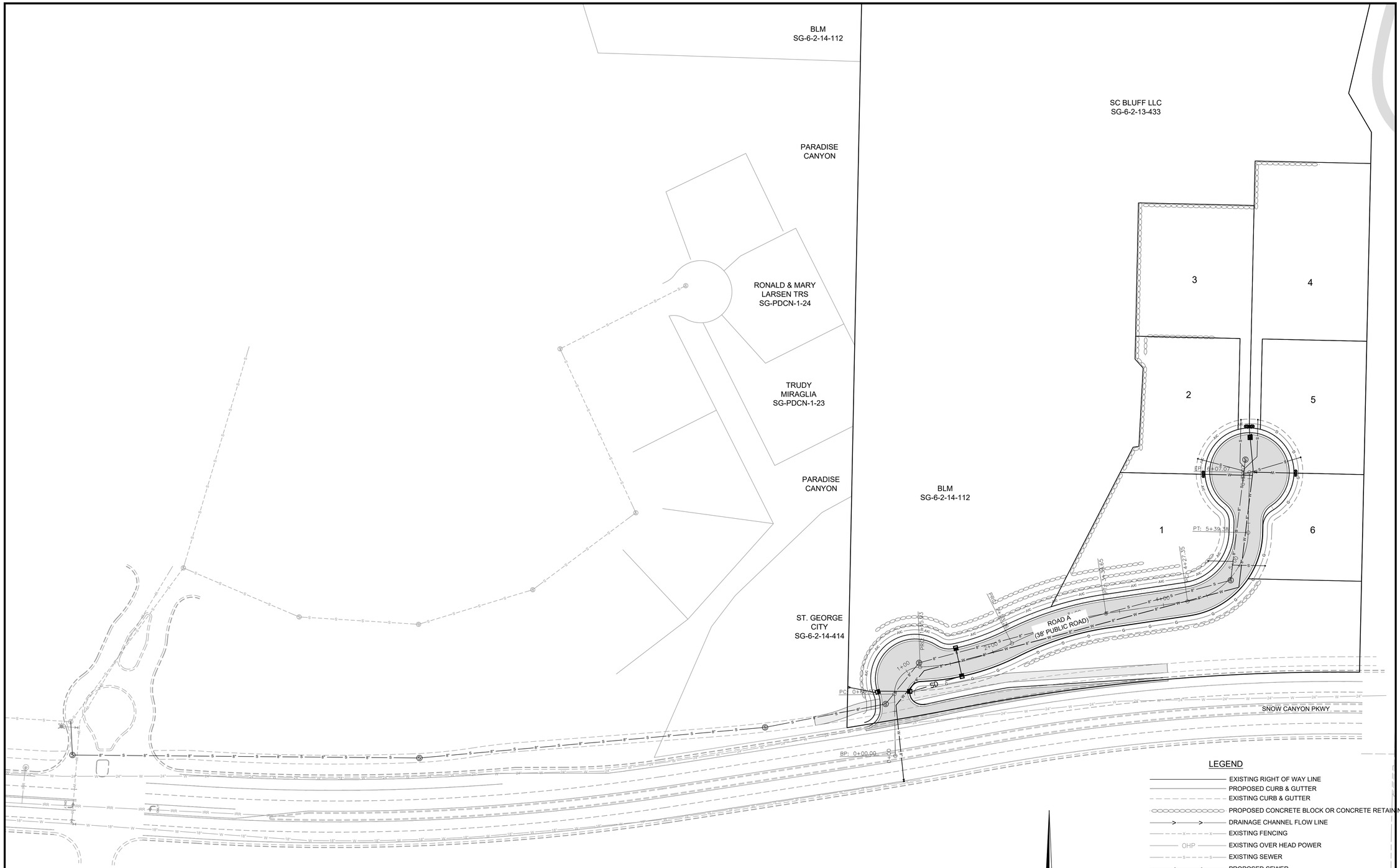

OWNER / DEVELOPER

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ENGINEERING CONTACT

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LEGEND

- EXISTING RIGHT OF WAY LINE
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED CONCRETE BLOCK OR CONCRETE RETAINING WALL
- DRAINAGE CHANNEL FLOW LINE
- EXISTING FENCING
- EXISTING OVER HEAD POWER
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING WATER
- PROPOSED WATER
- STOP / STREET SIGN
- END OF ROAD MARKERS
- DRAINAGE FLOW DIRECTION
- SECTIONAL MONUMENT (TYPE, LOCATION, ETC AS NOTED IN PLAT)
- PROPOSED ASPHALT
- DEDICATED TO CITY

No	Date	By	Revision

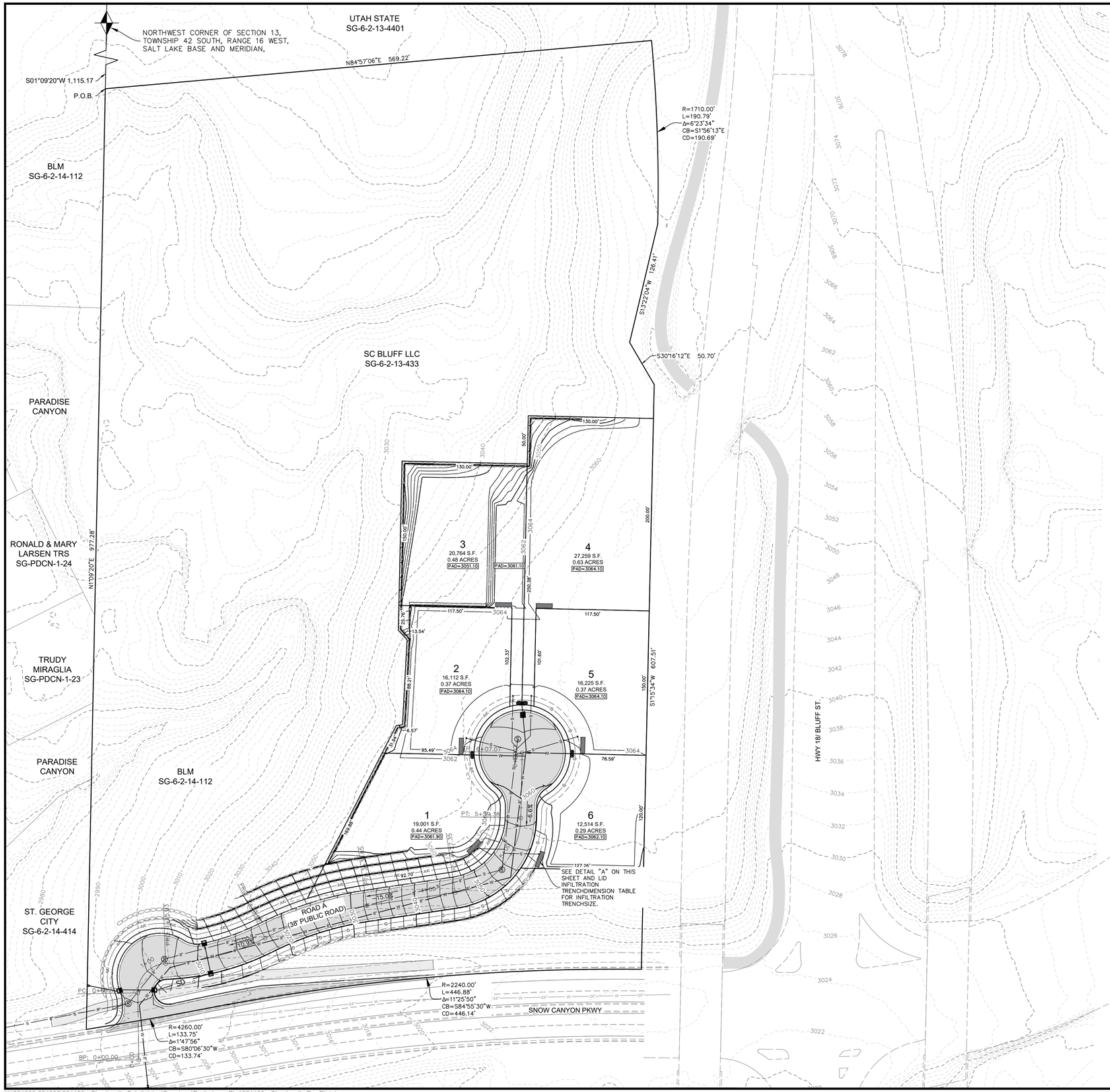
BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
205 East Tabernacle Suite #4
St. George, Utah 84770
Phone (435) 673-2337 / Fax (435) 673-3161
www.bushandgudgell.com

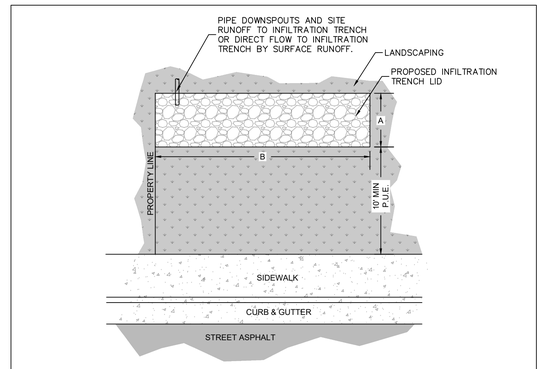
DATE: JULY 2023
DRAWN: CRW
APPROVED: WFM
SCALE: 1" = 50'
JOB NO.: 221190

UTILITY PLAN
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 3 OF 4 SHEETS
FILE: PRE PLAT

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Preliminary Plat\221190 - Chuckwalla Pre Plat.dwg





NOTES:
1. CONSTRUCT INFILTRATION TRENCH ON LOW SIDE OF LOT NEAR PROPERTY LINE, BEHIND SIDEWALK.

A LID INFILTRATION TRENCHDETAIL

NOT TO SCALE

LEGEND

- EXISTING GROUND CONTOUR
- FINISH GROUND CONTOUR
- DRAINAGE FLOW
- PAD= 00.0 FINISH PAD ELEVATION
- LOCATION ELEVATION SPOT ELEVATION
- SD STORM DRAIN
- (S) SINGLE CURB INLET PER CITY STD. DETAIL 205
- (D) DOUBLE CURB INLET PER CITY STD. DETAIL 205
- LOT LINE
- CURB & GUTTER
- EXISTING CURB & GUTTER
- FLOW LINE
- STORM DRAIN MAN HOLE

OWNER / DEVELOPER

SC BLUFF LLC

JERRY MYAHARA
(949) 279-6824
2 WEST
ST. GEORGE, UTAH 84770

ENGINEERING CONTACT

BUSH AND GUDGELL, INC.
205 EAST TABERNACLE #4
ST GEORGE, UT 84770
RICK MEYER - PROJECT MANAGER
(435)-673-2337

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

No.	Date	By	Revision

BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
205 East Tabernacle Suite #4
St. George, Utah 84770
Phone (435) 673-2337 / Fax (435) 673-3161
www.bushandgudgell.com

DATE: JULY 2023
DRAWN: CBW
APPROVED: WFM
SCALE: 1" = 50'
JOB NO.: 221190

LID PLAN
CHUCKWALLA ESTATES
LOCATED IN ST GEORGE, UTAH

SHEET 4 OF 4 SHEETS

FILE: PRE PLAT

X:\221000-221999\221190 - Chuckwalla Subdivision\Drawings\Preliminary Plat\221190 - Chuckwalla Pre Plat.dwg

TRUST LANDS ADMINISTRATION
SUPPORTING UTAH SCHOOLS AND INSTITUTIONS

Michelle E. McConkie
Executive Director

102 South 200 East, #600
Salt Lake City, Utah 84111
801-538-5100 Fax 801-355-0922
trustlands.utah.gov

October 4, 2023

Jerry,

Please consider this letter a confirmation of our telephone discussion of October 3, 2023. Trust Lands Archaeology Staff has reviewed the preliminary plat for the "Chuckwalla Estates" development and it's relationship to historic property 42Ws1515. Trust Lands has determined that this project sufficiently avoids the boundaries of this historic property and that the requirements described in the previously established Archaeological Deed Covenant have been satisfied.

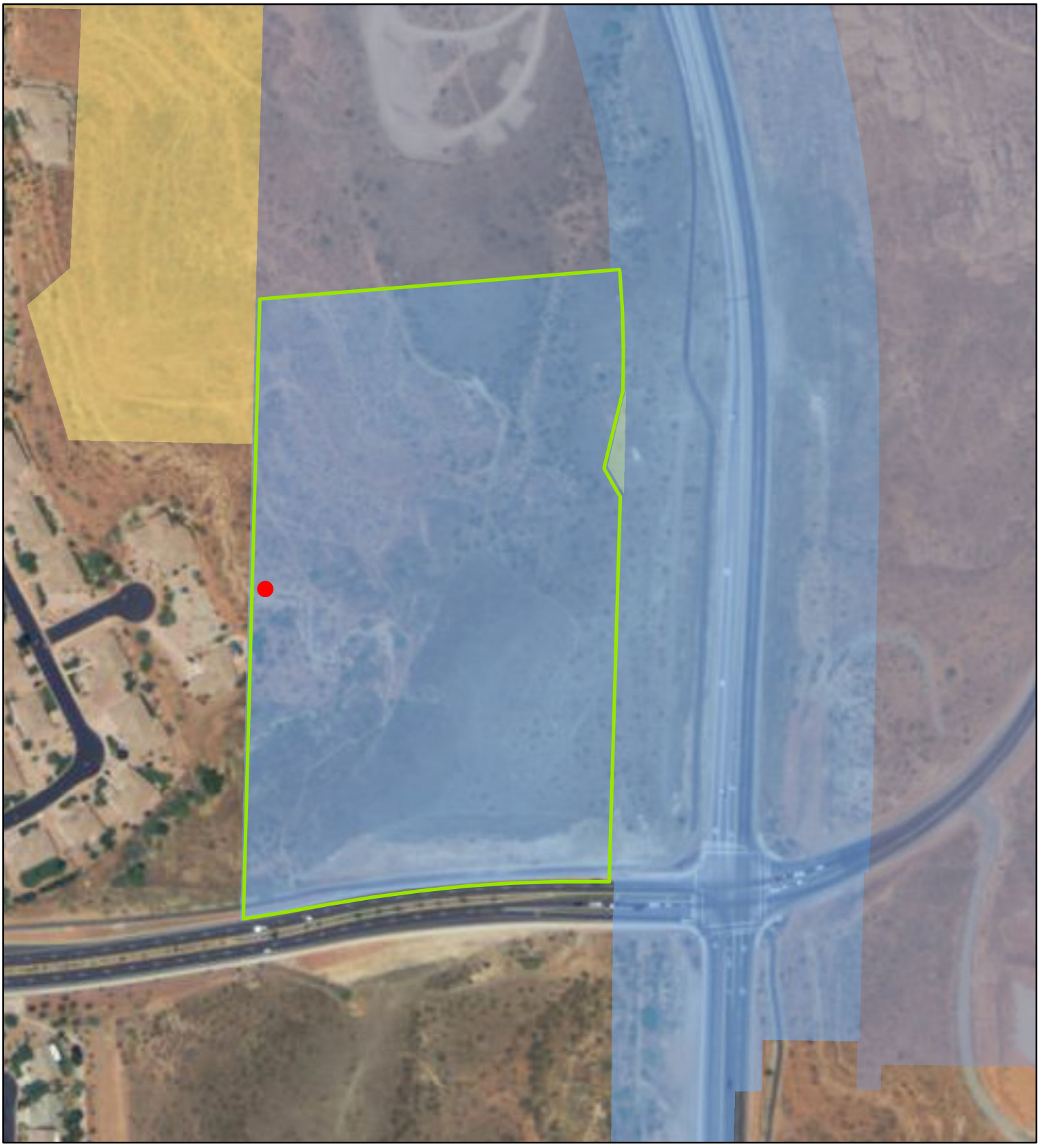
Thanks for your attention to this matter and please do not hesitate to contact me if your plans change prior to starting.

Joel Boomgarden

Lead Archaeologist

Trust Lands Administration

Exhibit "A"



Legend

- 42Ws1515
- C26714 Sale Parcel

0 0.0325 0.065 0.13 Miles

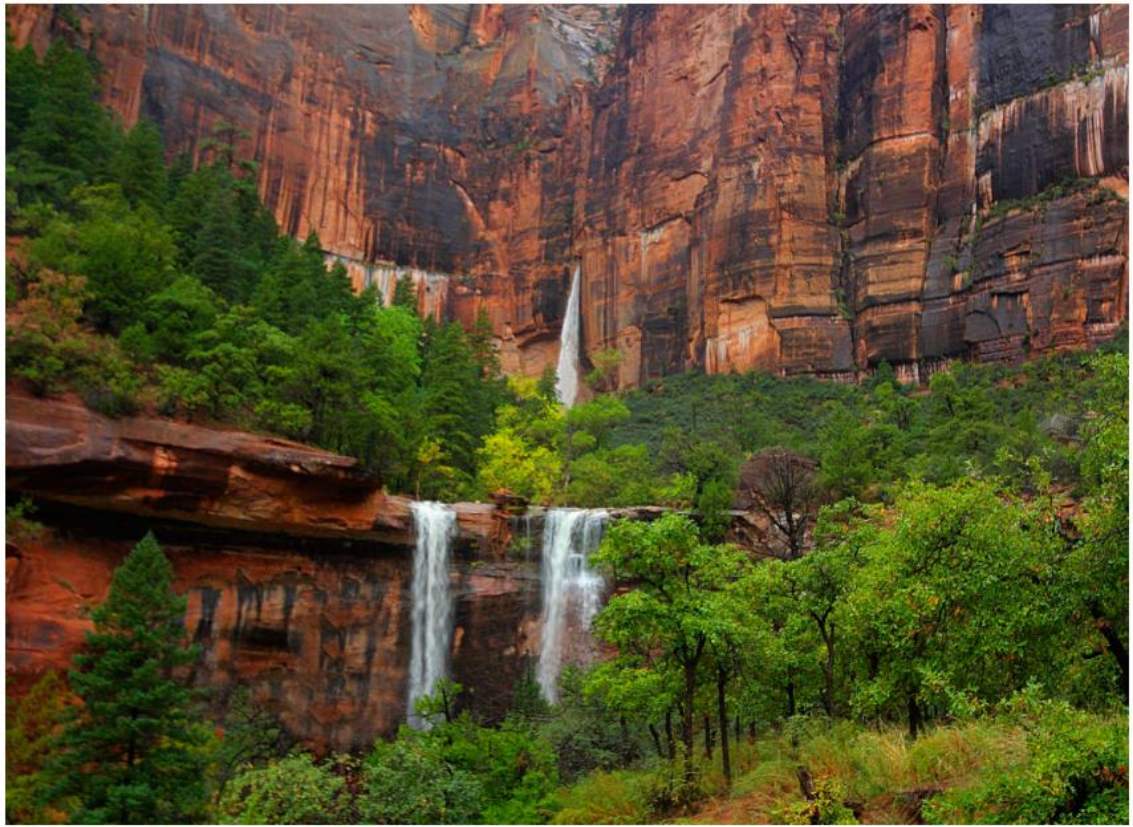
0 0.035 0.07 0.14 Kilometers

N

State of Utah
School & Institutional
Trust Lands Administration

Hillside Permit Chuckwalla

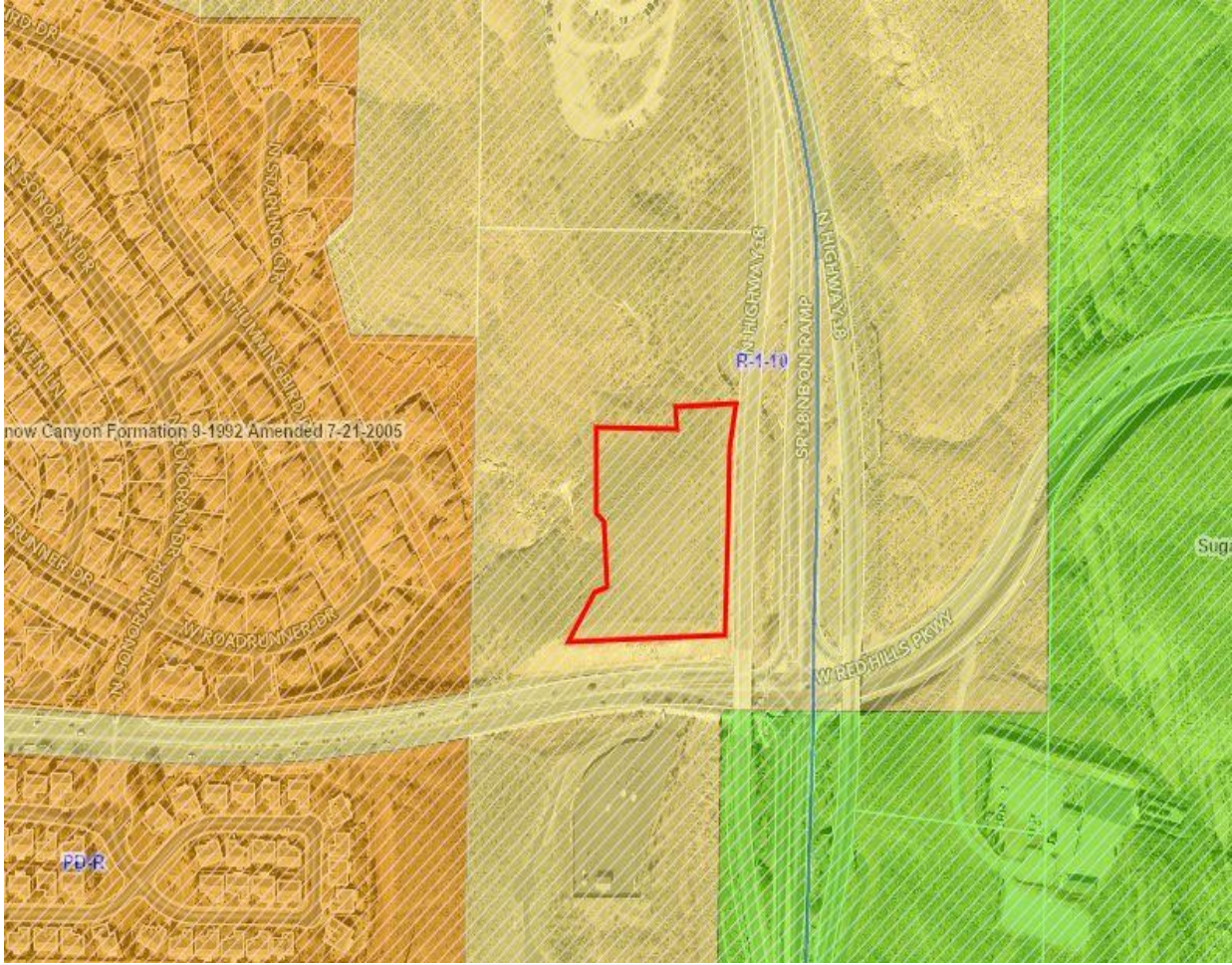
Case No. 2023-HS-008



Vicinity Map

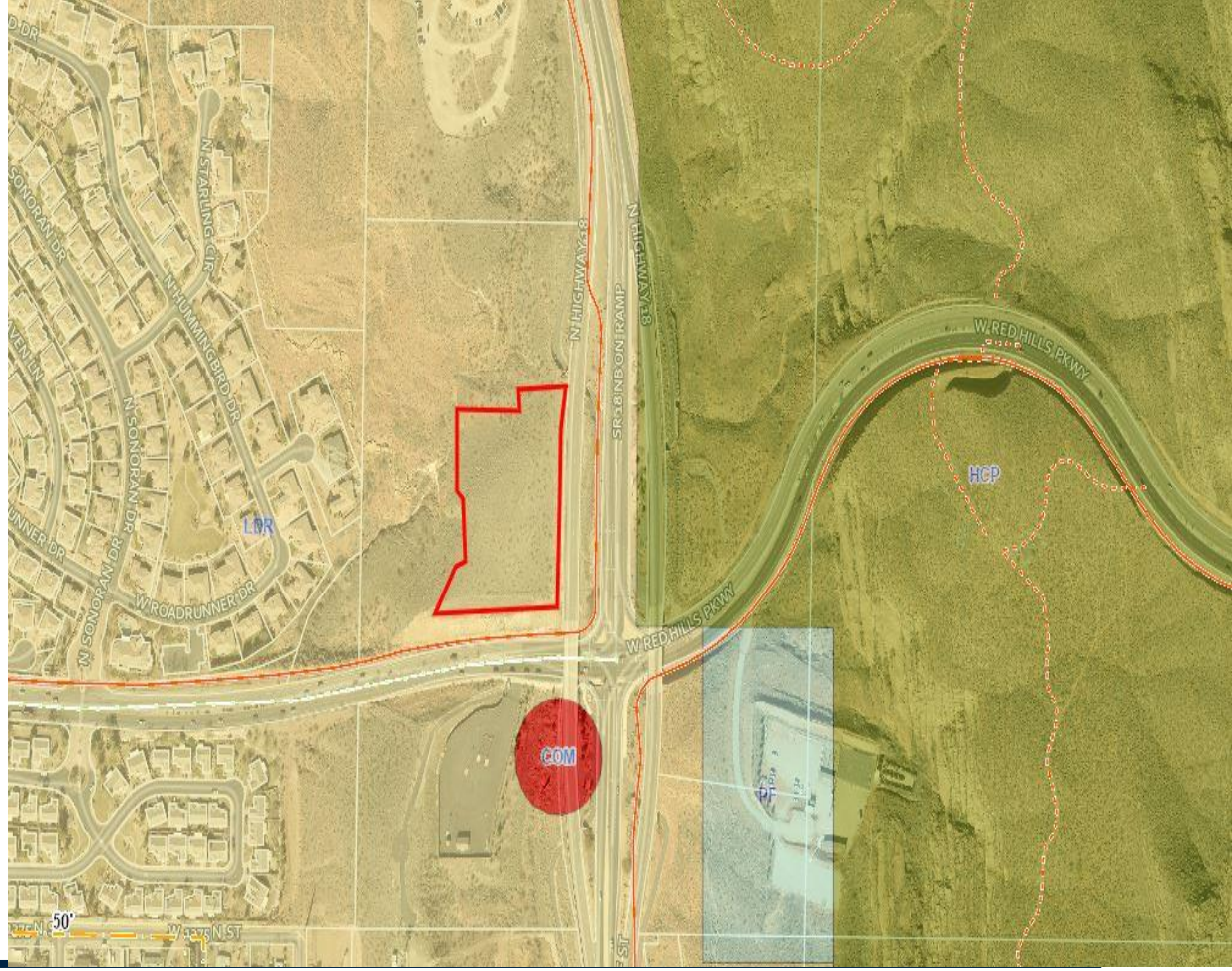


Zoning Map



now Canyon Formation 9-1992 Amended 7-21-2005
N HIGHWAY 8
SR 18 NBON RAMP
N HIGHWAY 8
R-1-10
W ROADRUNNER DR
W RED HILLS PKWY
PD-R

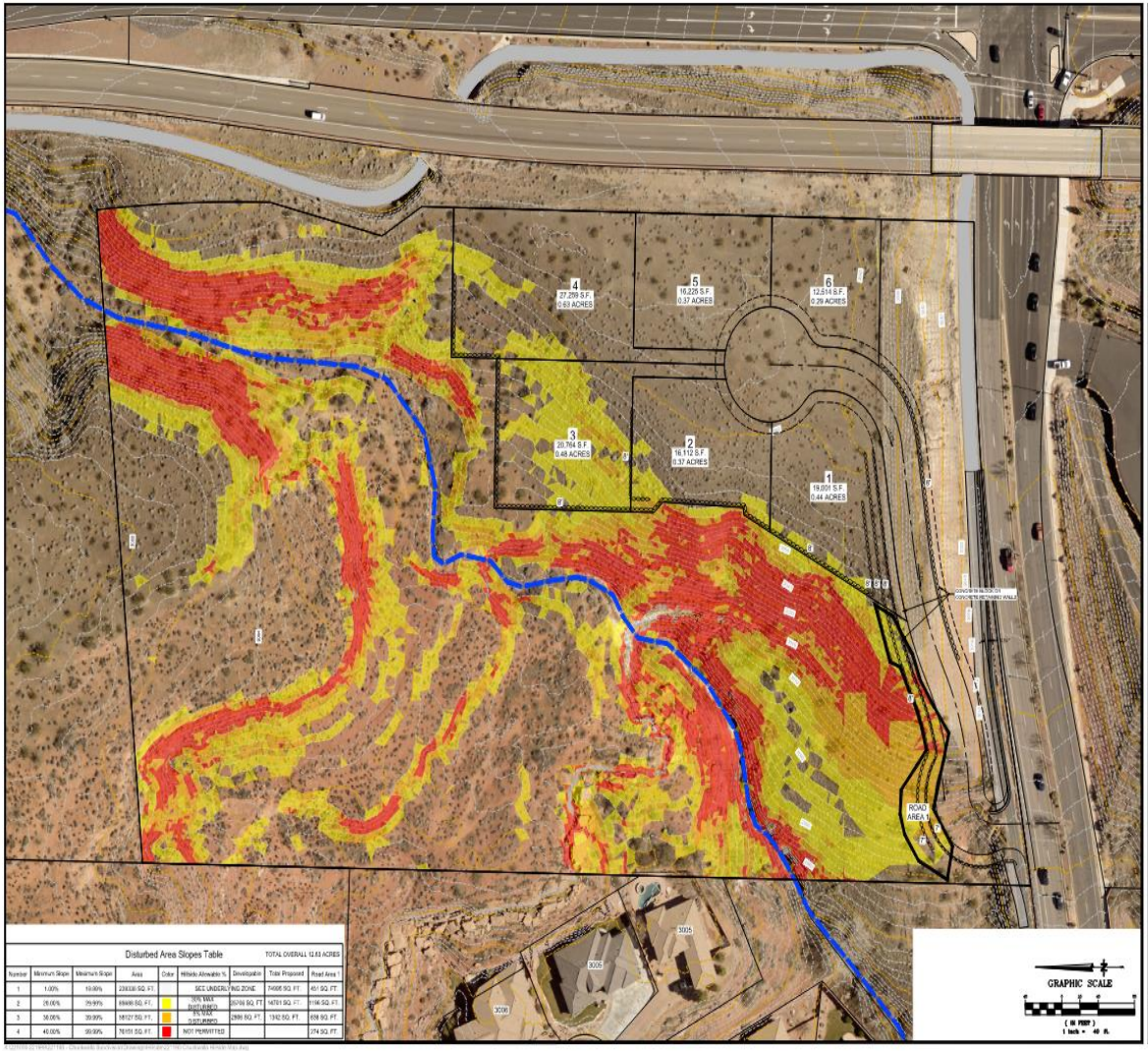
General Plan Map



Archaeological Site Map



Slope Map



4
27,259 S.F.
0.63 ACRES
5
16,225 S.F.
0.37 ACRES
6
12,514 S.F.
0.29 ACRES
3
20,764 S.F.
0.48 ACRES
2
16,112 S.F.
0.37 ACRES
1
19,001 S.F.
0.44 ACRES
ROAD AREA 1
Disturbed Area Slopes Table
TOTAL OVERALL 12.63 ACRES
Number
Minimum Slope
Maximum Slope
Area
Color
Hillside Allowable %
Developable
Total Proposed
Road Area 1
1
1.00%
10.00%
238336 SQ. FT.
SEE UNDERLYING ZONE
74906 SQ. FT.
451 SQ. FT.
2
20.00%
29.99%
69686 SQ. FT.
30% MAX DISTURBED
35766 SQ. FT.
14701 SQ. FT.
1196 SQ. FT.
3
30.00%
39.99%
58127 SQ. FT.
5% MAX DISTURBED
2986 SQ. FT.
1342 SQ. FT.
658 SQ. FT.
4
40.00%
99.99%
76151 SQ. FT.
NOT PERMITTED
274 SQ. FT.
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
205 East Tabernacle Suite #4
St. George, Utah 84770
Phone (435) 673-2337 / Fax (435) 673-3181
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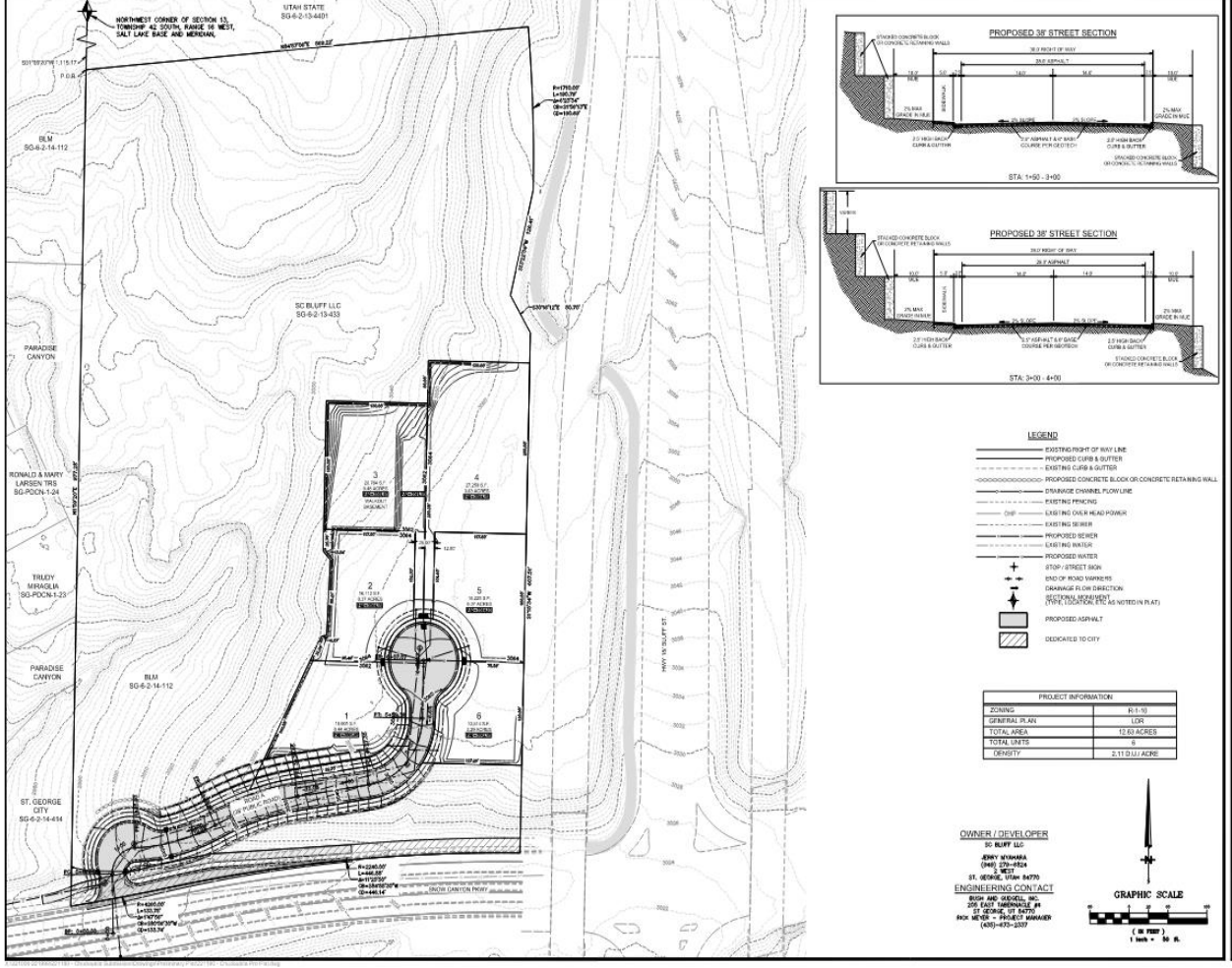
HILLSIDE MAP
CHUCKWALLA SUBDIVISION
@ ST. GEORGE, UTAH
SHEET 1 OF 2
FILE:221190

Preliminary Plat



Agenda Date: 11/16/2023 **Agenda Item Number:** 11

Subject:

Consider approval of a preliminary plat for the Chuckwalla development, a 6-lot subdivision located north of Snow Canyon Pkwy and east of Paradise Canyon subdivision. Case No. 2023-PP-030

Item at-a-glance:

Staff Contact: Mike Hadley

Applicant Name: Bob Hermandson

Reference Number: 2023-PP-030

Address/Location:

North of Snow Canyon Pkwy and east of the existing Paradise Canyon Subdivision.

Item History (background/project status/public process):

The applicant is proposing to develop six residential lots. At their meeting held on October 24, 2023, the Planning Commission held a public meeting and recommended approval with conditions.

Staff Narrative (need/purpose):

The proposed plat will provide six new residential lots in the area. The development needs to go through subdividing process to create the six new lots.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

The Planning Commission held a public meeting on October 24, 2023 as part of the preliminary plat process and have recommended approval of the application with a vote of 7-0 and with the following conditions: 1.Property lines for lots 3 & 4 need to be extended to cul-de-sac. 2. A 25-foot driveway easement needs to be dedicated with each lot granting an easement to each others lot along the stem. 3.Provide a detailed cross-section of road A showing the 3-tiered retaining wall on the north side of road A and the one-tiered retaining wall on the south side of road A and show the type of wall the developer is proposing. 4.Work with engineering on design of decel lane. 5.Remainder parcel needs to be included in this plat.

St.George
Community Development

Preliminary Plat

PLANNING COMMISSION AGENDA REPORT: **10/24/2023**
CITY COUNCIL AGENDA REPORT**:** **11/16/2023**
Chuckwalla Estates
Case No. 2023-PP-030

Request: Consider a request for a six (6) lot preliminary plat known as Chuckwalla Estates located approximately at Highway 18 and Snow Canyon Pkwy. The property is 12.63 acres and is zoned R-1-10. The applicant is SC Bluff LLC, and the representative is Ryan Lay, Bush and Gudgell Engineering. Case No. 2023-PP-030 (Staff – Mike Hadley)

Location: The site is located approximately at Highway 18 and Snow Canyon Pkwy.

Property: 12.63 acres

Number of Lots: 6

Density: 2.11 DU/AC

Zoning: R-1-10 (Single Family Residential minimum 10,000 sq ft lots)

Adjacent zones: This plat is surrounded by the following zones:
North – R-1-10 (Single Family Residential 10,000 sq ft lots minimum)
South – OS (Open Space) & R-1-10 (Single Family Residential 10,000 sq ft lots. minimum).
East – OS (Open Space)
West – PD-R (Planned Development Residential)

General Plan: LDR

Applicant: SC Bluff LLC.

Representative: Ryan Lay Bush & Gudgell

Planning Commission:
The Planning Commission recommended approval of the Chuckwalla preliminary plat with conditions.

RECOMMENDATION PRELIMINARY PLAT:
Staff recommends approval of the Preliminary Plat for the Chuckwalla Estates with the following conditions:

1. Property lines for lots 3 & 4 need to be extended to cul-de-sac.
2. A 25-foot driveway easement needs to be dedicated with each lot granting an easement to each other's lot along the stem.

3. Provide a detailed cross-section of road A showing the 3-tiered retaining wall on the north side of road A and the one-tiered retaining wall on the south side of road A and show the type of wall the developer is proposing.
4. Work with engineering on design of decel lane.
5. Remainder parcel needs to be included in this plat.

POSSIBLE MOTION:

The Planning Commission recommends approval to the City Council for the Chuckwalla Estates preliminary plat with conditions in the staff report.

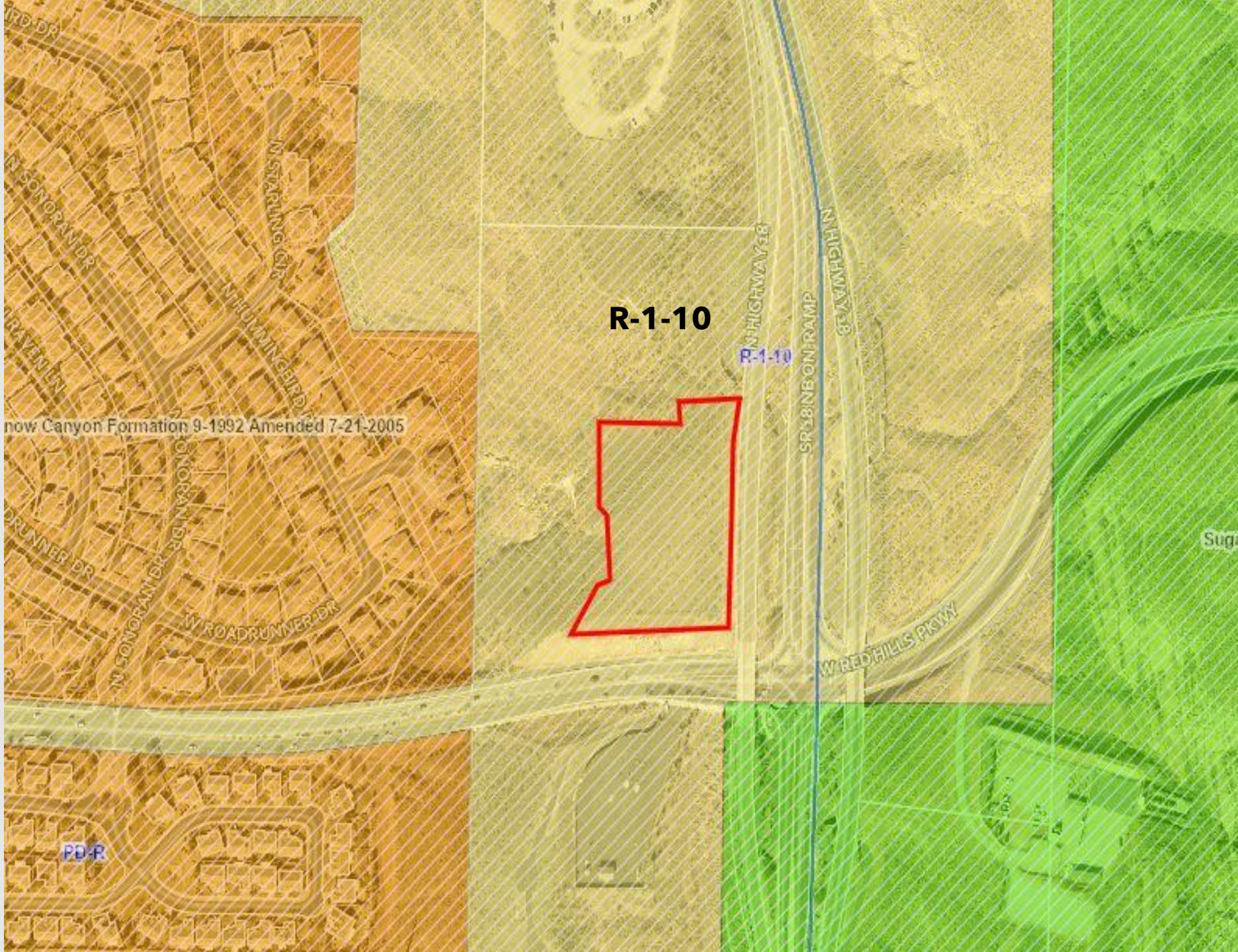


Chuckwalla Estates
2023-PP-030

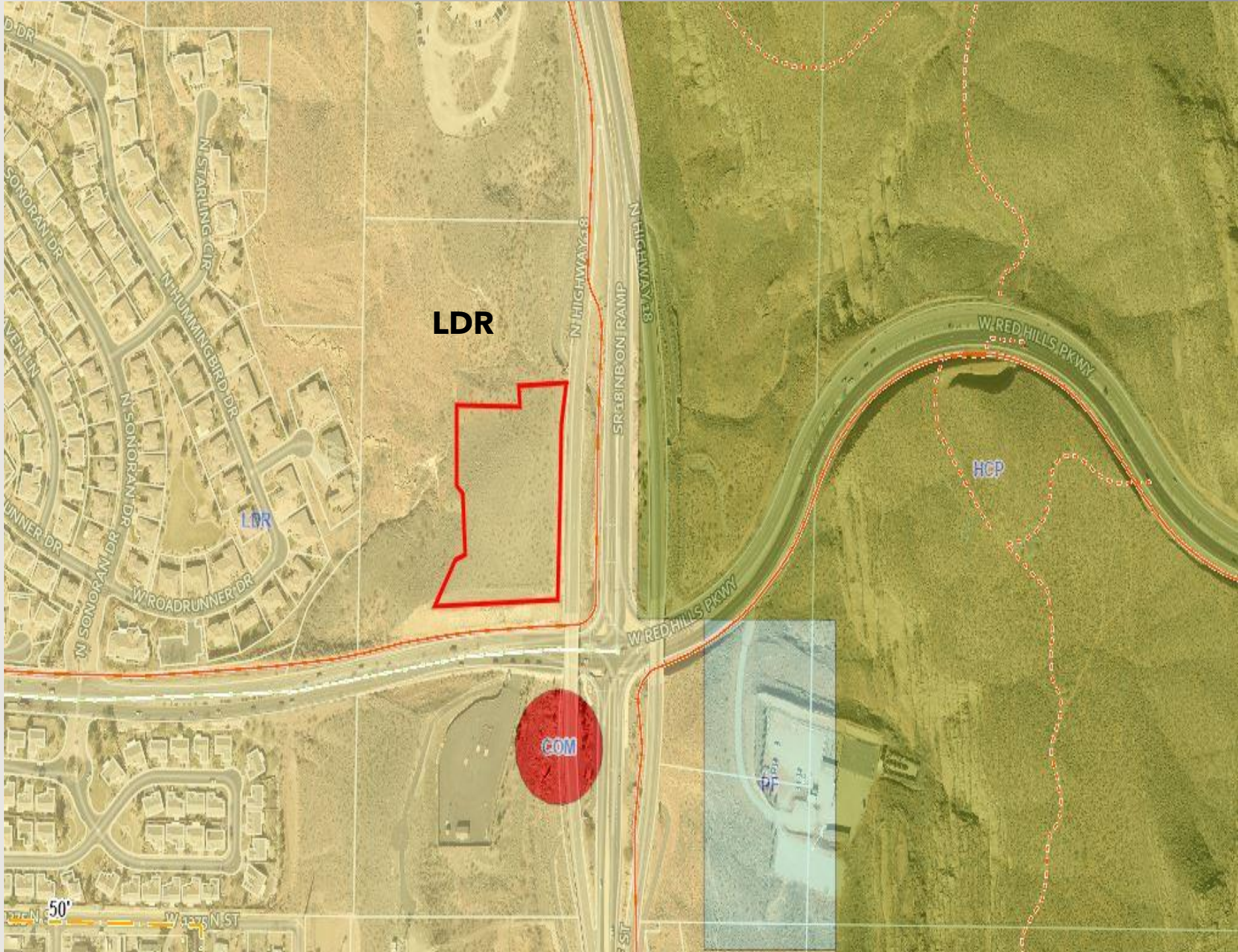
Vicinity Map



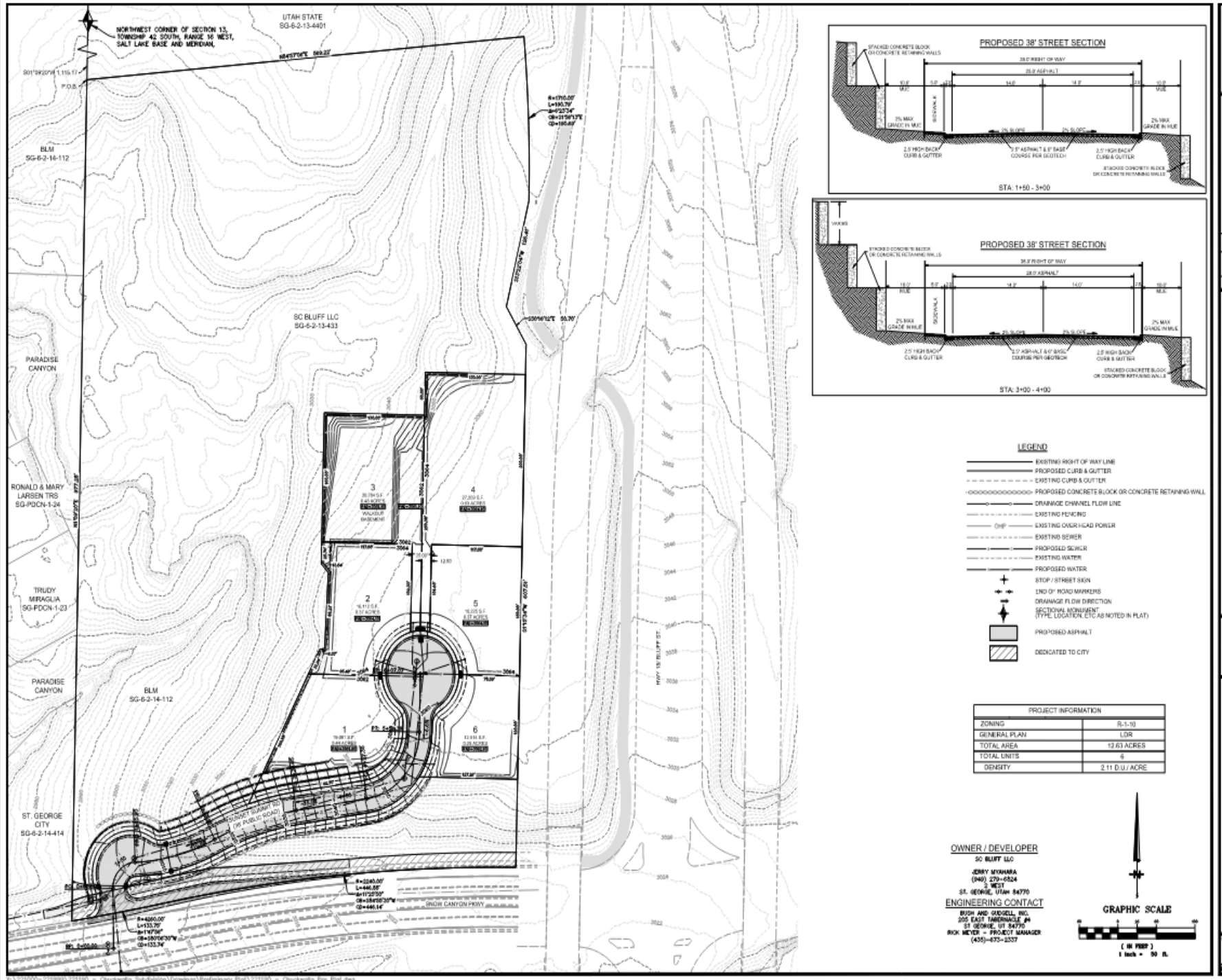
Zoning Map


R-1-10
R-1-10
now Canyon Formation 9-1992 Amended 7-21-2005
N STARLING CIR
N HUMMINGBIRD DR
N SONORAN DR
W ROADRUNNER DR
N HIGHWAY 18
SR 18 NB ON RAMP
W RED HILLS PKWY
PD-R

General Plan Map



Preliminary Plat



Agenda Date: 11/16/2023 **Agenda Item Number:** 12

Subject:

Consider approval of Ordinance No. 2023-039 amending Title 3 and Title 10 of the St. George City Code, to add provisions for temporary parking lot businesses to Title 3 and remove for mobile businesses from Title 10.

Item at-a-glance:

Staff Contact: Carol Winner

Applicant Name: The City of St. George

Reference Number: 2023-ZRA-003

Address/Location:

N/A

Item History (background/project status/public process):

On December 15, 2022, an amendment was approved to add mobile business to Title 3 and Title 10. In Title 10, mobile business was added as a permitted use with standards, and specific standards were created. However, in 2023, the State adopted a new code that prevents cities from requiring a mobile business to comply with the adopted zoning ordinance. This amendment renames mobile businesses to temporary parking lot businesses and adjusts the associated requirements in Title 3. In addition, this zoning regulation amendment removes mobile business regulations from Title 10. The changes to Title 10 were presented to the Planning Commission on October 24, 2023 where a public hearing was held. With a 7-0 vote, the Planning Commission recommended approval.

Staff Narrative (need/purpose):

This amendment is required to be in compliance with the Utah State Code.

Name of Legal Dept approver: Jami Brackin

Budget Impact: No Impact

Recommendation (Include any conditions):

On October 24, 2023, the Planning Commission held a public hearing for the land-use amendments to Title 10 and with a 7-0 vote, recommended approval of the amendment to Title 10.

PLANNING COMMISSION AGENDA REPORT: 10/24/2023
CITY COUNCIL AGENDA REPORT: 11/16/2023

ZONING REGULATION AMENDMENT TO AMEND MOBILE BUSINESS

(2023-ZRA-003)

Amendment to Title 3-2W-1
Applicability

Amendment to Title 3-2W-2
Definitions

Amendment to Title 3-2W-3
Operational Requirements

Amendment to Title 3-2W-4
Time Limits

Amendment to Title 3-2W-5
Two Year Expiration

Amendment to Title 3-2W-7
Overnight Parking

Amendment to Title 10-2-1
Definitions

Amendment to Title 10-8B-1
Allowed Uses (in the commercial zones)

Amendment to Title 10-17A-1
Permitted with Standards Application Requirements

Amendment to Title 10-17A-18
Mobile Business – Specific Standards

Amendment to Title 10-19-7
Shared Parking Facilities

REQUEST:
Consider a request to amend portions of Title 3 of the City Code, to amend Mobile Businesses; and to amend portions of Title 10 of the City Code, to remove mobile

business as a permitted with standards use in the C-2 and/or C-3 zone along with its specific standards, application, and parking requirements. The applicant is the City of St. George.

BACKGROUND:
On December 15, 2022, an amendment was approved to add mobile business to Title 10 as a permitted use with standards, and to create those specific standards. In 2022, our code did not allow for mobile businesses in the City; therefore, provisions were created and adopted. However, in 2023, the State adopted a new code that prevents cities from requiring a mobile business to comply with the adopted zoning ordinance. This amendment renames mobile businesses to temporary parking lot businesses and adjusts the associated requirements in Title 3. In addition, this zoning regulation amendment removes mobile business regulations from Title 10. The proposed changes will accomplish the following:

1. **Amendment to Title 3-2W-1 Applicability**
   This changes the name from mobile business to temporary parking lot business.

2. **Amendment to Title 3-2W-2 Definition**
   This amends the definition of Temporary Parking Lot Business.

3. **Amendment to Title 3-2W-3 Operational Requirements**
   This changes this section from Operational Requirements to Standards and lists the standards.

4. **Amendment to Title 3-2W-4 Time Limits**
   This changes this section from Time Limits to Operational Requirements and lists the operational requirements.

5. **Amendment to Title 3-2W-5 Two Year Expiration**
   This reenacts the two year time limit for this code.

6. **Amendment to Title 3-2W-7 Overnight Parking**
   This adds provisions for overnight parking at personal residents.

7. **Amendment to Title 10-2-1-Definitions**
   This removes the definitions for mobile services and mobile business.

8. **Amendment to Title 10-8B-1-Allowed uses in the commercial zones**
   This removes the mobile business use.

9. **Amendment to Title 10-17A-1-Permitted with Standards Application Requirements**
   This removes the additional provision that was added to the application requirements for the permitted with standards uses. This provision required the

mobile business applicant to provide proof that they were able to conduct their business on the property owner's property.

10. **Amendment to Title 10-17A-18 Mobile Business – Specific Standards**
    This removes the standards required for a mobile business.

11. **Amendment to Title 10-19-7 Shared Parking Facilities**
    This removes this requirement in the shared parking facilities.

Proposed Changes:
The complete proposed revisions are attached as Exhibit A

- The proposed additions are in red
- The proposed deletions have a ~~strikethrough~~

RECOMMENDATION:
On October 24, 2023, the Planning Commission held a public hearing for the land-use amendments to Title 10 and with a 7-0 vote, recommended approval of the amendment to Title 10.

ALTERNATIVES:
1. Approve as presented.
2. Approve with changes.
3. Deny this request.
4. Continue the proposed code amendment to a specific date.

POSSIBLE MOTION:
The Planning Commission recommends approval of the Zoning Regulation Amendment to Title 3, Business and License Regulations, and Title 10, Zoning Regulation, to add provisions for mobile businesses as a permitted with standards (PS) use in the C-2 and C-3 zones.

FINDINGS:
1. It is in the best interest of the city to update city zoning regulations periodically.
2. The proposed revisions will allow the city to welcome appropriate business activity at approved locations.

EXHIBIT A
Proposed Revisions

TITLE 3 BUSINESS AND LICENSE REGULATIONS

ARTICLE W. TEMPORARY PARKING LOT ~~MOBILE~~ BUSINESS

3-2W-1 APPLICABILITY
3-2W-2 DEFINITIONS
3-2W-3 STANDARDS ~~OPERATIONAL REQUIREMENTS~~
3-2W-4 OPERATIONAL REQUIREMENTS ~~TIME LIMITS~~
3-2W-5 TWO (2) YEAR EXPIRATION
3-2W-6 REVOCATION – PENALTY
3-2W-7 OVERNIGHT PARKING

3-2W-1 APPLICABILITY

It shall be unlawful for any person to engage in the business of temporary parking lot ~~mobile~~ business without first obtaining a city business license, in addition to any other required license or certificate from the state and complying with the conditions of this article.

3-2W-2 DEFINITIONS

TEMPORARY PARKING LOT ~~MOBILE~~ BUSINESS: Enclosed Mobile Business as defined by Utah State Code (11-56-102-1). Temporary parking lot businesses operates on private commercially zoned parcels. ~~A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A "mobile business" as herein defined does not include "mobile services" or "food trucks."~~

3-2W-3 STANDARDS ~~OPERATIONAL REQUIREMENTS~~

All temporary parking lot businesses operating within the City shall comply with the following standards:

A. The type of business must be a permitted use within the C-2 and/or C-3 zone. ~~INSPECTIONS~~

~~1. Inspection shall be made initially and at least once a year thereafter by the chief of police, or officer delegated by him, of the vehicle, trailer, or other mobile structure used for the mobile business.~~

~~2. Both the vehicle, trailer, or other mobile structure used for the mobile business shall be available for inspection at any reasonable time upon request by the chief of police, fire chief, or their delegated agent, for the purpose of ascertaining compliance with this article.~~

~~B. Location Of Service; Routes: The service locations or routes, together with intended points of sale, shall be provided to the City, either in a list form or clearly designated on a map, together with additions or deletions on a current basis from time to time. The City shall always have the right to remove from such designation and forbid service at any location where considerations of safety or general public welfare indicate that it would be in the best interests of the City to prohibit such service.~~

B~~C~~. The temporary parking lot business must be parked and located:

1. On an improved surface;

2. At least 50 feet from any entrance to the property from a public street;

3. In a manner that does not interfere with the normal flow of traffic, function of the parking lot, or emergency access;

4. In a manner that assures one (1) customer parking space for the temporary parking lot business but does not use more than five (5) parking spaces total. In no event shall a temporary parking lot business be permitted if there is insufficient parking for the property owner and fixed businesses currently at the location; and

5. In compliance with all setback requirements for the zone.

~~Litter Minimized: A licensee shall at all times do whatever is reasonable and necessary to minimize the littering of streets, sidewalks and private property as the result of the mobile business for which a license is issued, including providing convenient trash receptacles, advising customers verbally and in writing of proper methods of trash disposal, and personally policing the sales area before moving to another location in order to clean up any trash or debris resulting from the activities of licensee.~~

C~~D~~. A temporary parking lot business is prohibited from allowing any minor child, as a customer, inside the vehicle, trailer, or mobile structure without being accompanied by an adult.

~~Equipment: The licensee shall employ such mirrors, warning devices, lights and other equipment as may be reasonable and necessary on a mobile unit to warn traffic and pedestrians of the intended movements of said vehicle, including the incorporation of any suggested changes or equipment that may be requested by the chief of police after inspection as herein above provided.~~

D. The owner of a temporary parking lot business must possess all federal, state, or local licensing and permitting which may be required for the use. This includes vehicle licensing as well as a business license.

E. The temporary parking lot business must comply with all lighting, sign, and fire regulations of this Code and the Utah Code.

F. The temporary parking lot business shall dispose of any wastewater at the St. George Wastewater Treatment Plant or other appropriate disposal facilities approved by the water treatment department. Disposal or dumping of any black or grey wastewater in any non-approved location shall result in the immediate revocation of any development permit or business license.

G. The temporary parking lot business must have the required licenses and permits with them and be available for inspection at all times.

3-2W-4 OPERATIONAL REQUIREMENTS ~~TIME LIMITS~~

A. INSPECTIONS

1. Inspection shall be made initially and at least once a year thereafter by the chief of police, or officer delegated by him, of the vehicle, tailer, or other mobile structure used for the temporary parking lot business.

2. Both the vehicle, trailer, or other mobile structure used for the temporary parking lot business shall be available for inspection at any reasonable time upon request by the chief of police, fire chief, or their delegated agent, for the purpose of ascertaining compliance with this article.

B. Litter Minimized: A licensee shall at all times do whatever is reasonable and necessary to minimize the littering of streets, sidewalks and private property as the result of the temporary parking lot business for which a license is issued, including providing convenient trash receptacles, advising customers verbally and in writing of proper methods of trash disposal, and personally policing the sales area before moving to another location in order to clean up any trash or debris resulting from the activities of licensee.

C. Equipment: The licensee shall employ such mirrors, warning devices, lights and other equipment as may be reasonable and necessary on a mobile unit to warn traffic and pedestrians of the intended movements of said vehicle, including the incorporation of any suggested changes or equipment that may be requested by the chief of police after inspection as herein above provided.

~~1. DAILY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than twelve (12) hours in a twenty-four (24) period of time.~~

~~2. WEEKLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than five (5) consecutive days in a seven (7) day period of time.~~

~~3. MONTHLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than fourteen (14) days in a twenty-eight (28) day period of time.~~

3-2W-5 TWO YEAR EXPIRATION

This article shall amend the City Code for a time limited period of two (2) years after which this article will expire or “sunset” and will no longer be in effect unless the City Council adopts a new authorizing Ordinance prior to the sunset date to keep the regulations in effect.

3-2W-7 OVERNIGHT PARKING

In order to prevent offsite impacts, if the temporary parking lot business is going to be parked at their residence overnight, they must comply with Section 3-7-6-B6 of the St. George City Code. (Only one vehicle and one trailer per residence may be used for the business. The vehicle shall not be longer than twenty-one feet (21'), the trailer shall not be longer than fifteen feet (15'), and neither shall be greater than eight-and-one-half feet (8.5') in height including any attached apparatus, measured from the ground.)

TITLE 10 ZONING REGULATIONS

10-2-1: DEFINITIONS:

~~MOBILE BUSINESS: A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A Mobile Business does not include mobile services or food trucks.~~

~~MOBILE SERVICE: A service oriented business which may travel from a home base or office to a residential or commercial location to provide the service at that location, but which does not remain at the service site and returns to the home base or office.~~

10-8B-1: ALLOWED USES:

Any use not specifically permitted, permitted with standards, or conditionally permitted is prohibited. Only the following uses are allowed:

A. Uses indicated by the letter “P” below are permitted in the designated zone.

B. Uses indicated by the letters “PS” are permitted uses with required standards in this zone. Uses must comply with the standards and evaluation criteria established in chapter 17 of this title.

C. Uses indicated by the letter “C” are conditional uses in the designated zone.

Allowed Uses

	C-1	C-2	C-3	C-4
Alcohol establishments, including the following:				
Bar establishment		C	C	C
Off-premise beer retailer		P	P	P
Microbrewery or micro-winery (with restaurant or bar establishment)		P	P	P
Nightclub, dance hall (with alcohol)		C	C	C
Ambulance service		P	P	
Amusement centers (with no water activity)				
Indoor		P	P	
Outdoor		C	C	
Amusement centers (with water activity)		PS	PS	
Animal services, including the following:				
Animal boarding/care for small animals only and boarded for less than 30 days a year; provided, conducted completely within enclosed building		P	P	P
Animal hospital and veterinarian clinic, including overnight care of large animals (no boarding)		PS	PS	
Automobile and vehicle services, limited to the following uses:				
Automobiles and other similar vehicle sales lots		PS	PS	
Automobile parts sales (new parts only); provided, conducted within completely enclosed building		P	P	P
Automobile rental (vehicles up to 26' in length)		P	P	
Automobile repair, storage, including paint, body and fender, brake, muffler, upholstery or transmission work; provided, conducted within completely enclosed building (GVW 14,000 lbs or less)		P	P	P
Tire sales and service; provided, conducted within completely enclosed building		P	P	P
Financial, medical and professional services	P	P	P	P
Food service establishments, including the following and similar uses:				
Catering establishment		P	P	P
Restaurant	P	P	P	P
Lodging, temporary, limited to the following uses:				
Bed and breakfast		P	P	P
Hotel/motel		P	P	P

	C-1	C-2	C-3	C-4
RV parks, long and short term		PS		
Timeshare units		P	P	P
Hospitals			P	P
Counseling center, mental health, alcohol, drugs (nonresidential, less than 24 hours)		P	P	P
Mental health treatment center, with overnight stay		C	C	C
Nursing home		P	P	
Office	P	P	P	P
Religious facility	P	P	P	P
Residential, limited to the following use:				
Living quarters for manager or security personnel for business which requires 24-hour assistance or security – Up to 600 sf with occupancy limited to 4 people		PS	PS	PS
Large floor area building or site (20,000 sf or more ground floor aggregate)		C	C	C
Retail shops:				
Antique store		P	P	P
Athletic and sporting goods store		P	P	P
Department store		P	P	P
Drive-through sales (pharmacy, dairy products, etc.)		P	P	P
Furniture and large appliances sales (used)		P	P	
Furniture sales (new) and repair		P	P	P
Household appliance sales and service		P	P	P
Office supply, office machines sales and service		P	P	P
Paint or wallpaper store		P	P	P
Pawnshop		P	P	
Seed and feed store, retail		P	P	
Supermarket/grocery store		P	P	P
Thrift shop/secondhand store/consignment store (no outside storage and no drop-off of items during the hours the business is closed)		P	P	P
Vegetable stand		P	P	P
Payday lending/title loans		P	P	
Retail sale of goods with some operations outdoors, limited to the following uses:				

	C-1	C-2	C-3	C-4
Building materials sales			P	
Convenience markets with gas pumps/gas station		P	P	
Convenience markets with gas pumps located in the rear of the building				P
Farm implement sales (outdoor display)		P	P	
Fence, sales and service		P	P	
Garden supplies and plant material sales		P	P	
Greenhouse and nursery; soil and lawn service			P	
Landscape rock sales, ancillary to a permitted use			P	
Service businesses, limited to the following uses:				
Body piercing, ancillary to a permitted use		P	P	P
Carpet and rug cleaning		P	P	P
Child care center	P	P	P	P
Communication transmission facilities, including wireless, primary		PS	PS	PS
Communication transmission facilities, including wireless, primary, height over 50'	C	C	C	C
Construction trade services, plumbing shop, electrical shop, etc.			P	
Crematorium, independent human		P	P	
Educational institutions, schools, college, learning centers, trade schools (no residential or 24-hour facilities)		P	P	P
Gunsmith		P	P	P
Janitor service and supply		P	P	P
Locksmith		P	P	P
~~Mobile Businesses~~		~~PS~~	~~PS~~	
Mortuary		P	P	P
Permanent cosmetics, a secondary use to an establishment employing cosmetologist(s)/barber(s), aesthetician(s), electrologist(s), or nail technician(s) licensed by the state under 58-11a-101 et seq., Utah Code Annotated, 1953, as amended, excluding tattoo establishments and home occupations	P	P	P	P
Personal care service	P	P	P	P
Personal instruction service	P	P	P	P
Pest control and extermination		P	P	P

	C-1	C-2	C-3	C-4
Pet grooming		P	P	P
Printing, lithographing, publishing or reproduction sales and service			P	P
Psychic, tarot card reader, fortune teller, occult art practitioners, hypnotist		P	P	P
RV storage		PS	PS	
Sign sales		P	P	P
Storage rental units		PS	PS	
Tattoo establishment		P	P	P
Taxidermist		PS	PS	
Bus terminal		P	P	P
Taxi/shuttle		P	P	P
Government, public services and facilities, limited to the following uses:				
City, all facilities	P	P	P	P
Public utility facilities, primary		PS	PS	PS

10-17A-1: APPLICATION REQUIREMENTS:

Each permitted with standards applicant shall submit a complete application upon forms provided by the city, which, at a minimum, shall include:

A. A description of the proposed use;

B. A site plan and supporting materials; ~~which shall include proof of property owner permission for a mobile business~~;

C. A design schematic;

D. The size and location of the site;

E. Traffic generation, timing and nature of traffic impacts and the existing condition and capacity of the streets in the area;

F. Utility demand and available capacity, including storm water retention;

G. Emergency vehicle access and anticipated average and peak day demand;

H. Location and amount of off-street parking;

I. Internal vehicular and pedestrian circulation system, including delivery vehicles, loading, and unloading;

J. Fencing, screening, and landscaping to separate the permitted with standards use from adjoining property and uses;

K. Generation and screening of trash, and automated garbage collection (dumpsters);

L. Hours of operation, delivery, and use; and

M. Odor and noise plan if applicable.

~~10-17A-19: MOBILE BUSINESS – SPECIFIC STANDARDS~~

~~All Mobile Businesses operating within the City shall comply with the following standards:~~

~~A. The type of business must be a permitted use within the C-2 and/or C-3 zone~~

~~B. The mobile business must be located on private property with a notarized authorization from the property owner or their authorized representative allowing the mobile business on the property. The authorization must indicate:~~

~~1. Any conditions of the authorization;~~

~~2. The duration of the authorization;~~

~~3. The number of excess parking stalls currently available to the fixed business on the property; and~~

~~4. The solid waste disposal plan.~~

~~C. The mobile business must be parked and located:~~

~~1. On an improved surface;~~

~~2. At least 50 feet from any entrance to the property from a public street;~~

~~3. In a manner that does not interfere with the normal flow of traffic, function of the parking lot, or emergency access;~~

~~4. In a manner that assures one (1) customer parking space for the mobile business but does not use more than five (5) parking spaces total. In no event shall a Mobile Business be permitted if there is insufficient parking for the property owner and fixed businesses currently at the location; and~~

~~5. In compliance with all setback requirements for the zone.~~

~~D. A mobile business is prohibited from allowing any minor child inside the vehicle, trailer, or mobile structure without being accompanied by an adult.~~

~~E. The owner of a mobile business must possess all federal, state, or local licensing and permitting which may be required for the use. This includes vehicle licensing as well as a business license.~~

~~F. The mobile business must comply with all lighting, sign, and fire regulations of this Code and the Utah Code.~~

~~G. The mobile business shall dispose of any wastewater at the St. George Wastewater Treatment Plant or other appropriate disposal facilities approved by the water treatment department. Disposal or dumping of any black or grey wastewater in any non-approved location shall result in the immediate revocation of any development permit or business license.~~

10-19-7: SHARED PARKING:

A. *Shared Facilities:* Shared parking facilities may be used jointly with parking facilities for other uses when operations are not normally conducted during the same hours, or when peak uses vary.

B. *Requests – Guidelines:* Shared parking allowed subject to the following guidelines:

1. No substantial conflict in the periods of peak demand of uses for which the joint use is proposed, or an excess of required parking stalls is available.

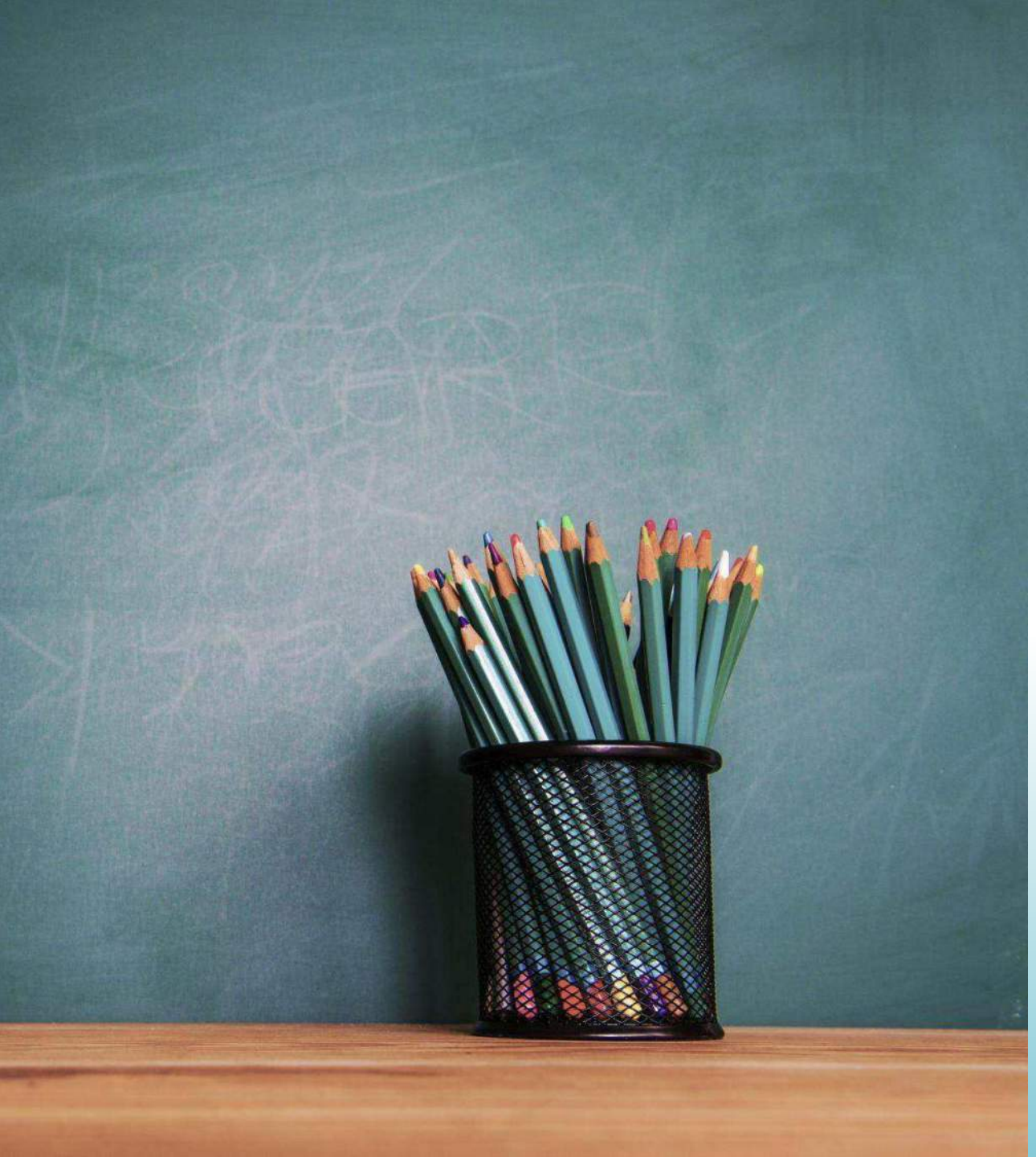
2. The number of parking stalls which may be credited against the requirements for the uses involved will not exceed the number of spaces that may normally be required for any one (1) of the uses sharing the parking.

3. Parking facilities are no farther than two hundred fifty feet (250') from any use proposing to use shared parking.

4. A written agreement shall be executed by all parties, and recorded against the properties, assuring the continued availability of shared parking facilities in the event that one (1) of the uses shall be sold or otherwise change ownership or management. The agreement shall provide that the shared parking facilities cannot be removed or changed without the express written consent of the city.

~~5. When a temporary parking lot business has permission to operate within the parking area of an existing business but on an after-hours or shared parking basis, the mobile business must obtain written consent of the owner acknowledging the shared parking and must have that written permission with them at all times for inspection during operating hours.~~

EXHIBIT B
POWER POINT PRESENTATION



MOBILE BUSINESSES AMENDED

2023-ZRA-003



A POLITICAL SUBDIVISION MAY NOT:

require a mobile business or its operator to demonstrate how the mobile business will comply with a **land use** or **zoning ordinance** at the time the mobile business applies for the business

DECEMBER 22, 2022

MOBILE BUSINESS APPROVED

UTAH STATE LEGISLATURE

2023

HOUSE BILL 408

TITLE 10 – ZONING REGULATIONS - AMENDMENT

10-2-1: DEFINITIONS:

~~MOBILE BUSINESS: A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A Mobile Business does not include mobile services or food trucks.~~

~~MOBILE SERVICE: A service oriented business which may travel from a home base or office to a residential or commercial location to provide the service at that location, but which does not remain at the service site and returns to the home base or office.~~

10-8B-1: ALLOWED USES:

~~Mobile Businesses~~		~~PS~~	~~PS~~	

10-17A-1: APPLICATION REQUIREMENTS:

B. A site plan and supporting materials; ~~which shall include proof of property owner permission for a mobile business~~;

10-17A-18: SPECIFIC STANDARDS:

~~All Mobile Businesses operating within the City shall comply with the following standards:~~
~~A, B, C, D, E, F, G~~

10-19-7: SHARED PARKING:

~~5. When a temporary parking lot business has permission to operate within the parking area of an existing business but on an after-hours or shared parking basis, the mobile business must obtain written consent of the owner acknowledging the shared parking and must have that written permission with them at all times for inspection during operating hours.~~

REMOVE ALL

TITLE 3 – BUSINESS AND LICENSE REGULATIONS - CHANGES



CHANGE #1

Mobile Business → Temporary Parking Lot Business

TITLE 3 – BUSINESS AND LICENSE REGULATIONS - CHANGES

CHANGE #2 Definition of Temporary Parking Lot Business

~~A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A "mobile business" as herein defined does not include "mobile services" or "food trucks."~~

Enclosed Mobile Business as defined by Utah State Code (11-56-102-1). Temporary parking lot businesses operates on private commercially zoned parcels.

State Code definition:

Enclosed mobile business means a business that maintains ongoing mobility and of which the receipt of goods or services offered and point of sales occurs within an enclosed vehicle, an enclosed trailer, or an enclosed mobile structure.

CHANGE #3 Standards

ADD

A. The type of business must be a permitted use within the C-2 and/or C-3 zone.
B. The temporary parking lot business must be parked and located:
    1. On an improved surface;
    2. At least 50 feet from any entrance to the property from a public street;
    3. In a manner that does not interfere with the normal flow of traffic, function of the parking lot, or emergency access;
    4. In a manner that assures one (1) customer parking space for the temporary parking lot business but does not use more than five (5) parking spaces total. In no event shall a temporary parking lot business be permitted if there is insufficient parking for the property owner and fixed businesses currently at the location; and
    5. In compliance with all setback requirements for the zone.
C. A temporary parking lot business is prohibited from allowing any minor child, as a customer, inside the vehicle, trailer, or mobile structure without being accompanied by an adult.
D. The owner of a temporary parking lot business must possess all federal, state, or local licensing and permitting which may be required for the use. This includes vehicle licensing as well as a business license.
E. The temporary parking lot business must comply with all lighting, sign, and fire regulations of this Code and the Utah Code.
F. The temporary parking lot business shall dispose of any wastewater at the St. George Wastewater Treatment Plant or other appropriate disposal facilities approved by the water treatment department. Disposal or dumping of any black or grey wastewater in any non-approved location shall result in the immediate revocation of any development permit or business license.
G. The temporary parking lot business must have the required licenses and permits with them and be available for inspection at all times

TITLE 3 – BUSINESS AND LICENSE REGULATIONS - CHANGES

CHANGE #4 Operational Requirements

REMOVE

~~DAILY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than twelve (12) hours in a twenty-four (24) period of time.~~

~~WEEKLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than five (5) consecutive days in a seven (7) day period of time.~~

~~MONTHLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than fourteen (14) days in a twenty-eight (28) day period of time.~~

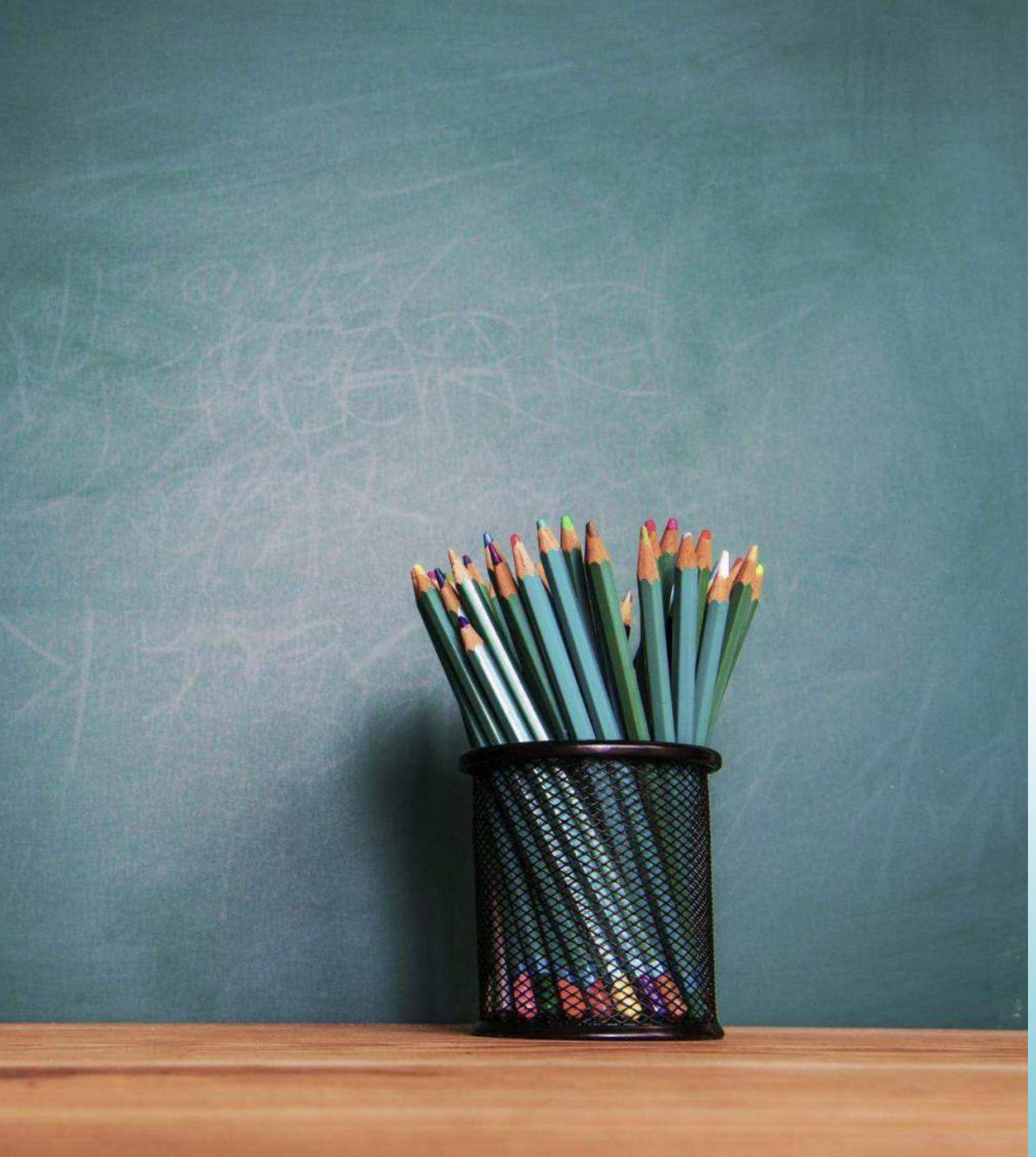
TITLE 3 – BUSINESS AND LICENSE REGULATIONS - CHANGES

CHANGE #5 Overnight Parking

ADD

3-2W-7 OVERNIGHT PARKING

In order to prevent offsite impacts, if the temporary parking lot business is going to be parked at their residence overnight, they must comply with Section 3-7-6-B6 of the St. George City Code. (Only one vehicle and one trailer per residence may be used for the business. The vehicle shall not be longer than twenty-one feet (21'), the trailer shall not be longer than fifteen feet (15'), and neither shall be greater than eight-and-one-half feet (8.5') in height including any attached apparatus, measured from the ground.)



MOBILE BUSINESSES AMENDED

RECOMMENDATION

ORDINANCE NO. _____

AN ORDINANCE AMENDING TITLE 3 AND TITLE 10 OF THE ST. GEORGE CITY CODE, TO ADD PROVISIONS FOR TEMPORARY PARKING LOT BUSINESSES TO TITLE 3 AND REMOVE PROVISIONS FOR MOBILE BUSINESSES FROM TITLE 10.

WHEREAS, the City Council has determined that it is in the best interest of the City and the public to amend provisions of city code, Title 3 and Title 10, to add provisions regarding temporary parking lot businesses and remove provisions regarding mobile businesses; and

WHEREAS, after careful consideration, the city council has determined that amending Title 3 and Title 10 is in the best interest of the health, safety and welfare of the citizens of St. George to provide standards for temporary parking lot businesses.

WHEREAS, the Planning Commission held a public hearing on October 24, 2023, and thereafter forwarded a recommendation for approval of the requested code amendment to the City Council; and

NOW, THEREFORE, BE IT ORDAINED, by the St. George city council, as follows:

Section 1. Repealer. Any provision of the St. George city code found to be in conflict with this Ordinance is hereby repealed.

Section 2. Enactment. The St. George city code is hereby amended by adopting changes and revisions to Title 3 and Title 10 for the protection of the City and the public, as set forth in Exhibit 'A' attached hereto and incorporated herein.

Section 3. Severability. If any provision of this Ordinance is declared to be invalid by a court of competent jurisdiction, the remainder shall not be affected thereby.

Section 4. Effective Date. This Ordinance shall take effect immediately upon execution below and upon posting in the manner required by law.

APPROVED AND ADOPTED by the St. George City Council, this 16th day of November 2023.

ST. GEORGE CITY:

_____
Michele Randall, Mayor

ATTEST:

_____
Christina Fernandez, City Recorder

APPROVED AS TO FORM:
City Attorney's Office

_____
Jami Brackin, Deputy City Attorney

VOTING OF CITY COUNCIL:

Councilmember Hughes _____
Councilmember McArthur _____
Councilmember Larkin _____
Councilmember Larsen _____
Councilmember Tanner _____

EXHIBIT A

TITLE 3 BUSINESS AND LICENSE REGULATIONS

ARTICLE W. TEMPORARY PARKING LOT ~~MOBILE~~ BUSINESS

3-2W-1 APPLICABILITY
3-2W-2 DEFINITIONS
3-2W-3 STANDARDS ~~OPERATIONAL REQUIREMENTS~~
3-2W-4 OPERATIONAL REQUIREMENTS ~~TIME LIMITS~~
3-2W-5 TWO (2) YEAR EXPIRATION
3-2W-6 REVOCATION – PENALTY
3-2W-7 OVERNIGHT PARKING

3-2W-1 APPLICABILITY

It shall be unlawful for any person to engage in the business of temporary parking lot ~~mobile~~ business without first obtaining a city business license, in addition to any other required license or certificate from the state and complying with the conditions of this article.

3-2W-2 DEFINITIONS

TEMPORARY PARKING LOT ~~MOBILE~~ BUSINESS: Enclosed Mobile Business as defined by Utah State Code (11-56-102-1). Temporary parking lot businesses operates on private commercially zoned parcels. ~~A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A "mobile business" as herein defined does not include "mobile services" or "food trucks."~~

3-2W-3 STANDARDS ~~OPERATIONAL REQUIREMENTS~~

All temporary parking lot businesses operating within the City shall comply with the following standards:

A. The type of business must be a permitted use within the C-2 and/or C-3 zone. ~~INSPECTIONS~~

~~1. Inspection shall be made initially and at least once a year thereafter by the chief of police, or officer delegated by him, of the vehicle, trailer, or other mobile structure used for the mobile business.~~

~~2. Both the vehicle, trailer, or other mobile structure used for the mobile business shall be available for inspection at any reasonable time upon request by the chief of police, fire chief, or their delegated agent, for the purpose of ascertaining compliance with this article.~~

~~B. Location Of Service; Routes: The service locations or routes, together with intended points of sale, shall be provided to the City, either in a list form or clearly designated on a~~

~~map, together with additions or deletions on a current basis from time to time. The City shall always have the right to remove from such designation and forbid service at any location where considerations of safety or general public welfare indicate that it would be in the best interests of the City to prohibit such service.~~

B~~C~~. The temporary parking lot business must be parked and located:

1. On an improved surface;

2. At least 50 feet from any entrance to the property from a public street;

3. In a manner that does not interfere with the normal flow of traffic, function of the parking lot, or emergency access;

4. In a manner that assures one (1) customer parking space for the temporary parking lot business but does not use more than five (5) parking spaces total. In no event shall a temporary parking lot business be permitted if there is insufficient parking for the property owner and fixed businesses currently at the location; and

5. In compliance with all setback requirements for the zone.

~~Litter Minimized: A licensee shall at all times do whatever is reasonable and necessary to minimize the littering of streets, sidewalks and private property as the result of the mobile business for which a license is issued, including providing convenient trash receptacles, advising customers verbally and in writing of proper methods of trash disposal, and personally policing the sales area before moving to another location in order to clean up any trash or debris resulting from the activities of licensee.~~

C~~D~~. A temporary parking lot business is prohibited from allowing any minor child, as a customer, inside the vehicle, trailer, or mobile structure without being accompanied by an adult.

~~Equipment: The licensee shall employ such mirrors, warning devices, lights and other equipment as may be reasonable and necessary on a mobile unit to warn traffic and pedestrians of the intended movements of said vehicle, including the incorporation of any suggested changes or equipment that may be requested by the chief of police after inspection as herein above provided.~~

D. The owner of a temporary parking lot business must possess all federal, state, or local licensing and permitting which may be required for the use. This includes vehicle licensing as well as a business license.

E. The temporary parking lot business must comply with all lighting, sign, and fire regulations of this Code and the Utah Code.

F. The temporary parking lot business shall dispose of any wastewater at the St. George Wastewater Treatment Plant or other appropriate disposal facilities approved by the water

treatment department. Disposal or dumping of any black or grey wastewater in any non-approved location shall result in the immediate revocation of any development permit or business license.

G. The temporary parking lot business must have the required licenses and permits with them and be available for inspection at all times.

3-2W-4 OPERATIONAL REQUIREMENTS ~~TIME LIMITS~~

A. INSPECTIONS
   1. Inspection shall be made initially and at least once a year thereafter by the chief of police, or officer delegated by him, of the vehicle, tailer, or other mobile structure used for the temporary parking lot business.

   2. Both the vehicle, trailer, or other mobile structure used for the temporary parking lot business shall be available for inspection at any reasonable time upon request by the chief of police, fire chief, or their delegated agent, for the purpose of ascertaining compliance with this article.

B. Litter Minimized: A licensee shall at all times do whatever is reasonable and necessary to minimize the littering of streets, sidewalks and private property as the result of the temporary parking lot business for which a license is issued, including providing convenient trash receptacles, advising customers verbally and in writing of proper methods of trash disposal, and personally policing the sales area before moving to another location in order to clean up any trash or debris resulting from the activities of licensee.

C. Equipment: The licensee shall employ such mirrors, warning devices, lights and other equipment as may be reasonable and necessary on a mobile unit to warn traffic and pedestrians of the intended movements of said vehicle, including the incorporation of any suggested changes or equipment that may be requested by the chief of police after inspection as herein above provided.

~~1. DAILY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than twelve (12) hours in a twenty-four (24) period of time.~~

~~2. WEEKLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than five (5) consecutive days in a seven (7) day period of time.~~

~~3. MONTHLY USE: A mobile business can be located at the same location, or within the 1 mile of the same location, for no more than fourteen (14) days in a twenty-eight (28) day period of time.~~

3-2W-5 TWO YEAR EXPIRATION

This article shall amend the City Code for a time limited period of two (2) years after which this article will expire or "sunset" and will no longer be in effect unless the City Council adopts a new authorizing Ordinance prior to the sunset date to keep the regulations in effect.

3-2W-7 OVERNIGHT PARKING

In order to prevent offsite impacts, if the temporary parking lot business is going to be parked at their residence overnight, they must comply with Section 3-7-6-B6 of the St. George City Code. (Only one vehicle and one trailer per residence may be used for the business. The vehicle shall not be longer than twenty-one feet (21'), the trailer shall not be longer than fifteen feet (15'), and neither shall be greater than eight-and-one-half feet (8.5') in height including any attached apparatus, measured from the ground.)

TITLE 10 ZONING REGULATIONS

10-2-1: DEFINITIONS:

~~MOBILE BUSINESS: A commercial business for which the point of sale and operation is located entirely within a vehicle, trailer, or other mobile structure not affixed to the land and capable of movement and relocation on a daily basis. A Mobile Business does not include mobile services or food trucks.~~

~~MOBILE SERVICE: A service oriented business which may travel from a home base or office to a residential or commercial location to provide the service at that location, but which does not remain at the service site and returns to the home base or office.~~

10-8B-1: ALLOWED USES:

Any use not specifically permitted, permitted with standards, or conditionally permitted is prohibited. Only the following uses are allowed:

A. Uses indicated by the letter "P" below are permitted in the designated zone.

B. Uses indicated by the letters "PS" are permitted uses with required standards in this zone. Uses must comply with the standards and evaluation criteria established in chapter 17 of this title.

C. Uses indicated by the letter "C" are conditional uses in the designated zone.

Allowed Uses

	C-1	C-2	C-3	C-4
Alcohol establishments, including the following:				

	C-1	C-2	C-3	C-4
Bar establishment		C	C	C
Off-premise beer retailer		P	P	P
Microbrewery or micro-winery (with restaurant or bar establishment)		P	P	P
Nightclub, dance hall (with alcohol)		C	C	C
Ambulance service		P	P	
Amusement centers (with no water activity)				
Indoor		P	P	
Outdoor		C	C	
Amusement centers (with water activity)		PS	PS	
Animal services, including the following:				
Animal boarding/care for small animals only and boarded for less than 30 days a year; provided, conducted completely within enclosed building		P	P	P
Animal hospital and veterinarian clinic, including overnight care of large animals (no boarding)		PS	PS	
Automobile and vehicle services, limited to the following uses:				
Automobiles and other similar vehicle sales lots		PS	PS	
Automobile parts sales (new parts only); provided, conducted within completely enclosed building		P	P	P
Automobile rental (vehicles up to 26' in length)		P	P	
Automobile repair, storage, including paint, body and fender, brake, muffler, upholstery or transmission work; provided, conducted within completely enclosed building (GVW 14,000 lbs or less)		P	P	P
Tire sales and service; provided, conducted within completely enclosed building		P	P	P
Financial, medical and professional services	P	P	P	P
Food service establishments, including the following and similar uses:				
Catering establishment		P	P	P
Restaurant	P	P	P	P
Lodging, temporary, limited to the following uses:				
Bed and breakfast		P	P	P
Hotel/motel		P	P	P
RV parks, long and short term		PS		

	C-1	C-2	C-3	C-4
Timeshare units		P	P	P
Hospitals			P	P
Counseling center, mental health, alcohol, drugs (nonresidential, less than 24 hours)		P	P	P
Mental health treatment center, with overnight stay		C	C	C
Nursing home		P	P	
Office	P	P	P	P
Religious facility	P	P	P	P
Residential, limited to the following use:				
Living quarters for manager or security personnel for business which requires 24-hour assistance or security – Up to 600 sf with occupancy limited to 4 people		PS	PS	PS
Large floor area building or site (20,000 sf or more ground floor aggregate)		C	C	C
Retail shops:				
Antique store		P	P	P
Athletic and sporting goods store		P	P	P
Department store		P	P	P
Drive-through sales (pharmacy, dairy products, etc.)		P	P	P
Furniture and large appliances sales (used)		P	P	
Furniture sales (new) and repair		P	P	P
Household appliance sales and service		P	P	P
Office supply, office machines sales and service		P	P	P
Paint or wallpaper store		P	P	P
Pawnshop		P	P	
Seed and feed store, retail		P	P	
Supermarket/grocery store		P	P	P
Thrift shop/secondhand store/consignment store (no outside storage and no drop-off of items during the hours the business is closed)		P	P	P
Vegetable stand		P	P	P
Payday lending/title loans		P	P	
Retail sale of goods with some operations outdoors, limited to the following uses:				

	C-1	C-2	C-3	C-4
Building materials sales			P	
Convenience markets with gas pumps/gas station		P	P	
Convenience markets with gas pumps located in the rear of the building				P
Farm implement sales (outdoor display)		P	P	
Fence, sales and service		P	P	
Garden supplies and plant material sales		P	P	
Greenhouse and nursery; soil and lawn service			P	
Landscape rock sales, ancillary to a permitted use			P	
Service businesses, limited to the following uses:				
Body piercing, ancillary to a permitted use		P	P	P
Carpet and rug cleaning		P	P	P
Child care center	P	P	P	P
Communication transmission facilities, including wireless, primary		PS	PS	PS
Communication transmission facilities, including wireless, primary, height over 50'	C	C	C	C
Construction trade services, plumbing shop, electrical shop, etc.			P	
Crematorium, independent human		P	P	
Educational institutions, schools, college, learning centers, trade schools (no residential or 24-hour facilities)		P	P	P
Gunsmith		P	P	P
Janitor service and supply		P	P	P
Locksmith		P	P	P
~~Mobile Businesses~~		~~PS~~	~~PS~~	
Mortuary		P	P	P
Permanent cosmetics, a secondary use to an establishment employing cosmetologist(s)/barber(s), aesthetician(s), electrologist(s), or nail technician(s) licensed by the state under 58-11a-101 et seq., Utah Code Annotated, 1953, as amended, excluding tattoo establishments and home occupations	P	P	P	P
Personal care service	P	P	P	P
Personal instruction service	P	P	P	P
Pest control and extermination		P	P	P

	C-1	C-2	C-3	C-4
Pet grooming		P	P	P
Printing, lithographing, publishing or reproduction sales and service			P	P
Psychic, tarot card reader, fortune teller, occult art practitioners, hypnotist		P	P	P
RV storage		PS	PS	
Sign sales		P	P	P
Storage rental units		PS	PS	
Tattoo establishment		P	P	P
Taxidermist		PS	PS	
Bus terminal		P	P	P
Taxi/shuttle		P	P	P
Government, public services and facilities, limited to the following uses:				
City, all facilities	P	P	P	P
Public utility facilities, primary		PS	PS	PS

10-17A-1: APPLICATION REQUIREMENTS:

Each permitted with standards applicant shall submit a complete application upon forms provided by the city, which, at a minimum, shall include:

A. A description of the proposed use;

B. A site plan and supporting materials; ~~which shall include proof of property owner permission for a mobile business~~;

C. A design schematic;

D. The size and location of the site;

E. Traffic generation, timing and nature of traffic impacts and the existing condition and capacity of the streets in the area;

F. Utility demand and available capacity, including storm water retention;

G. Emergency vehicle access and anticipated average and peak day demand;

H. Location and amount of off-street parking;

I. Internal vehicular and pedestrian circulation system, including delivery vehicles, loading, and unloading;

J. Fencing, screening, and landscaping to separate the permitted with standards use from adjoining property and uses;

K. Generation and screening of trash, and automated garbage collection (dumpsters);

L. Hours of operation, delivery, and use; and

M. Odor and noise plan if applicable.

~~10-17A-19: MOBILE BUSINESS – SPECIFIC STANDARDS~~

~~All Mobile Businesses operating within the City shall comply with the following standards:~~

~~A. The type of business must be a permitted use within the C-2 and/or C-3 zone~~

~~B. The mobile business must be located on private property with a notarized authorization from the property owner or their authorized representative allowing the mobile business on the property. The authorization must indicate:~~

~~1. Any conditions of the authorization;~~

~~2. The duration of the authorization;~~

~~3. The number of excess parking stalls currently available to the fixed business on the property; and~~

~~4. The solid waste disposal plan.~~

~~C. The mobile business must be parked and located:~~

~~1. On an improved surface;~~

~~2. At least 50 feet from any entrance to the property from a public street;~~

~~3. In a manner that does not interfere with the normal flow of traffic, function of the parking lot, or emergency access;~~

~~4. In a manner that assures one (1) customer parking space for the mobile business but does not use more than five (5) parking spaces total. In no event shall a Mobile Business be permitted if there is insufficient parking for the property owner and fixed businesses currently at the location; and~~

~~5. In compliance with all setback requirements for the zone.~~

~~D. A mobile business is prohibited from allowing any minor child inside the vehicle, trailer, or mobile structure without being accompanied by an adult.~~

~~E. The owner of a mobile business must possess all federal, state, or local licensing and permitting which may be required for the use. This includes vehicle licensing as well as a business license.~~

~~F. The mobile business must comply with all lighting, sign, and fire regulations of this Code and the Utah Code.~~

~~G. The mobile business shall dispose of any wastewater at the St. George Wastewater Treatment Plant or other appropriate disposal facilities approved by the water treatment department. Disposal or dumping of any black or grey wastewater in any non-approved location shall result in the immediate revocation of any development permit or business license.~~

10-19-7: SHARED PARKING:

A. *Shared Facilities:* Shared parking facilities may be used jointly with parking facilities for other uses when operations are not normally conducted during the same hours, or when peak uses vary.

B. *Requests – Guidelines:* Shared parking allowed subject to the following guidelines:

1. No substantial conflict in the periods of peak demand of uses for which the joint use is proposed, or an excess of required parking stalls is available.

2. The number of parking stalls which may be credited against the requirements for the uses involved will not exceed the number of spaces that may normally be required for any one (1) of the uses sharing the parking.

3. Parking facilities are no farther than two hundred fifty feet (250') from any use proposing to use shared parking.

4. A written agreement shall be executed by all parties, and recorded against the properties, assuring the continued availability of shared parking facilities in the event that one (1) of the uses shall be sold or otherwise change ownership or management. The agreement shall provide that the shared parking facilities cannot be removed or changed without the express written consent of the city.

~~5. When a temporary parking lot business has permission to operate within the parking area of an existing business but on an after-hours or shared parking basis, the mobile business must obtain written consent of the owner acknowledging the shared parking and must have that written permission with them at all times for inspection during operating hours.~~