



**BLUFFDALE CITY COUNCIL
MEETING AGENDA
Wednesday, October 12, 2016
AMENDED**

Notice is hereby given that the Bluffdale City Council will hold a meeting Wednesday, October 12, 2016 at the Bluffdale City Fire Station, 14350 South 2200 West, Bluffdale, Utah scheduled to begin promptly at **6:30 p.m.** or as soon thereafter as possible. Notice is further given that access to this meeting by the Mayor and or City Council may be by electronic means via telephonic conference call.

BLUFFDALE CITY COUNCIL REGULAR BUSINESS MEETING 6:30 P.M.

1. Roll Call, Invocation, Pledge of Allegiance*
2. **PUBLIC FORUM** – (4 minute maximum per person to bring items not already on the agenda before the Council. Participants are encouraged to submit a written statement (1 copy) for items that are complex or that may require more than 4 minutes to present).
3. **CONSENT AGENDA** –
 - 3.1 Approval of the September 14, 2016 meeting minutes.
 - 3.2 Approval of the September 21, 2016 meeting minutes.
4. Presentation and discussion regarding the City's involvement with the Summit High School Auditorium addition, presenter, Holly Brown.
5. Presentation and discussion of the final draft of the Drinking Water Master Plan, presenters, Michael Fazio, City staff, and Steve Jones, Hansen, Allen, and Luce.
6. Presentation and discussion on the GIS Strategic Plan work being performed for the City by Bio-West, presenters, Michael Fazio, City staff, and Glen Bush, Bio-West.
7. Consideration and vote on a Preliminary and Final Subdivision Plat Application for 10.41 acres known as The Preserve at Springview Farms for 18 residential lots in the R-1-10 (I-O) Zone, located at approximately 1650 West 14500 South, Ken Olson, applicant, staff presenter, Jennifer Robison.
8. *** Consideration and vote on a resolution approving Porter's Point Townhomes Major Change to Development Agreement and Project Plan for 5.83 acres in the Mixed Use Zone as part of the Independence Project, Newman Construction, applicant, staff presenter, Jennifer Robison.
9. Mayor's Report
10. City Manager's Report and Discussion

PLANNING SESSION

11. Please Note: The planning session is for identifying future items and other council discussion in accordance with Utah Code § 52-4-201(2)(a). While the meeting may be open to the public, there will not be any opportunity for public input during the planning session.

12. Closed meeting pursuant to Utah Code § 52-4-205(1) to discuss the character, professional competence, or health of an individual, collective bargaining, pending or imminent litigation, strategies to discuss real property acquisition, including any form of a water right or water shares, security issues, or any alleged criminal misconduct (if needed).

13. Adjournment

Dated this 11^h day of October, 2016

I HEREBY CERTIFY THAT THE FOREGOING NOTICE AND AGENDA WAS FAXED TO THE SOUTH VALLEY JOURNAL, THE SALT LAKE TRIBUNE, AND THE DESERET MORNING NEWS; POSTED AT THE BLUFFDALE CITY HALL, BLUFFDALE CITY FIRE STATION, AND THE COMMUNITY BULLETIN BOARD AT THE BLUFFS APARTMENTS; EMAILED OR DELIVERED TO EACH MEMBER OF THE BLUFFDALE CITY COUNCIL; ON THE CITY'S WEBSITE AT WWW.BLUFFDALE.COM AND ON THE PUBLIC MEETING NOTICE WEBSITE, WWW.PMN.UTAH.GOV



Wendy L. Deppe, CMC
City Recorder

Note: The Bluffdale City Council will take a recess at approximately 9:30 p.m. and will evaluate the time needed to complete items not yet heard on the evening's agenda. Items the Council determines may take the meeting past 10:00 p.m. may be removed from the agenda and re-scheduled for the next regularly scheduled meeting. In compliance with the American with Disabilities Act, individuals needing assistance or other services or accommodation for this meeting should contact Bluffdale City Hall at least 24 hours in advance of this meeting at 801-254-2200. TTY 7-1-1. *Contact the City Recorder if you desire to give the Invocation.

CONSENT AGENDA



**BLUFFDALE CITY COUNCIL AND
REDEVELOPMENT AGENCY BOARD
COMBINED MEETING AGENDA
Wednesday, September 14, 2016**

Notice is hereby given that the Bluffdale City Council and the Bluffdale Redevelopment Agency Board will hold a combined meeting Wednesday, September 14, 2016 at the Bluffdale City Fire Station, 14350 South 2200 West, Bluffdale, Utah scheduled to begin promptly at **6:30 p.m.** or as soon thereafter as possible. Notice is further given that access to this meeting by the Mayor and or City Council may be by electronic means via telephonic conference call.

BLUFFDALE CITY COUNCIL REGULAR BUSINESS MEETING 6:30 P.M.

1. City Council Photograph by Wayman Studio.
2. Roll Call, Invocation, Pledge of Allegiance*
3. **PUBLIC FORUM** – (4 minute maximum per person to bring items not already on the agenda before the Council. Participants are encouraged to submit a written statement (1 copy) for items that are complex or that may require more than 4 minutes to present).
4. **CONSENT AGENDA** –
 - 4.1 Approval of the August 24, 2016 meeting minutes.
 - 4.2 Preliminary acceptance of Iron Horse Plat C Subdivision, and beginning the warranty period.
 - 4.3 Acceptance of Palisade Acres Subdivision, ending the warranty period.
 - 4.4 Acceptance of Deer Orchard Cove, ending the warranty period.
5. Presentation and discussion regarding the level of Police Service/Coverage in the City, staff presenter, Police Chief Burton.
6. **PUBLIC HEARING** – Consideration and vote on an Amendment to the Zoning Map from Heavy Commercial (HC) to General Commercial (GC-1) for 4.66 acres shown as Plat J, located at approximately 15200 South Pony Express Road, 4 Independence, LLC, applicant, staff presenter, Jennifer Robison.
7. Consideration and vote on a Resolution authorizing execution of an Amended Development Agreement with Simple Products Corporation, including an amended Project Plan, staff presenters, Grant Crowell and Vaughn Pickell.
8. Consideration and vote on a Preliminary and Final Subdivision Plat Applications for The Highlands Phase 2 for 5.11 acres to create four (4) residential lots located in the R-1-43 Residential (1 acre) Zone at approximately 14132 South 1850 West, Skye Phase V, applicant, staff presenter, Jennifer Robison.
9. Consideration and vote on a Resolution of the Bluffdale City Council authorizing the City Manager to enter into agreements awarding a contract for General Services, ADA Ramps and Various Concrete Flatwork, and establishing a Maximum Expenditure for FY 2016-2017, staff presenter, Dan Tracer.

BLUFFDALE CITY REDEVELOPMENT AGENCY BOARD MEETING

1. Roll Call
2. **CONSENT AGENDA** –
 - 2.1 Approval of the June 08, 2016 meeting minutes.
 - 2.2 Approval of the June 22, 2016 meeting minutes.
3. Consideration and vote on a Resolution of the Bluffdale City Redevelopment Agency Board Authorizing a Transfer from the Eastern Bluffdale EDA Fund and the Jordan Narrows EDA Fund to the Bluffdale City Park Impact Fees Fund, staff presenter, Bruce Kartchner.
4. Consideration and vote on a Resolution of the Bluffdale City Redevelopment Agency Board Authorizing Use of the Housing Allocation for Construction of a Public Park and an Accompanying Secondary Water Pump Station, Finding that Those Improvements Constitute Infrastructure Improvements Related to Housing in a Project Area where Blight Has Been Found to Exist, staff presenter, Bruce Kartchner.
5. Consideration and vote on a Resolution of the Bluffdale City Redevelopment Agency Board Authorizing Reimbursement to the City of Bluffdale Funds for the Construction of Noell Nelson Drive, staff presenter, Bruce Kartchner.
6. Adjournment

CONTINUATION OF BUSINESS MEETING

10. Mayor's Report
11. City Manager's Report and Discussion

PLANNING SESSION

7. Please Note: The planning session is for identifying future items and other council discussion in accordance with Utah Code § 52-4-201(2)(a). While the meeting may be open to the public, there will not be any opportunity for public input during the planning session.
8. Closed meeting pursuant to Utah Code § 52-4-205(1) to discuss the character, professional competence, or health of an individual, collective bargaining, pending or imminent litigation, strategies to discuss real property acquisition, including any form of a water right or water shares, security issues, or any alleged criminal misconduct (if needed).
9. Adjournment

Dated this 9th day of September, 2016

I HEREBY CERTIFY THAT THE FOREGOING NOTICE AND AGENDA WAS FAXED TO THE SOUTH VALLEY JOURNAL, THE SALT LAKE TRIBUNE, AND THE DESERET MORNING NEWS; POSTED AT THE BLUFFDALE CITY HALL, BLUFFDALE CITY FIRE STATION, AND THE COMMUNITY BULLETIN BOARD AT THE BLUFFS APARTMENTS; EMAILED OR DELIVERED TO EACH MEMBER OF THE BLUFFDALE CITY COUNCIL; ON THE CITY'S WEBSITE AT WWW.BLUFFDALE.COM AND ON THE PUBLIC MEETING NOTICE WEBSITE, WWW.PMN.UTAH.GOV



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DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
MEETING MINUTES
Wednesday, September 14, 2016**

1 **Present:** Mayor Derk Timothy
2 Alan Jackson
3 Ty Nielsen
4 Boyd Preece
5 Justin Westwood
6 James Wingate
7

8 **Staff:** Mark Reid, City Manager
9 Vaughn Pickell, City Attorney
10 Grant Crowell, City Planner/Economic Development Director
11 Jennifer Robison, Senior City Planner
12 Caitlyn Miller, Associate City Planner
13 Dan Tracer, Assistant City Engineer
14 Bruce Kartchner, Finance Director
15 Blain Dietrich, Public Works Operations Manager
16 Andrew Burton, Police Chief
17 Wendy Deppe, City Recorder
18

19 **BLUFFDALE CITY COUNCIL REGULAR BUSINESS MEETING**
20

21 Mayor Derk Timothy called the meeting to order at 6:30 p.m.
22

23 **1. City Council Photograph by Wayman Studio.**
24

25 Photos of the City Council were taken prior to commencement of the public meeting.
26

27 **2. Roll Call, Invocation, Pledge of Allegiance.**
28

29 All Members of the City Council were present.
30

31 Pete Larkin offered the invocation. Ulises Flynn led the Pledge of Allegiance.
32

33 **3. PUBLIC FORUM.**
34

35 Ulises Flynn gave his address as 15195 South Skyfall Drive and asked the City Council to amend
36 the ordinance for fencing between Commercial and Residential. Currently the minimum height is
37 six feet. He recommended it be changed to eight feet and liked the precedent set between Smith's
38 and the neighboring subdivision. City Manager, Mark Reid, stated that eight feet is already the
39 standard but Smith's is 10 feet. City Planner/Economic Development Director, Grant Crowell,
40 clarified that the maximum for residential is eight feet and commercial is six feet.
41

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**BLUFFDALE CITY COUNCIL
MEETING MINUTES
Wednesday, September 14, 2016**

1 Brant Snow gave his address as 14212 Stone Fly Drive and asked for the Council's assistance
2 getting support from UDOT with respect to sound barriers. UDOT does their research at the
3 beginning of each year. Mr. Snow hoped to get on their agenda prior to next year. Mayor
4 Timothy referred Mr. Snow to UDOT's Region 2 Director, Brian Adams, and stated that he would
5 be the best contact.

6
7 Ryan Rasband gave his address as 1575 West Iron Horse Boulevard and stated that the backyard
8 of his newly constructed home overlooks the Jordan River Parkway Trail. He feels it is his duty
9 and responsibility as a resident to share with the Council what he has observed on the trail. He has
10 witnessed hunting and shooting near the trail and motor vehicles being driven there. It was his
11 understanding that Bluffdale City allows shooting in designated areas. His concern was that the
12 area is not clearly identified on signs or a shooting map so hunters are hunting outside the
13 designated area, which puts homes and families at risk.

14
15 Mr. Rasband was also concerned about children playing on the trail and being hit by vehicles on
16 the Jordan River Parkway Trail. The trail is clearly marked yet no citations have been issued. His
17 understanding was that there is continued debate about whether to allow hunting in Bluffdale.

18 Mr. Rasband stated that earlier in the evening two shots were fired over his home. A few days
19 earlier he observed two four-wheelers going 30 mph that nearly hit a small child on a bicycle on
20 the trail. He stated that he has video evidence that he was willing to share and there were
21 witnesses. He indicated that no trespassing signs are also being vandalized. Hunters intimidate
22 those using the Jordan River Parkway Trail and litter the area with spent shot gun shells.

23
24 Mayor Timothy stated that the hunting issue has not been discussed for two years. There was
25 adequate support among the Council to put it on a future City Council agenda. Mr. Rasband stated
26 that currently there is nothing prohibiting driving on the trail. City Attorney, Vaughn Pickell,
27 agreed to look into the matter further.

28
29 Mr. Crowell introduced the City's New Associate Planner, Caitlyn Miller
30

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**BLUFFDALE CITY COUNCIL
MEETING MINUTES
Wednesday, September 14, 2016**

1 **4. CONSENT AGENDA -**
2

3 **4.1 Approval of the August 24, 2016 Meeting Minutes.**
4

5 **4.2 Preliminary Acceptance of Iron Horse Plat C Subdivision, and Beginning the**
6 **Warranty Period.**
7

8 **4.3 Acceptance of Palisade Acres Subdivision, Ending the Warranty Period.**
9

10 **4.4. Acceptance of Deer Orchard Cove, Ending the Warranty Period.**
11

12 Justin Westwood moved to approve the Consent Agenda. Ty Nielsen seconded the motion.

13 The motion passed with the unanimous consent of the Council.
14

15 **5. Presentation and Discussion Regarding the Level of Police Service/Coverage in the**
16 **City, Staff Presenter, Police Chief Burton.**
17

18 Police Chief, Andrew Burton, presented the Workload Study and described the Department's
19 staffing needs. He reported that they conducted an analysis to help them understand the level of
20 law enforcement services. Chief Burton stated that he puts officer safety as the first consideration.
21 Some calls require two and sometimes more than two officers. There is liability if enough
22 manpower is not provided. Response times were described as seven minutes or less for Priority 1
23 calls. The ratio of officers based on population was discussed. Chief Burton's experience was
24 that 1 officer per 1,000 in Utah is about right. Bluffdale is at .6 and Saratoga Springs is at .84
25 officers per 1,000 residents.
26

27 With regard to the patrol officers' time, he referred to the call numbers. He noted that calls are not
28 all that an officer has to do and can take an entire shift to complete. In addition, an officer may
29 have to attend trainings, meetings, or perform vehicle maintenance. Unobligated time involves
30 being proactive and patrolling neighborhoods, monitoring school zone speeds, giving
31 presentations, etc.
32

33 Calls for service were next discussed. Chief Burton stated that there is a projection for a slight
34 increase each year. In 2016, they are seeing an increase in calls for service. They also have
35 incidents and first reports. This year they have seen a 30% increase in incidents with 3,325 that

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1 require a first report and others that necessitate additional investigation. Chief Burton reported
2 that in 2016, response times for Priority 1 calls were 8:47. In 2015, one patrol officer was added
3 which resulted in a 13% decrease in the number of calls per officer. Currently there is a 17%
4 increase in calls for service per officer per year. The same analysis was conducted for first
5 reports, which are 608 per officer per year.

6
7 Mayor Timothy stressed the importance of getting to a level of officers where they are doing more
8 patrolling and enforcing the speed limits in the City. He noted that at the most recent Meet the
9 Mayor Meeting, every person that was present brought up the issue of speeding. Chief Burton
10 stated that if two officers were added and they did not have calls, they could specifically be
11 assigned to be project officers and perform speed enforcement in school zones.

12
13 With regard to investigations, Chief Burton stated that they are projecting a large increase in the
14 number of cases assigned and completed. He suggested that the ideal staffing would be two full-
15 time detectives. Ideally there would be two patrol officers and one investigator. Chief Burton
16 reported that in terms of Part 1 crimes they have done fairly well and have only a slight increase.

17
18 The Mayor invited members of the public to ask questions. With regard to safety, Chief Burton
19 stated that both Saratoga Springs and Bluffdale are both very safe comparatively speaking. In
20 addition, the police force enjoys great support from the citizens. In response to a question raised,
21 Chief Burton stated that for 23 years he worked for the Unified Police Department and spent eight
22 years working for Summit County as a Canyon Detective. He also worked in Salt Lake where he
23 was assigned to Gang Enforcement for 11 years.

24
25 A citizen indicated that she is the mother of an autistic child and asked Chief Burton how he
26 would deal with someone with autism. Chief Burton indicated that officers are not trained
27 psychologists but they are receiving more training on how to deal with various types of
28 disabilities. He noted that officers are sensitive to cases of that nature and deal with them on
29 occasion.

30

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1 The issue of speeding in the light industrial area was next addressed. Mayor Timothy stated that
2 the speed limit sign issue should be handled by the City Engineer. Mr. Reid stated that the speed
3 limit is 35 mph along Heritage Crest Way from 14600 South to the entrance to Independence,
4 where it changes to 25 mph.

5
6 **6. PUBLIC HEARING – Consideration and Vote on an Amendment to the Zoning Map**
7 **from Heavy Commercial (HC) to General Commercial (GC-1) for 4.66 Acres Shown**
8 **as Plat J, Located at Approximately 15200 South Pony Express Road,**
9 **4 Independence, LLC, Applicant, Staff Presenter, Jennifer Robison.**

10
11 The above matter was removed from the agenda at the request of the applicant.

12
13 **Justin Westwood moved to remove the above item from the agenda. Ty Nielsen seconded**
14 **the motion. The motion passed with the unanimous consent of the Council.**

15
16 **7. Consideration and Vote on a Resolution Authorizing Execution of an Amended**
17 **Development Agreement with Simple Projects Corporation, Including an Amended**
18 **Project Plan, Staff Presenters, Grant Crowell and Vaughn Pickell.**

19
20 Mr. Crowell presented the staff report and gave a history of the property. He reported that the
21 original Independence boundary was amended in 2014. New owners purchased the property and
22 are now interested in modifying some of the terms of the Land Use Agreement, which is a project
23 plan that is an exhibit to the Development Agreement contract. In 2014, commercial was
24 developed on the east side and Porter Rockwell Boulevard was to curve toward the freeway. It
25 had since been determined that it will be curving so they plan to move forward with the plans for a
26 straight through or a T-intersection depending on what happens to the north.

27
28 The applicants asked for consideration of a new project plan to add warehousing and light
29 industrial land uses as approved uses on the property. Doing so will require an amendment to the
30 Project Plan, which is an amendment to the Development Agreement. If the land use approval
31 moves forward, the new Project Plan will guide the technical review of the final site plan and they
32 will work with staff to move forward. Mr. Crowell stated that the issue is whether additional uses
33 such as warehousing and light industrial uses that are referenced in the mixed-use zoning

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1 ordinance including additional building size from 50,000 to 60,000, should be modified and
2 approved.

3
4 Mr. Crowell stated that the Planning Commission reviewed the request and forwarded a positive
5 recommendation to the City Council. Mayor Timothy noted that it passed with a 3-to-2 vote.

6 Mr. Crowell described the process and stated that a public hearing is not required.

7
8 The applicant, Scott Carlson, stated that they need to consolidate their businesses into one
9 location. Currently, they are scattered throughout the Valley, which has become cumbersome.
10 They want to locate in Bluffdale City. In addition, their project will provide employment
11 opportunities in Bluffdale. Mr. Carlson stated that they are prepared to move forward within 18
12 months.

13
14 Jim Dunn reported that he is a Bluffdale resident and gave his address as 14064 Pheasant Hollow
15 Lane. He gave the Council a historical perspective and stated that in 1999 he served on the City
16 Council and proposed with Mayor Noell Nelson and other Members of the Council the rezone of
17 the corner of Bangerter and Redwood Road as commercial and to create an RDA. The meetings
18 were well attended and the public hearing was held at the elementary school. There was so much
19 anger and vilification that law enforcement was present at the meeting to prevent violence. At the
20 time, everyone in Bluffdale wanted one-acre lots and no commercial not understanding that the
21 City's three largest sources of revenue were building permits, property taxes, and sales taxes
22 generated by the Maverik. The City could no longer function with that kind of revenue. The
23 corner was approved and 17 years later it is still undeveloped.

24
25 Mr. Dunn stated that the Council has a very difficult job, which is to balance the competing
26 interests of private property owners and current residents. He explained that the developer wants
27 to be a good neighbor and will operate his business here. Mr. Dunn stated that his bias is that he
28 represents the developer and drafted the Development Agreement. As a 23-year Bluffdale
29 resident, his interests are similar to those present. He wants to preserve the quality of life that
30 many moved to the area to obtain.

31

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1 Mr. Dunn reported that when they appeared before the Planning Commission there was concern
2 that because the property is zoned Light Industrial there would be manufacturing there. Light
3 Industrial allows several uses that the Commercial zone does not. First, what is not allowed is any
4 type of auto glass repair, auto parts sales, bicycle parts/sales/service, laundry and dry cleaning,
5 furniture stores, hardware stores, office buildings, retail sales, aquariums, and small animal
6 veterinary clinics. The Commercial zone allows automobile sales and services, banks, car washes,
7 convenience stores, drive-thru facilities, gas stations, and restaurants.

8
9 Jason Hagblom from Newmark Grubb Acres Commercial Real Estate spoke about the type of
10 tenants that would be interested in locating to a project like this. When they began, many of those
11 they were speaking to wanted big box retail. In their research they found that they are five to 10
12 years from a big box retailer coming to a location like the one proposed, especially with the
13 Smith's store being announced. The applicants decided that the highest and best use of the
14 property was to have Simple Projects occupy the northeast corner and have the northwest corner
15 occupied by more traditional retail tenants. They have reached out and spoken to many major
16 franchises who have expressed early interest. The southeast building will be office, wellness,
17 dentists, etc. and the southwest building will eventually be phased into more retail but will begin
18 as ecommerce type companies with a retail store front and a back end warehouse.

19
20 Mayor Timothy opened the meeting to public comment.

21
22 Ulises Flynn gave his address 15195 South Skyfall Drive and felt that the City would be selling
23 out by accepting the proposal. He commented that once the prison relocates, the area will be
24 prime real estate. He thought that perhaps holding out a bit longer might be beneficial.

25
26 Stacy Leavitt gave her address as 14759 Lewski Lane and stated that they are directly across the
27 street from the proposed development. When they purchased their home they did so with the
28 understanding that the property would be retail space and not Light Industrial. They wanted a
29 place where they could walk to shops. There are a few acres of Light Industrial behind them
30 where there is plenty of space for Simple Products. Mrs. Leavitt did not support what is proposed
31 across the street and was concerned about her property values.

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1
2 Anthony Castro gave his address as 15189 South Inverlieth Cove, and considered the argument
3 about what happened 17 years ago to be invalid. He thought the pictures were great but
4 unrealistic. In the end, the developer is looking for people to pay their mortgage. Mr. Castro
5 stated that although he lives in Bluffdale he goes to other cities to shop. He preferred to do things
6 in Bluffdale and the proposal does not help that become a reality. He pointed out that this is a
7 prime location and sets the tone for the entire community. He thought there were better options
8 and suggested the City hold out for something better.

9
10 Pete Larkin gave his address as 15189 South Liberty Bell Drive and commented that there are two
11 main entries into the community and one is already Light Industrial. Having another entry way
12 full of industrial immediately creates a perception.

13
14 Alan Jackson asked Mr. Crowell to display the list of currently permitted uses.

15
16 Derek Brown gave his address as 15109 South Peace Drive and did not recommend the Council
17 approve the amendment. The owner purchased the property as-is and at some point the
18 Independence residents will represent at least one-half of Bluffdale's population.

19
20 Sean Leavitt gave his address as 14759 Lewski Lane and was not in favor the proposal. He stated
21 that when they purchased their home they were told that the area was zoned for retail. They were
22 not able to change the zoning once they purchased their property and he did not think it was right
23 for the applicants to do so either. Mr. Leavitt was also concerned about the potential for large
24 trucks to come through the neighborhood.

25
26 Raymond Stratford gave his address as 15984 South Peace Drive and addressed the placement of
27 the freeway, which he considered to be a benefit.

28
29 Justin McTee gave his address as 14735 South Nob Lane and stated that he and his wife have two
30 boys aged 9 and 4 months. They moved to Bluffdale because they want to live in a neighborhood
31 where their nine-year-old can ride his bike. He stated that there was no talk of what the traffic
32 impact will be or how many semi-trucks might be coming through on a daily basis. If it is truly

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1 industrial, he stated that there will be shipping and receiving taking place. Mr. McTee saw no
2 reason for the applicant to try to sell the Council on what they want to do. He asked the Council
3 to consider whether they would like this kind of use near them.

4
5 Christopher Moore gave his address as 14722 Nob Lane and commented that Bluffdale is a
6 wonderful place to live and he wanted it to stay that way. He did not believe that what is proposed
7 is in the best interest of the City.

8
9 David Prince gave his address as 15065 South Pledge Drive and added economical points that had
10 not been made. He has witnessed these kinds of things in the past and was previously involved in
11 real estate in the Uintah Basin where he saw several instances involving the switching of zoning
12 and property planning taking place. He understands and respects property rights but stated that a
13 better strategic option for the applicants would have been to enter into an option before purchasing
14 the property to see if they could attain the desired zoning approval. Mr. Prince stated that Heavy
15 Commercial will provide the retail tax base the City needs. He agreed that once the prison moves,
16 the property will be ideal prime property.

17
18 Hannah Jones gave her address as 15181 South Sabre Place and stated that she would prefer what
19 is proposed to a warehouse because it will be well maintained and quiet.

20
21 Michelle Harris gave her address as 14787 Rising Star Way, which is across the street from the
22 subject property. About six months ago a group of neighbors contacted their developer to change
23 the fencing from Trex to vinyl. The neighbors approached the City Council who required them to
24 adhere to their original agreement. Ms. Harris remarked that the developer also signed an
25 agreement and knew how the property was zoned. She thought they should also adhere to the
26 original agreement.

27
28 Mr. Dunn commented that a great deal of bias had been shown tonight. He explained that by
29 allowing mixed-use zoning they do not eliminate commercial. The property can be used for
30 residential or light industrial if the change is made to the Development Agreement. Mr. Dunn
31 explained that the market will control what happens on the property. If the Development

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1 Agreement is modified to allow mixed use, it will expand the number of businesses and the types
2 of uses that will be allowed. Currently it is limited.

3
4 Mayor Timothy commented that Brian Christensen who is the CEO of Simple Products
5 approached the City Council during a work session and asked about the possibility of his project
6 being allowed before he purchased the property. Since then many homes have been built and the
7 market has changed. At the time, the City Council agreed to consider the request. He stressed that
8 Simple Products did not purchase the property without performing their due diligence. Prior to
9 July 7, he reminded the City Council that retail was preferred and he has been very supportive of
10 the proposed project. In an email he received from Mr. Christensen, there was mention of his
11 agent beginning to put a “Plan B” together to hold on to on the property and build elsewhere due
12 the timing and complexity of the process. After receiving the letter, the Mayor retracted his
13 support.

14
15 Boyd Preece stated that at the time the request was originally made, relocation of the prison was
16 not an issue and was not taken into account. Porter Rockwell was put in to capture the traffic.
17 One of the benefits that will result from the traffic is having these types of services. Council
18 Member Preece indicated that there are studies that show that Bluffdale could support some of the
19 retail uses described. He recommended the Council stick with the plan that is in place for the sake
20 of economic growth. He wanted to have Simple Products in the City but did not consider this to
21 be the right location. He was passionate about the issue after growing up in Pleasant Grove where
22 citizens pushed out retail for a long time. In the process, the roads fell into disrepair and utility
23 costs increased annually. He did not want to see the same thing happen in Bluffdale. He
24 commented that retail in the proposed location will increase property values and sales taxes. He
25 felt there were numerous advantages to waiting. Mayor Timothy clarified that even the current
26 agreement as written does not guarantee retail.

27
28 Alan Jackson stated that although he is opposed to the request as it is currently, Simple Products
29 could build their facility today. He recommended that the City dictate that the front parcels only
30 be allowed to include uses that the neighborhood supports. He suggested that the City be involved
31 in deciding what is out front. Council Member Jackson wanted to see the front portion developed

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1 as retail. He suggested there be more discussion in an effort to meet the desires of both the
2 applicant and the residents. Until that happens, he would be opposed to the request.

3
4 James Wingate asked Mr. Reid about sales tax revenue and what the Maverik generates compared
5 to the industrial businesses along 14600 South. Mr. Reid reported that in comparing two buildings
6 of similar value, property tax generates about 1% per year of the value that comes to the City. In
7 terms of retail sales tax, the City receives ½ of 1% of the products sold at a retail establishment.
8 He did not have the figures for the Maverik but stated that Smith's Marketplace expect sales of \$1
9 million per month, which results in \$5,000 per week to the City. Sales tax would not be generated
10 by Simple Products because products are not sold directly to customers. He noted that restaurants
11 also generate additional sales tax.

12
13 Ty Nielsen felt strongly about property rights but did not think this was the right location for
14 Simple Products.

15
16 Alan Jackson commented that he has had the opportunity to meet with the leadership of Simple
17 Products and they are a company he wants in Bluffdale. He felt there was a way to bring the two
18 needs and desires together and find something that will work for both sides. He preferred to see
19 retail along the entire frontage. He liked the ideas submitted and recommended the City be
20 involved in determining what is allowed there and what is not.

21
22 Mr. Pickell clarified that an agreement was drafted that adopts the project plan. He remarked that
23 the uses can be negotiated.

24
25 Justin Westwood had observed the process since the beginning and had found the applicants to be
26 very upfront. He stated that at one point the City spoke to a group who proposed uses such as a
27 hotel and grocery store. He personally liked the idea of a hotel near the freeway to help generate
28 sales taxes, however, that idea never came to fruition. He thought Mr. Dunn's comment about
29 Redwood and Bangerter was valid and stated they have been waiting for a long time. He hoped to
30 see retail develop. His understanding was that there are no signed contracts in place with Simple
31 Products but they are putting forth their best effort. Council Member Westwood would consider

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1 the comments made tonight as well as the agreement. He hoped to find something that will work
2 for Simple Products and the community.

3
4 James Wingate appreciated the integrity of Simple Products and suggested tabling the item while
5 alternatives can be worked out to allow Simple Products to have the warehouse space and fill the
6 front space with retail. He would support forcing the project to be what the citizens consider
7 retail. Simple Products could then make the decision about risk. He preferred to wait to ensure
8 that the desired uses are out front.

9
10 Pete Larkin asked if there was an intent on the part of Simple Products as their company grows
11 and expands to lease to other companies to grow their business into the other units. Mayor
12 Timothy felt that as the demand for retail increases, the applicants will move out of the properties.
13 He commented that retail property is worth more than warehouse and that the front properties are
14 not ideal for retail businesses.

15
16 Kimberly Hansen Ennis gave her address as 14757 South Lewski Lane. She has moved more than
17 20 times in her life and Bluffdale is the classiest and most beautiful place she has ever lived.
18 When thinking about the best places for commercial around the Valley, none include a warehouse.
19 She wanted to see Simple Products locate in Bluffdale, just not in the proposed location.

20
21 The Mayor thought it would be desirable for the Simple Products building to be in the back
22 corner. He expected there to be retail demand on the corner in the future. He commented that
23 what could potentially be allowed could be worse than what is proposed.

24
25 **Justin Westwood moved to table agenda item number seven for two months or sooner to**
26 **allow further discussion and negotiate with Simple Products to see if they can do what is best**
27 **for them and the community. Ty Nielsen seconded the motion. Vote on motion: Alan**
28 **Jackson-Aye, Ty Nielsen-Aye, Justin Westwood-Aye, James Wingate-Aye, Boyd Preece-Aye.**
29 **The motion passed unanimously.**

30
31 Mayor Timothy explained that the City has worked very hard to get a light at the trestle to help
32 alleviate traffic. An officer directed traffic there one morning, with the goal being to determine

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1 whether a light would work there. The Mayor explained that legally a light cannot yet be placed
2 on the trestle, however, they have gone out to bid for a traffic light that makes the direction of the
3 traffic the priority. The result is a faster and better traffic flow. It will also include a height sensor
4 to warn trucks and give them time to turn around.

5
6 With regard to 1000 West (Noell Nelson Drive), they currently cannot connect the roundabout
7 because they do not have that jurisdiction. The following Friday they plan to meet with the
8 Transportation Commission and propose an agreement between UDOT and Bluffdale pertaining to
9 a jurisdictional transfer. UDOT will be given Porter Rockwell Boulevard and the City will take
10 14600 South. Over the last seven years, Bluffdale City has worked diligently to obtain Corridor
11 Preservation Funds to purchase the right-of-way for Porter Rockwell Boulevard. In about 1 ½
12 months the City will own the entire right-of-way from 14600 South to Redwood Road. The City's
13 problem is that they cannot afford a \$50 million bridge. Mayor Timothy explained that they will
14 not be able to accomplish their goal without it being a state road.

15
16 Bids were to be opened on Monday and the following Wednesday a Special City Council Meeting
17 was scheduled to award the contract and move forward to improve the road. The light was
18 expected to take until the end of the year to install at a cost of \$250,000.

19
20 James Wingate had heard talk of compromise and complaining and invited the citizens to offer up
21 their ideas.

22
23 Mayor Timothy reported that Smith's is hopefully still coming but they have postponed the next
24 step until February, which is in their next accounting year.

25
26 **8. Consideration and Vote on a Preliminary and Final Subdivision Plat Application for**
27 **The Highlands Phase 2 for 5.11 Acres to Create Four (4) Residential Lots Located in**
28 **the R-1-43 Residential (1 Acre) Zone at Approximately 14132 South 1850 West, Skye**
29 **Phase V, Applicant, Staff Presenter, Jennifer Robison.**
30

31 Senior City Planner, Jennifer Robison, presented the staff report and stated that above matter was
32 reviewed by the Planning Commission who forwarded a recommendation to the City Council.
33 She reported that about two years ago the City Council and staff began a discussion about how to

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1 develop unique properties in the City. The Council was approached by several property owners
2 about how they could get access and develop their properties. The Council looked at various
3 situations and adopted an ordinance in February 2015 to allow development of pre-existing private
4 rights-of-way with access to a public street. In doing so, the applicant, Ken Milne, who has
5 developed other properties in the City, came forward with a unique property that he owns.

6
7 The location of the property was identified on a map displayed. Mrs. Robison indicated that the
8 ordinance allows for private rights-of-way to be determined by the Fire Chief who does not
9 impose requirements on how wide the private right-of-way should be. In this situation, the Fire
10 Chief recommended that the width of the right-of-way be 20 feet and asphalted. There is another
11 provision in the ordinance that allows for a deviation of strict compliance relating to other
12 requirements such as the length of the cul-de-sac, which is typically 1,000 feet. Mrs. Robison
13 reported that it is approximately 1,500 feet to the opening of the project. There is also a restriction
14 that dead end streets have a maximum of 30 lots. The applicant in this case is well under that.

15
16 One of the other considerations was not to install curb, gutter, and sidewalk. As a result,
17 Mr. Milne was not proposing curb, gutter, or sidewalk on the 20-foot asphalt access. There will,
18 however, be some sidewalk into the cul-de-sac, which meets all of the requirements.

19 Mrs. Robison stated that the Planning Commission recommended approval with a 3-to-2 vote.

20
21 The applicant, Ken Milne, gave his address 13037 South Galloway Cove in Riverton. He
22 indicated that their goal is to maintain the one-acre lot, which has been accomplished. The
23 residents want it to remain private as well. With regard to storm drainage, near the entrance to the
24 subdivision and along 14200 South, an eight-inch line will be installed to collect storm drainage.

25
26 Mayor Timothy opened the meeting to public comment.
27

28 Ulises Flynn stated that to have an asphalted lane of this size that benefits the other property
29 owners can become a problem. Currently, the four property owners are responsible for
30 maintaining the road, which is also shared by other property owners. He questioned whether they

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1 need a pivable road and asked if they could instead just pave the section in front of the four
2 properties.

3
4 Mayor Timothy stated that the argument has been going on for the past 10 years and it took a long
5 time to reach an agreement. He confirmed that they do have to pave the entire road. Mr. Flynn
6 recommended it be a City road.

7
8 Rich Pemberton gave his address as 15053 South 2990 West and expressed concern if all of the
9 neighbors on the street are relying on four people to take care of it and they do not. Mayor
10 Timothy stated that if that happens they would have a road like the gravel road and unhappy
11 neighbors. Mr. Pemberton did not think the City Council had enough information at this point. In
12 surveying the property his understanding was that no one really knows where the lane is. By
13 surveying it from Redwood Road you come up with a lane being in one place and another location
14 when surveying it from 2200 West. He noted that there is at least an eight-foot difference. If that
15 is the case, Mr. Pemberton questioned which one would be used.

16
17 Mayor Timothy stated that it would likely be a civil matter between the landowners.
18 Mr. Pemberton suggested that the matter be addressed before a decision is made so that all of the
19 homeowners on the lane are in agreement. The Mayor stated that the fact that there is a
20 disagreement as to who owns what is an issue for the landowners to resolve. Mr. Pickell
21 explained that the City Council's job is to review the subdivision application for compliance with
22 the ordinance. Staff's job was to help accomplish that. The ordinance requires the plat be drawn
23 by a professional land surveyor. Mr. Pemberton clarified that he is not for or against the proposal
24 but simply feels that more information is needed.

25
26 George Pemberton gave his address as 14016 South 1850 West. He asked if it was possible for
27 the survey stakes to be placed where the lane is proposed to be located for the benefit of the
28 current property owners. Mayor Timothy stated that that would be a question for the developer.
29 He explained that the City's approval will not be dependent on disputes over where the road is and
30 will be based on the certified plat. Mr. Pemberton stated that they have 18 inches of property they
31 are paying taxes on that runs from the end of the lane to the corner, which impacts them and their

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1 property ownership. Mr. Pemberton did not know if his 18 inches was part of the 20 feet owned
2 by Mr. Milne.

3
4 Kristin Streeter gave her address as 14104 South 1850 West. She stated that when Mr. Milne
5 purchased the property he knew that it could not be subdivided and that would require curb and
6 gutter. She stated that it is also only supposed to be 1,000 feet to the subdivision and it is nearly
7 1,500. Ms. Streeter commented that the property violates many of the City’s ordinances. If
8 Mr. Milne plans to pave the road, she suggested it be done right with curb and gutter. She stated
9 that Mr. Milne does not live in Bluffdale and simply wants to develop his property. Once the road
10 is in need of maintenance, Mr. Milne will be out of the picture. Ms. Streeter recommended the
11 Council look to the citizens of Bluffdale and not the developer and abide by their wishes.

12
13 Lee Dzierzanowski gave his address as 1879 West 14200 South. He was not opposed to
14 Mr. Milne being allowed to develop his property but took exception to the way the road is being
15 constructed. He comes from a family of road builders and was very familiar with the types of
16 roads that can be built. The absence of curb and gutter only leads to immediate problems with
17 maintenance. Mr. Dzierzanowski also recommended there be an enforcement mechanism for
18 maintenance of the road. He urged the Council to require Mr. Milne to also install curb and gutter.

19
20 Ken Groves gave his address as 14021 South 2055 West and stated that his friend, Mike Phillips,
21 asked him to voice his concerns about ownership of the lane going north off of 14200 South.
22 Mr. Groves was concerned about the 20-foot strip of road since he uses it occasionally to access
23 the lower portion of his property. He recommended the project be done right. He stated that he
24 moved from South Jordan about eight years ago after living there for 28 years because he liked the
25 values Bluffdale offers.

26
27 Barry Pilcher gave his address as 1821 West 14200 South and wanted to see the lane asphalted to
28 help reduce dust and increase the value of their property. In his business he works with HOAs and
29 knows how they operate. He stated that they can be very unpredictable. He did not expect an
30 HOA to take care of the lane for a long period of time.

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1 Jim McDuff gave his address as 1822 West 14200 South and commented that there is not 20 feet
2 between the field fence and the ditch. The entire base of the ditch is needed to support the water
3 that comes in. His understanding was that Mr. Milne plans to cut into the ditch to get his 20 feet.

4
5 Jamie Roller gave her address as 14109 South 2055 West and was concerned that the way the four
6 houses are positioned, the homes will most likely be at the back of the property. If that is the case
7 and if they are very large homes, they will not be interested in livestock or animals, which nearly
8 all of the surrounding homeowners are.

9
10 There were no further public comments. Mayor Timothy closed the public hearing.

11
12 Boyd Preece recused himself from the discussion and vote on the matter due to a conflict of
13 interest. He reported that he worked with the applicant prior to being elected to the City Council.

14
15 James Wingate recommended Mr. Milne place the asphalt only on the portion that he owns.

16 Mayor Timothy stated that the City Engineer is allowing Mr. Milne to fill in the ditch and
17 maintain usability of it. He noted that he would not be prevented from piping it. He explained
18 that it will have to be done legally and approved by the City Engineer per approved drawings.

19 Mayor Timothy did not comment on the legal aspect of paving or not paving but stated that it is
20 Mr. Milne and the residents' choice. The question was whether it is something the City Council
21 wants.

22
23 The Mayor asked Mr. Pickell for clarification regarding corrals. Mr. Pickell explained that if there
24 is an existing corral and someone on a neighboring lot builds a house, it becomes a non-
25 conforming situation. If the corral is moved to be at least 75 feet from the structure, that distance
26 would have to be maintained.

27
28 Alan Jackson felt there was a high likelihood that four homeowners will not be able to maintain an
29 asphalt road. Mr. Pickell reported that the ordinance requires it to be paved. With regard to curb
30 and gutter, Mayor Timothy stated that they specifically reviewed what was going to be required up
31 to and in the subdivision. Curb and gutter was specifically left out up to the subdivision, which

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1 would be a private lane. The entire lane would be owned by the property owners who would have
2 to agree to pave it.

3
4 The possibility of all of the homeowners pitching and completing the entire road to City width was
5 discussed. The Mayor stated that cost would be an issue. If the road were built to City standards
6 the City would require a width of 50 to 52 feet.

7
8 Ty Nielsen shared his personal experience growing up on an unpaved road and empathized with
9 the neighbors.

10
11 Jennifer Robison reiterated that the deviation from the ordinance is the length of the lane being
12 increased from 1,000 feet to 1,500 feet.

13
14 Mayor Timothy stated that there have been issues with private lanes in the City and in many cases
15 the residents have asked the City to take the lanes and pave them. He stressed that the City will
16 not do that. Legal issues were discussed. The Mayor's understanding was that if a lane is owned
17 by the residents, it is their choice to pave or not. He explained that if he only wanted to pave his
18 right-of-way and not worry about the houses at the other end, he could pave the road. Legal issues
19 were discussed. The Mayor explained that if Mr. Milne does not have the entire 20-foot right-of-
20 way he would have to acquire it in order to proceed.

21
22 Barry Pilcher commented that as a general contractor he likes the idea of the asphalt but he did not
23 want the HOA to dictate the private lane.

24
25 Mr. Crowell explained that in previous years it did not seem like there was momentum for a public
26 street on 14200 South between 2200 West and Redwood Road. It also did not seem to be the
27 intent to have a public street to the north. That left the property owners in a situation where if they
28 wanted to develop in the future they would all exceed the 1,000-foot limit. For that reason, the
29 deviation from strict compliance section was added to the ordinance. It allowed the Council to
30 look at unique geographical situations and use the Fire Code and safety as a basis to ensure that a
31 safe situation is being created. Mr. Reid stated that 1,000 feet was an arbitrary number.

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1 Mayor Timothy clarified that seven years ago 14200 South was shown on the Master
2 Transportation Plan from Redwood Road to 2200 West to go all the way through. They were not,
3 however, collecting impact fees. The only way that would have been done is if it was for public
4 use. After speaking to the residents of 14200 South, it was determined that they overwhelmingly
5 did not want a road to go all the way through. As a result, it was taken off the map. Because of
6 the way the City has been developed over the years, it is difficult for the City to force a road to go
7 through. Doing so, however, would make the property developable. The Mayor was in favor of
8 the proposal because it results in a paved road.

9
10 **Justin Westwood moved to approve a preliminary and final subdivision plat for the**
11 **Highland Phase 2 Subdivision for 5.11 acres to create four residential lots located in the R-1-**
12 **1-43 residential zone at approximately 145132 South 1850 West, Skye Phase V, as presented.**
13 **Ty Nielsen seconded the motion.**

14
15 James Wingate commented that it is important to allow in terms of dealing with future property
16 owners with unique lots. He remarked that the 1,000-foot rule could become a problem in the
17 future.

18
19 **Vote on motion: Alan Jackson-Aye, Ty Nielsen-Aye, Justin Westwood-Aye, James Wingate-**
20 **Aye, Boyd Preece-Abstained. The motion passed unanimously with one abstention.**

21
22 **9. Consideration and Vote on a Resolution of the Bluffdale City Council Authorizing the**
23 **City Manager to Enter into Agreements Awarding a Contract for General Services,**
24 **ADA Ramps and Various Concrete Flatwork, and Establishing a Maximum**
25 **Expenditure for FY 2016-2017, Staff Presenter, Dan Tracer.**

26
27 Assistant City Engineer, Dan Tracer, reported that the City has a need for various concrete and
28 flatwork repair through the City. Council Member Preece mentioned the need for ADA ramps in
29 Independence. There are also minor projects throughout the City that are needed such as curb and
30 gutter in some areas and broken sidewalks in others. They submitted a request for bids from
31 contractors and asked for units cost pricing. They asked to be provided for the cost to install one
32 square foot of concrete sidewalk, one square foot of concrete repair, one ADA ramp pad, traffic
33 control, and the price for each. Three bids were received with the lowest bidder being Quick

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1 Silver Concrete with a bid of \$508.75. This amount included the summation of the unit prices. It
2 was noted that each contract will be larger than that because of quantity.

3
4 Mr. Tracer stated that the City has worked with Quick Silver in the past and they are currently
5 installing concrete and sidewalk in Parry Farms. They have received good reports on the work
6 being done there. Several of Quick Silver Concrete’s references had been checked as well with
7 very good results. Mr. Tracer stated that following this course will result in a cost savings since it
8 will not be necessary to advertise each individual project. In this case, the contract will be set for
9 one year and could be extended for up to two years with an amount of up to \$50,000. Mr. Tracer
10 stated that the price submitted was very competitive.

11
12 **Ty Nielsen moved to approve a resolution authorizing the City Manager to enter into an**
13 **agreement awarding a contract for General Services, ADA Ramps, and various concrete**
14 **flatwork, and establishing a maximum expenditure for FY 2016-2017, as presented. James**
15 **Wingate seconded the motion. Vote on motion: Alan Jackson-Aye, Ty Nielsen-Aye, Justin**
16 **Westwood-Aye, James Wingate-Aye, Boyd Preece-Aye. The motion passed unanimously.**

17
18 The City Council next conducted the Bluffdale City Redevelopment Agency Board Meeting after
19 which they continued the City Council Meeting.

20
21 **10. Mayor’s Report**
22

23 Mayor Timothy reported that the previous night was the Volunteer Appreciation Dinner. The
24 event includes multiple groups such as the Bluffdale Arts Advisory Board, the Miss Bluffdale
25 Committee, the Rodeo Committee, the Old West Days Committee, the Board of Adjustment, and
26 others who volunteer. The event was well attended and the Mayor considered it money well spent.

27
28 The Mayor stated that Friday, September 16, the Transportation Commission Meeting will be held
29 in Farr West. At that meeting, the Commission will hopefully approve the proposed jurisdictional
30 transfer between Porter Rockwell Boulevard and 14600 South. The Mayor had spoken to
31 UDOT’s Region 2 Director, Brian Adams, and informed him that he does not want to go through

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1 any more negotiation. He wants to sign a contract in order to install a light. Mr. Adams stated
2 that if the Transportation Commission approves it, UDOT will immediately sign the documents.

3
4 The project will be put on Phase 1, which makes it eligible for Corridor Preservation. Through the
5 Wasatch Front Regional Council, they will then go through Trans Fund (short-term funding) and
6 RGC (long-term funding) to improve the road and widen the bridge. The intent was to widen the
7 road between 800 West and Redwood Road. Even though widening the bridge is a big expense,
8 the Mayor did not expect the City to be responsible for more than 20% of the cost.

9
10 It was reported that the Jordan Economic Summit is scheduled for Tuesday, September 20, 2016,
11 at 8:00 a.m.

12
13 **11. City Manager's Report and Discussion.**

14
15 Mr. Reid updated the Council on City Hall and stated that they are framing and putting on the
16 outside board. The stairs had also been poured. In the next week they will begin to sheetrock.

17
18 With respect to Parry Farms Park a great deal of excavation work had been done and they were out
19 to bid on the concrete work for the basketball and pickle ball courts and the pavilion.

20
21 Mr. Reid indicated that a Special Meeting is scheduled for Wednesday, September 21. That night
22 the agenda will include approval of the bid for the trestle light. The bid was to be opened
23 Monday.

24
25 Mr. Reid reported that a required training for the Council on Emergency Preparedness is
26 scheduled for the following Wednesday at 6:30 p.m. Justin Westwood stated that he would be
27 unable to attend.

28
29 Mr. Reid indicated that he attended a special VECC Board Meeting where they approved \$6
30 million for the new CAD system. He needed to find out when they convert from Saratoga Springs
31 Police Department to Bluffdale Police Department. He stated that the City may have to incur the
32 conversion costs instead of being converted with everyone else. He would confirm the timing and
33 cost and report back to the Council.

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1
2 Mr. Reid reported that for the last few years they have been working on a Maintenance Agreement
3 with the Utah Data Center. A meeting was scheduled for the following week that could make a
4 substantial difference in the amount the City gets to pay off bonds and cover maintenance in the
5 Water Department.

6
7 Mr. Reid indicated that a petition was started by residents of the Bluffs to have the emergency
8 access opened to Loumis Parkway. Each time the access has been opened up there has been a
9 major accident. He asked the City Engineer to look at a way to make it safer or come up with an
10 alternate access. Mr. Reid stated that he has been approached by BYU to have an engineering
11 class conduct a study for the City at no cost. He was in the process of arranging for the study.

12
13 Mr. Reid reported that Draper City engaged New Fire Chief, Clint Smith, who previously served
14 as the Interim Mayor of Herriman City.

15
16 **PLANNING SESSION**

17
18 **12. Planning Session.**

19
20 James Wingate commented that the Council received an email on August 1 from Sherry Young
21 about the condition of the Rodeo Arena. She was disappointed that no one responded to her.

22 Mr. Reid agreed to respond to Ms. Young. He noted that they have approved the Black Widow
23 and Arena Blend and are in the process of looking for a new tractor.

24
25 Justin Westwood reported on a recent Association of Municipal Governments Meeting he
26 attended. He stated that Herriman, Mapleton, and Highland have hired a Professional Archer to
27 help them control their deer problem. The possibility of relocating the animals was discussed.
28 The City was encouraged to contact Mike Arnell from the State if they want to participate in their
29 program to control skunks and racoons. The total contract is currently \$81,000. Based on the size
30 of Bluffdale City, the City's cost was expected to be 2%. Problems with disposing of skunks and
31 racoons that are trapped were discussed.

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1 Alan Jackson asked to further explore adding additional police officers as was discussed earlier in
2 the meeting. Mayor Timothy wanted to find out the cost to hire the three officers and how to fund
3 the positions.

4
5 Mr. Kartchner presented information on water rates and commented that he projected into the
6 future what the City will need. The Water Master Plan Project was completed and laid out what
7 they have and will need in the future. The plan shows that currently they have sufficient capacity
8 for their current needs. This means that the future needs can be categorized as being due to
9 growth and incorporated into the IFFP and impact fees. One of the aspects of water rights is that
10 they then have someone who is effectively paying for the system when they build a home,
11 however, it is actually the users over time that are utilizing the system. Because it is a business-
12 type fund, it should be funded by those who are using it, which would result in rates being the
13 method of collecting money for infrastructure. The situation should also be looked at from a
14 bonding standpoint because they do not have the needed \$14 million.

15
16 Mr. Kartchner referenced the second page of the report that showed the City's rates at the top. He
17 then looked at other cities in the valley to show their rates. He pointed out that the City has
18 consistently had its rates increased by the Jordan Valley Water Conservancy District by 5% per
19 year. He did not factor in any cost increases. He noted that they have invoiced 628,451,000
20 gallons in fiscal year 2016. They had more gallons that were not invoiced. The cost averages
21 \$2.95 per 1,000 gallons.

22
23 Mr. Kartchner stated that he met with Mark Reid and Michael Fazio and discussed the various
24 projects that need to be completed. The total of \$14 million was analyzed. If they bond for the
25 entire amount using a 4% rate over a 20-year term, the annual debt service would be just over \$1
26 million. If that were divided by the \$14 million total, the debt service percentage would be
27 7.358%. That percentage can then be multiplied by whatever projects need to be built and is the
28 total debt service for the number of projects under those assumptions. He next explained how the
29 rate increase necessary to cover the costs could be calculated. Mr. Kartchner commented that the
30 \$1.2 million South Valley Sewer Project was discussed as being part of the EDA funds that the
31 Board authorized earlier will be spent out of the housing allowance money.

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1
2 In response to a question raised by Mayor Timothy, Mr. Kartchner stated that the cost per
3 thousand gallons represents an increase from the current rate, which would include any increases.
4 That would represent the amount needed to fund the bonds.

5
6 With regard to the secondary reservoir and pump station, Mr. Kartchner stated that as part of the
7 master plan, in order to avoid having to build additional primary water supplies, the plan was to
8 have secondary water irrigation water. A reservoir would be needed to provide enough storage to
9 provide for irrigation watering during the day. That would be provided on a City-wide and
10 system-wide basis.

11
12 Mr. Reid stated that the City periodically purchases shares knowing that they will eventually be
13 needed. He had been working with Salt Lake County to see if they would be interested in going in
14 on a joint project with the City to build the pond. The County would build the pond and the City
15 would fill it. It would then become an urban fishery for the County and a source of secondary
16 water for the City. Mr. Kartchner stated that one advantage is that it will be located in a high spot,
17 which will help with water pressures.

18
19 Mr. Reid asked for feedback from the Council on whether they want to develop drinking water
20 wells. Currently, the City is locked in to purchasing all of their culinary water from Jordan Valley
21 Water Conservancy District. If there is a problem with that supply, they do not have another
22 source. He wasn't looking for a large source but an emergency source of water.

23
24 **13. Closed Meeting Pursuant to Utah Code §52-4-205(1) to Discuss the Character,**
25 **Professional Competence, or Health of an Individual, Collective Bargaining, Pending**
26 **or Imminent Litigation, Strategies to Discuss Real Property Acquisition, Including**
27 **Any Form of a Water Right or Water Shares, Security Issues, or any Alleged**
28 **Criminal Misconduct.**

29
30 **Ty Nielsen moved to go into closed meeting pursuant to Utah Code §52-4-205(1) to discuss**
31 **the character, professional competence, or health of individual, collective bargaining,**
32 **pending or imminent litigation, strategies to discuss real property acquisition, including any**
33 **form of water right or water shares, security issues, or any alleged criminal misconduct.**

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
MEETING MINUTES
Wednesday, September 14, 2016**

1 **Alan Jackson seconded the motion. The motion passed with the unanimous consent of the**
2 **Council.**

3
4 The City Council was in closed session from 10:58 to 12:33 a.m.

5
6 **Justin Westwood moved to end the closed meeting and return to open session. Ty Nielsen**
7 **seconded the motion. The motion passed with the unanimous consent of the Council.**

8
9 **14. Adjournment.**

10
11 The City Council Meeting adjourned at 12:33 a.m.

12
13
14 _____
15 Wendy L. Deppe, CMC

16 City Recorder:
17
18 Approved: _____

DRAFT - FOR DISCUSSION PURPOSES ONLY

BLUFFDALE CITY COUNCIL
CLOSED MEETING MINUTES
Wednesday, September 14, 2016

1 **Present:** Mayor Derk Timothy
2 Alan Jackson
3 Ty Nielsen
4 Boyd Preece
5 Justin Westwood
6 James Wingate
7

8 At approximately 10:58 p.m. Mayor Derk Timothy called the meeting to order.
9

10 **Motion:** Ty Nielsen moved to go into closed meeting pursuant to Utah Code §52-4-205(1) to
11 discuss the character, professional competence, or health of individual, collective bargaining,
12 pending or imminent litigation, strategies to discuss real property acquisition, including any form
13 of water right or water shares, security issues, or any alleged criminal misconduct.
14

15 **Second:** Alan Jackson seconded the motion.
16

17 **Vote on Motion:** The motion passed with the unanimous consent of the Council.
18

19 The Council discussed closed session items.
20

21 **Motion:** Justin Westwood moved to end the closed meeting and return to open session.
22

23 **Second:** Ty Nielsen seconded the motion.
24

25 **Vote on Motion:** The motion passed with the unanimous consent of the Council.
26

27 The City Council returned to the City Council chambers to resume the open portion of the meeting
28 at 12:33 p.m.
29
30
31

32 _____
33 Wendy L. Deppe, CMC
34 City Recorder
35

36 Approved: _____

The City of Bluffdale
REGULAR CITY COUNCIL MEETING
Closed Meeting Minutes
September 14, 2016

Bluffdale City Fire Station
14350 South 2200 West
Bluffdale, Utah 84065

CLOSED MEETING CERTIFICATE

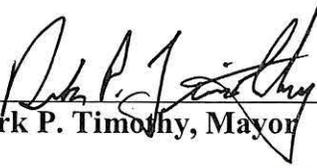
Council Member Ty Nielsen **MOVED** to meet in Closed Session pursuant to Utah Code §52-4-205(1) to discuss the character, professional competence, or physical or mental health of an individual at 10:58 p.m. Council Member Alan Jackson **SECONDED** the motion. Mayor Timothy called for discussion on the motion. There being none, he called for a roll-call vote. The vote was as follows: Alan Jackson-Aye, Ty Nielsen-Aye, Justin Westwood-Aye, James Wingate-Aye, and Boyd Preece-Aye. All members of the City Council present voted and the motion carried by a unanimous vote.

There were no others present at the Closed Session.

CLOSED SESSION

I, Derk P. Timothy, Mayor of the City of Bluffdale, do hereby certify that a meeting of the City Council held on September 14, 2016, was closed to discuss the character, professional competence, or physical or mental health of an individual, wherein no other items were discussed.

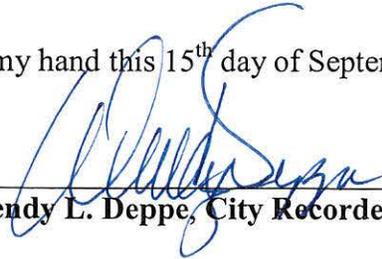
Council Member Justin Westwood **MOVED** to adjourn the Closed Session at 12:33 a.m. Council Member Ty Nielsen **SECONDED** the motion. Mayor Timothy called for discussion on the motion. There being none, he called for a roll-call vote. The vote was as follows: Alan Jackson-Aye, Ty Nielsen-Aye, Justin Westwood-Aye, James Wingate-Aye, and Boyd Preece-Aye. **The motion passed unanimously.**



Derk P. Timothy, Mayor

IN WITNESS WHEREOF, I have set my hand this 15th day of September 2016.





Wendy L. Deppe, City Recorder



**BLUFFDALE CITY COUNCIL
SPECIAL MEETING AGENDA
Wednesday, September 21, 2016**

Notice is hereby given that the Bluffdale City Council will hold a special meeting Wednesday, September 21, 2016 at the Bluffdale City Fire Station, 14350 South 2200 West, Bluffdale, Utah scheduled to begin promptly at **6:30 p.m.** or as soon thereafter as possible. Notice is further given that access to this meeting by the Mayor and or City Council may be by electronic means via telephonic conference call.

BLUFFDALE CITY COUNCIL SPECIAL MEETING 6:30 P.M.

1. Roll Call, Invocation, Pledge of Allegiance*
2. Consideration and vote on a resolution of the Bluffdale City Council authorizing the City Manager to enter into agreements awarding a contract for the Trestle Traffic Signal, and establishing a contingency, staff presenter, Dan Tracer.
3. Training on Emergency Management and the Incident Command System, staff presenter, Natalie Hall.
4. Adjournment

Dated this 16th day of September, 2016

I HEREBY CERTIFY THAT THE FOREGOING NOTICE AND AGENDA WAS FAXED TO THE SOUTH VALLEY JOURNAL, THE SALT LAKE TRIBUNE, AND THE DESERET MORNING NEWS; POSTED AT THE BLUFFDALE CITY HALL, BLUFFDALE CITY FIRE STATION, AND THE COMMUNITY BULLETIN BOARD AT THE BLUFFS APARTMENTS; EMAILED OR DELIVERED TO EACH MEMBER OF THE BLUFFDALE CITY COUNCIL; ON THE CITY'S WEBSITE AT WWW.BLUFFDALE.COM AND ON THE PUBLIC MEETING NOTICE WEBSITE, WWW.PMN.UTAH.GOV

**Wendy L. Deppe, CMC
City Recorder**

Note: The Bluffdale City Council will take a recess at approximately 9:30 p.m. and will evaluate the time needed to complete items not yet heard on the evening's agenda. Items the Council determines may take the meeting past 10:00 p.m. may be removed from the agenda and re-scheduled for the next regularly scheduled meeting. In compliance with the American with Disabilities Act, individuals needing assistance or other services or accommodation for this meeting should contact Bluffdale City Hall at least 24 hours in advance of this meeting at 801-254-2200. TTY 7-1-1. *Contact the City Recorder if you desire to give the Invocation.

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

- 1 **Present:** **Mayor Derk Timothy**
2 **Alan Jackson**
3 **Ty Nielsen**
4 **Boyd Preece**
5 **Justin Westwood**
6 **James Wingate**
7
8 **Staff:** **Mark Reid, City Manager**
9 **Vaughn Pickell, City Attorney**
10 **Natalie Hall, Emergency Preparedness Manager**
11 **Dan Tracer, Assistant City Engineer**
12 **John Roberts, Fire Chief**
13 **Wendy Deppe, City Recorder**
14
15 **Others:** **Kelly Harris, Project Engineering Consultants (PEC)**
16 **Wade Watkins, Salt Lake County Deputy Emergency Manager-Training and**
17 **Exercise**
18 **Thomas Miller, Salt Lake County Training and Exercise Specialist**
19

20 **BLUFFDALE CITY COUNCIL SPECIAL MEETING**

21
22 Mayor Derk Timothy called the meeting to order at 6:39 p.m.

23
24 **1. Roll Call, Invocation, Pledge of Allegiance.**

25
26 All Members of the City Council were present.

27
28 Natalie Hall offered the invocation. Vaughn Pickell led the Pledge of Allegiance.

29
30 **2. Consideration and Vote on a Resolution of the Bluffdale City Council Authorizing the**
31 **City Manager to Enter into Agreements Awarding a Contract for the Trestle Traffic**
32 **Signal, and Establishing a Contingency, Staff Presenter, Dan Tracer.**
33

34 Assistant City Engineer, Dan Tracer referenced the problems that exist on 14600 South that are
35 caused by the railroad bridge. To address the issues, they designed a two-way traffic signal that
36 will help control traffic. It will allow vehicles to pass through for a certain period of time in one
37 direction and then allow the other side to go. They will soon be supplied with the steel for the
38 traffic signal support arms, some of the control cabinets and electronics, and some of the ancillary
39 hardware needed to construct it. An RFP was sent out to request bids from contractors to submit
40 bids for installation of all work, provide the traffic lights, and the Over Height Detection System.

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 Three bids were submitted. The initial low bidder was Craig F. Sorensen Construction, however,
2 after reviewing the bid, they were found to be non-responsive and failed to submit several pieces
3 of required information. The other two bidders submitted complete bids and provided all of the
4 required information. The apparent responsive low bidder was identified as Hidden Peak Electric
5 in the amount of \$145,330.

6
7 Design Engineer, Kelly Harris, described the system and stated that the newest feature is the Over
8 Height Vehicle Detection System. The system predicts the height of the vehicle and from the west
9 gives drivers time to turn around on Spring View Parkway where there is a roundabout. On the
10 east side semi-trucks will be able to turn around in the roundabout. The system is far enough to
11 the east to alert drivers in time to turn around. The signal will cycle and allow a certain number of
12 vehicles to pass and then switch to the other side. The system will have to be set initially,
13 monitored, and adjusted as needed. The intent is to offer traffic relief. City Manager, Mark Reid,
14 reported that UDOT requires that their traffic control people oversee control of the signal.

15
16 Mr. Tracer stated that the traffic signal will be powered through an underground cable owned by
17 Rocky Mountain Power. The Over Height Vehicle Detection System will operate off of solar
18 power. A battery backup will power the system at night. It was noted that the battery can run for
19 a 24-hour period. The lights will flash only when the sensors detect an over height vehicle.

20
21 Mayor Timothy asked if there was any accommodation for emergency services giving them
22 priority to get through. Mr. Harris stated that that was not included but is an option that can be
23 added.

24
25 Kelly Albiston gave his address as 14161 South Stone Fly Drive and expressed concern with the
26 roundabout. He stated that there will be development to the south of it. He remarked that at some
27 point the traffic will interrupt the function of the roundabout and back up the east bound traffic.

28
29 Mayor Timothy's understanding was that even if the traffic backs up into the roundabout it is not
30 going to be any worse than if traffic were on a straight road. He stated that a light would be the
31 best option but the roundabout is sufficient and can accommodate large trailer trucks. Mr. Tracer

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**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 stated that it was sized specifically for a full-length travel trailer. The interior is reinforced
2 concrete. Mr. Albiston thanked the Council for the devoted attention given to the matter to ensure
3 a minimal backup of traffic. The Mayor stated that it has been frustrating for the Council trying to
4 get a light there. Now that they control the road it will be easier and improvements will be made
5 along the way.

6
7 Mr. Reid stated that the suggestion was made that they lower the road so that there is more
8 clearance between the road and the top of the bridge. They are unable to do that because there is a
9 canal directly adjacent to the bridge. The height cannot be increased due to fact that the Union
10 Pacific Railroad owns the bridge.

11
12 James Wingate asked that the jersey barriers be examined to ensure that they are linked together.

13
14 Mr. Tracer stated that there have been two complaints about excess water on the road. He was
15 working with Public Works Operations Manager, Blain Dietrich, to remedy that. The source of
16 the water was unknown. Mayor Timothy was told years ago that the water was coming from the
17 canal and nothing can be done about it. Emergency Preparedness Manager, Natalie Hall's,
18 understanding was that it was from a natural spring.

19
20 Ty Nielsen thanked that Mayor and Mr. Reid for taking proactive measures with regard to bridge
21 issues.

22
23 **Ty Nielsen moved to authorize the City Manager to enter into an agreement awarding a**
24 **contract for the Trestle Traffic Signal and establish a contingency to Hidden Peak Electric**
25 **Company in the amount of \$145,330 with a 10% contingency. Alan Jackson seconded the**
26 **motion.**

27
28 Kelly Harris described the preemption in addition to the 10% contingency since they do not know
29 what is beneath the bridge. Dan Tracer stated that that issue had been addressed with the bidders.

30
31 **Vote on motion: Alan Jackson-Aye, Ty Nielsen-Aye, Justin Westwood-Aye, James Wingate-**
32 **Aye, Boyd Preece-Aye. The motion passed unanimously.**

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1
2 **3. Training on Emergency Management and the Incident Command System, Staff**
3 **Presenter, Natalie Hall.**
4

5 Ms. Hall introduced Wade Watkins and Thomas Miller who would help conduct the training.
6

7 Wade Watkins serves as the Salt Lake County Deputy Emergency Manager over Training and
8 Exercise for all of the jurisdictions in Salt Lake County. The main focus of tonight's meeting will
9 be the Incident Command System, which is ICS-402, Parts 1 and 2. Mr. Watkins explained that
10 the difference between an incident and an event is that an event is something that is planned and
11 an incident is spontaneous and cannot be controlled.

12
13 When they begin looking at an incident they consider the complexity. Factors can include road
14 systems, terrain, livestock, and jurisdictional boundaries. Mr. Watkins stated that the Incident
15 Command System is an on-scene all hazard incident management system. Bluffdale should be
16 operating the same as all other jurisdictions that are standardized. He indicated that it is important
17 for the executives to understand their role in the system. The goal is to ensure the safety of
18 responders, which is the top priority, and the efficient use of resources. During larger scale
19 emergencies/incidents there is often duplication of effort. Mr. Watkins used 9/11 as an example
20 and stated that prior to 9/11 there was no mandate from the federal government to do this. Katrina
21 was another example of when the nation has struggled during large scale disasters.

22
23 Mr. Watkins stated that the Bluffdale Fire Engine is considered a Class 1 or Type 1 Pumper and it
24 should be able to be ordered and used interchangeably. If it doesn't have pumping and/or stacking
25 capacity, a mutual aid agreement is necessary with an adjoining jurisdiction. Mr. Watkins stated
26 that Bluffdale fits the national standard and a great deal of time and effort has been focused on
27 coming into conformance. He noted that all in the valley operate under the same Incident
28 Command.

29
30 Mr. Watkins introduced the National Incident Management System (NIMS) and explained why
31 NIMS compliance is important. Another significant aspect of emergency management is the
32 recovery phase which consists of preventing, responding to, recovering from, and mitigating
33 incidents. NIMS exists to reduce the loss of life, which is the priority. Property comes next

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**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 followed by protecting the environment. When it is necessary to coordinate efforts in a timely
2 fashion, the Incident Command System can facilitate it effectively.

3
4 Mayor Timothy gave an example of a flood that damages multiple homes. First responders are on
5 the scene and police are controlling crowds and traffic. There would be many things going on at
6 once and the Fire Department may need the assistance of the police. Mr. Watkins stated that the
7 system is all the same and with a unified command they will work together and set a single
8 objective. Communications may be different and they may be broken into functional groups or
9 divisions, but the system is intended for all to work together. In a situation involving flooding,
10 Public Works would step up and take a role in incident command. Objectives would be set along
11 with support objectives dealing with fire and law enforcement together.

12
13 Mr. Reid stated that he has seen it work. Whoever is first on the scene sets up the incident
14 command. They may turn over the incident command to someone else, but they are in charge
15 until they release it. The difference from the day-to-day administrative organizational structures
16 and positions, unique ICS positions, titles, and organizational structures are designed to avoid
17 confusion during response. This is called the chain of command. Rank may change during
18 deployment so a chief may not hold the title under the Incident Command System. Different
19 functional assignments and verbiage might be used when giving out specific assignments.

20
21 ICS requires the use of common terminology, which helps define organizational functions and
22 incident facilities. As the incident develops, those involved have specific titles. Chain of
23 command issues were next discussed. With regard to unity of command, there is only one
24 supervisor. Mr. Watkins stated that the incident commander should be the most qualified person
25 on the scene. As soon as someone who is more qualified or has more capability arrives, there
26 should be a transition of command. The change of command can take place in different ways. It
27 is most effective when a chief officer arrives, at which time they communicate that on the radio so
28 that everyone knows and then they take command.

29
30 A question was raised about the possibility of two different incidents being related. Mr. Watkins
31 stated that there can be one incident command and then they can begin to prioritize the resources

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**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 and assignments of incoming resources and split them up. If there are two larger scale incidents,
2 they can be broken up to create two separate incidents that operate simultaneously. If it begins to
3 exceed the span of control, it should be split into two.

4
5 Mr. Watkins explained that the incident command provides overall leadership for the incident
6 response. The tone and demeanor the person in charge sets everyone to that tone. The incident
7 objectives should be set appropriately in the first operational period and are critical and direct the
8 development of the Incident Action Plan. Executive Senior Officials roles and responsibilities
9 provide policy guidance on priorities and objectives based on situational needs and the Emergency
10 Operations Plan. Something that exceeds the resource capability of Bluffdale would be a Type 3
11 incident. That includes an incident that goes longer than 12 hours. They oversee the resource
12 coordination and support of the on scene command from the Emergency Operations Center
13 (EOC), which coordinates resources.

14
15 Command and Coordination was next discussed. Examples were given of multi-agency
16 coordination efforts. Mr. Watkins stated that executives and senior officials delegate command
17 authority to the designated incident commanders of the on scene operations. The Incident
18 Commander has direct tactical operational responsibility for conducting incident management
19 activities.

20
21 With regard to delegation of authority, Mr. Watkins stated that it can be in writing, established in
22 advance, or verbal and include legal authorities or restrictions, financial authorities or restrictions,
23 reporting requirements, demographic issues, political implications, agents and jurisdictional
24 priorities, plan for public information management, process for communications, and a plan for
25 ongoing incident evaluation. Within the delegation or authority, or scope of work, each agency is
26 informed of what they are and are not in charge of for that incident. Mr. Watkins stated that in a
27 situation where someone is faced with a delegation of authority for an Incident Management
28 Team, if it overwhelms the system that is in place, a delegation of authority is laid out. He
29 recommended that the City articulate the City Management objectives.

30
31 Mr. Watkins summarized the incident management roles as follows:

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**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

- 1
- 2 • Incident Commander – Manages the incident at the scene and keeps the EOC informed of
- 3 all important matters pertaining to the incident.
- 4
- 5 • Agency and Executives Senior Officials – Their mission is strategic direction and
- 6 authority.
- 7
- 8 • Command Staff – Consists of the Public Information Officer, Liaison Officer, and the
- 9 Safety Officer and is overseen by the Incident Commander.
- 10
- 11 • General Staff – Supports the Command Staff and consists of the Operation Section Chief,
- 12 Planning Section Chief, Logistic Section Chief, and Finance and Administration.

13
14 Mr. Watkins stated that ultimately the Incident Commander is in charge. It was reported that ICS
15 is managed by objectives, which are communicated throughout the entire ICS organization.
16 Everyone should be aware of the objectives for that operational period. The Incident Action Plan
17 is referenced and specifies the objectives outlined by the Incident Commander after he has
18 received guidance from the executive level officials who have given him the management
19 objectives. He studies the activities to be completed and covers a specified time frame called an
20 Operational Period.

21
22 With regard to integrated communications, Mr. Watkins stated that recently they had a
23 communications exercise in Salt Lake County. Within the fire service they communicate
24 throughout the valley. The computer-aided dispatch capability will be relevant in the new systems
25 coming out in the next 18 months. This includes use of the CAD system, which should result in
26 no delay in emergency response. On January 13, 1982, 72 people lost their lives when an Air
27 Florida flight crashed in Washington D.C. Crews responded quickly but could not coordinate
28 their efforts because they could not communicate by radio. On September 11, 2001 when
29 American Airlines Flight 77 crashed into the Pentagon, there were users on the scene from 50
30 different agencies who were able to communicate. Responding agencies had learned a valuable
31 lesson from the Air Florida tragedy.

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1
2 Thomas Miller overviewed the Unified Command and stated that those in command should figure
3 out and communicate the best way to mitigate whatever situation they are dealing with. The intent
4 of the Unified Command is to come together with one common operating picture. The primary
5 functions of an Area Command were described. Some positions include the Public Information
6 Officer who is very important in terms of communicating what is taking place. The intent is for
7 multiple people to communicate and come up with one message to be disseminated so that
8 everyone is well informed.

9
10 Natalie Hall addressed NIMS Preparedness and stated that it is what Bluffdale is working toward
11 in terms of compliance. Currently, they are working on a Continuity of Operations Fund, which
12 they do not presently have. This means that every position in the City needs three people. This is
13 difficult right now because Bluffdale is a very small city. They want to make sure that those
14 involved are completing all of the ICS training. On the City's website, Ms. Hall has linked the
15 ICS basic course. She will have representatives from each neighborhood and someone to
16 coordinate the neighborhood plan. A drill was scheduled for Monday, November 7, when they
17 will be activating their ECC with all personnel in the City who will be involved with the General
18 Command System.

19
20 In preparation for the drill all employees were encouraged to complete IS-100, IS-200, IS-700, and
21 IS-800. Mr. Reid pointed out that they can all be done online. Ms. Hall stated that at some point
22 employees may be required to complete the trainings although presently it is just requested. Mr.
23 Reid stated that employees are offered a \$25 incentive to complete the trainings and he has been
24 pleased by the variety of people who have taken it. Ms. Hall explained that the IS-300 course is a
25 two-day course that takes 16 hours to complete. Mayor Timothy felt that because it is so
26 important, it should be required of all employees since the class is coming to the City.

27
28 Mr. Miller stated that the class can be intimidating so employees need encouragement. The test is
29 online and can be taken as many times as necessary in order to pass. Ways to rotate employees
30 through the training were discussed. Mr. Miller stated that in the event of a large-scale
31 emergency, every employee will be involved in some capacity. The IS-300 course is relevant

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 because it involves supervising people in a disaster. It was stated that the role of policy is to give
2 direction in the event of a disaster. Mr. Miller stated that there are issues within the community
3 that need to be addressed. They also need to collaborate and make sure there is a consensus on
4 management objectives. The Council's role is to support the Incident Commander through
5 strategic planning and collaborative efforts and communicating the management objectives.

6
7 Mr. Reid stated that frequently they have incidents in the field where Fire Chief, John Roberts, has
8 to come back to the station to supervise the first responders. Until recently the Incident Command
9 has been on the scene of an incident. Mr. Miller stated that the Incident Command should be in
10 the field. If a situation is under control it can be supported from the Emergency Operations
11 Center.

12
13 NIMS preparedness issues were next addressed by Ms. Hall. Mr. Miller reported that on an
14 annual basis an All Hazards Academy takes place in Salt Lake County where they perform
15 position specific training. The Finance Section Sheet Class lasts about one week and requires
16 prior completion of IS-100, IS-200, IS-700, IS-800, and IS-300. It provides valuable information
17 and helps participants understand how to record and document all of the different hours including
18 volunteer hours.

19
20 Mr. Miller stated that all of the classes central to the Incident Management Team are excellent
21 training for anyone in Public Works who works on a supervisory level. The planning sections are
22 also beneficial. The end result is that personnel know exactly what to do in the event of an
23 emergency.

24
25 Ms. Hall explained that when there is a disaster, until an emergency is declared, the City is 100%
26 responsible financially. It is a gamble in terms of determining that threshold. Once an emergency
27 is declared, things change again, and potentially even the Form of Government. Mr. Miller stated
28 that the threshold he looks at when jurisdictions declare an emergency is when they have exceeded
29 their resources and capability. He remarked that it is better to pull the trigger earlier than later.
30 The threshold for Salt Lake County is only \$3.6 million and \$8.6 million for the state.

31

DRAFT – FOR DISCUSSION PURPOSES ONLY

**BLUFFDALE CITY COUNCIL
SPECIAL MEETING MINUTES
Wednesday, September 21, 2016**

1 The designated positions in the City were as follows:
2

- 3 Commander - Fire Chief, John Roberts
- 4 ECC Coordinator – Natalie Hall
- 5 Operations Chief – Stephanie Thayer
- 6 Incident Operator – unknown
- 7

8 It was reported that the HAM Radio Club trains on the 2nd and 4th Tuesday of each month. They
9 also check in every Sunday on the net. In the event of an incident they would come to City Hall
10 for communication. They would then open up the net and check in throughout the City. The goal
11 is to have five or six licensed HAM radio operators active and trained in every section of the City.
12 Ms. Hall stated that they are also working with the new EOC on how to best have the new
13 building wired for HAM radios. They are currently planning for towers and wiring.

14
15 Mr. Reid stated that the City has two satellite phones and a communications box containing police,
16 fire, and public work radios. Communication was acknowledged as a very important component.
17 Other communication methods were described as well. Mr. Reid felt that the most common
18 incident they will have in the City will pertain to motorists being stranded because of snow.

19
20 Ms. Hall reported that she gets information daily about incidents throughout the state and anything
21 that effects the City through the Health Department. She is always aware of what is going on in
22 the City.

23
24 **4. Adjournment.**
25

26 The City Council Special Meeting adjourned at 8:39 p.m.
27
28
29

30 _____
31 Wendy L. Deppe, CMC
32 City Recorder:
33

34 Approved: _____



14175 Redwood Road, Bluffdale, Utah 84065; Tel. 801-559-7781; mfazio@bluffdale.com

Memo

Date: 7 October 2016

From: Michael Fazio, P.E. 

To: Mark Reid, City Manager

Mayor Timothy

City Council

CC:

RE: Water System Master Plan – Presentation

Steve Jones of Hansen, Allen and Luce (HAL) have been working in the last few months to prepare a Water System Master Plan. The main purpose of the master plan is to assess the current condition of our system and plan for the future needs of the City. As part of the master plan, the whole system was surveyed and modeled to assess the ability of the City to supply water to our current and future customers.

HAL is nearing the completion of their work and would like to present the information to City Council for consideration and comments so the plan can be finalized for adoption.



WATER MASTER PLAN PART I: DRINKING WATER

(HAL Project No.: 394.01.100)

DRAFT

October 2016

CITY OF BLUFFDALE

WATER SYSTEM MASTER PLAN
PART I: DRINKING WATER

(HAL Project No.: 394.01.100)

Steven C. Jones, P.E.
Principal, Project Manager



October 2016

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APPENDIX A

Hydraulic Model Calibration Data

APPENDIX B

Checklist for Hydraulic Model Design Elements Report

APPENDIX C

JVWCD Water Storage Agreement

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City of Bluffdale

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Blaine Dietrich, Public Works Operations Manager

GLOSSARY

Average Daily Flow: The average yearly demand volume expressed in a flow rate.

Average Yearly Demand: The volume of water used during an entire year.

Build-out: When the development density reaches maximum allowed by planned development.

Demand: Required water flow rate or volume.

Distribution System: The network of pipes, valves and appurtenances contained within a water system.

Drinking Water: Water of sufficient quality for human consumption. Also referred to as culinary or potable water.

Dynamic Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is flowing through the system.

Equivalent Residential Connection: A measure used in comparing water demand from non-residential connections to residential connections.

Fire Flow Requirements: The rate of water delivery required to extinguish a particular fire. Usually it is given in rate of flow (gallons per minute) for a specific period of time (hours).

Head: A measure of the pressure in a distribution system that is exerted by the water. Head represents the height of the free water surface (or pressure reduction valve setting) above any point in the hydraulic system.

Head Loss: The amount of pressure lost in a distribution system under dynamic conditions due to the wall roughness and other physical characteristics of pipes in the system.

Peak Day: The day(s) of the year in which a maximum amount of water is used in a 24-hour period.

Peak day Demand: The average daily flow required to meet the needs imposed on a water system during the peak day(s) of the year.

Peak Instantaneous Demand: The flow required to meet the needs imposed on a water system during maximum flow on a peak day.

Pressure-Reducing Valve (PRV): A valve used to reduce excessive pressure in a water distribution system.

Pressure Zone: An area within a distribution system in which water pressure is maintained within specified limits.

Service Area: Typically, the area within the boundaries of the entity or entities that participate in the ownership, planning, design, construction, operation, and maintenance of a water system.

Static Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is not flowing through the system, i.e., during periods of little or no water use.

Storage Reservoir: A facility used to store, contain and protect drinking water until it is needed by the customers of a water system. Also referred to as a Storage Tank.

Transmission Pipeline: A pipeline that transfers water from a source to a reservoir or from a reservoir to a distribution system.

Water Conservation: Planned management of water to prevent waste.

ABBREVIATIONS

ac	acre [area]
ac-ft	acre-foot (1 ac-ft = 325,851 gal) [volume]
DIP	Ductile Iron Pipe
EPA	U.S. Environmental Protection Agency
EPANET	EPA hydraulic network modeling software
ERC	Equivalent Residential Connection
ft	foot [length]
ft/s	feet per second [velocity]
gal	gallon [volume]
gpd	gallons per day [flow rate]
gpm	gallons per minute [flow rate]
HAL	Hansen, Allen & Luce, Inc.
hp	horsepower [power]
hr	hour [time]
in.	inch [length]
irr-ac	irrigated acre [area]
JVWCD	Jordan Valley Water Conservancy District
kgal	thousand gallons [volume]
LF	linear foot [length]
MG	million gallons [volume]
MGD	million gallons per day [flow rate]
NAIP	National Agricultural Imagery Program
mi	mile [length]
psi	pounds per square inch [pressure]
s	second [time]
SCADA	Supervisory Control And Data Acquisition
yr	year [time]

CHAPTER 1 - INTRODUCTION

PURPOSE AND SCOPE

The purpose of this part of the Water Mater Plan is to provide direction to the City of Bluffdale (the City) regarding decisions that will be made over the next 5 to 10 years to provide an adequate drinking water system for its customers. Recommendations are based on water use, growth projections, standards of the Utah Division of Drinking Water (DDW), the City's General Plan, and standard engineering practices. The planning horizon for the master plan is build-out, though the decision horizon is 5 to 10 years.

This part of the master plan is a study of the City's drinking water system. It addresses source requirements, storage requirements, and distribution system requirements. Capital improvements needed to meet the requirements have been identified and conceptual-level cost estimates have been provided.

The results of the study are limited by the accuracy of growth projections, data provided by the City, and other assumptions used in preparing the study. It is expected that the City will review and update this master plan every 5–10 years as new information about development, system performance, or water use becomes available.

BACKGROUND

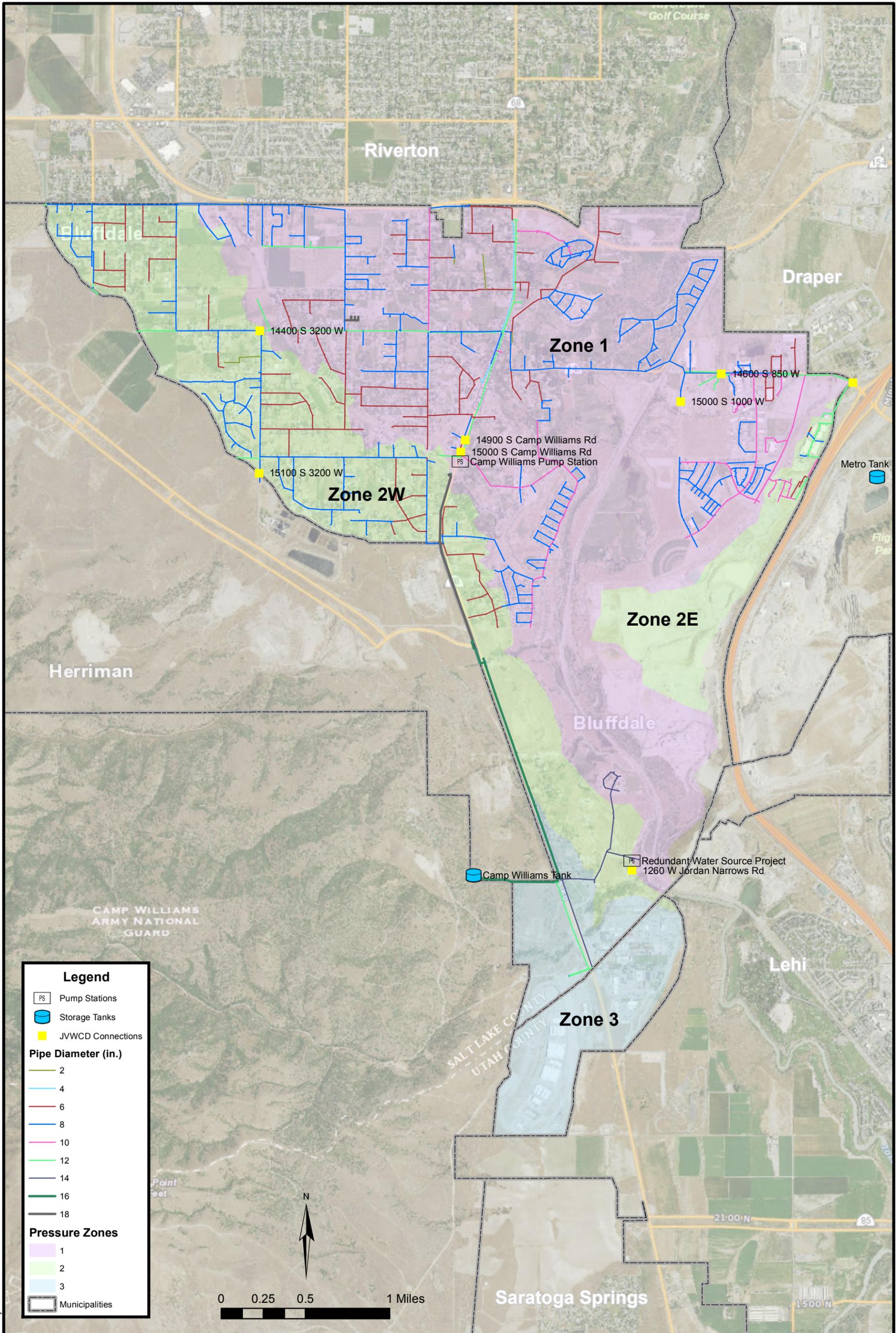
Bluffdale is located primarily in Salt Lake County, Utah, with a portion located in Utah County, Utah. The City is home to open spaces, dramatic views of the Wasatch Range, and a significant stretch of the Jordan River. Its unique semirural lifestyle has attracted many new residents and businesses, increasing the population in the last 20 years from about 1,700 to 8,000 and incurring rapid housing and infrastructure expansion (Bluffdale 2014a).

Figure 1-1 illustrates the extent of the City's drinking water system. As shown, the distribution network is divided into three pressure zones.

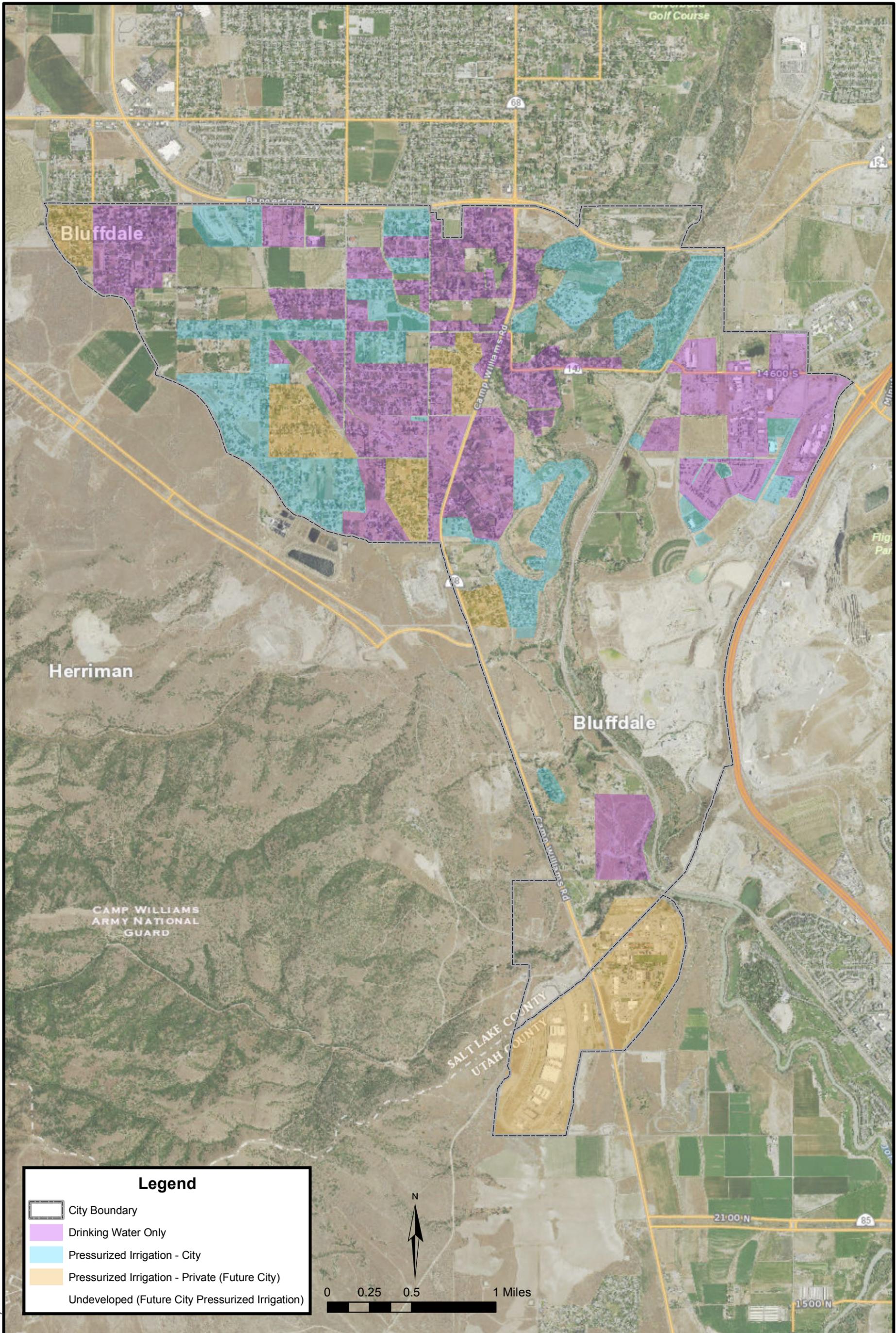
MASTER PLANNING APPROACH

The City's drinking water system consists of water sources, pumps, storage facilities, valves, and pipes. The system must be able to responding to daily and seasonal variations in demand while concurrently providing adequate capacity for firefighting and other emergency needs. In order to meet these goals, each of the system components must be properly designed and operated. Furthermore, careful planning is required in order to ensure that the system is capable of meeting the City's needs through build-out.

In addition to indoor uses, the City's drinking water system supplies water for outdoor irrigation to portions of Bluffdale. About 40 independent City-owned and private pressurized irrigation (PI)



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systems serve other areas. Service areas for both drinking water and pressurized irrigation systems were delineated during a March 2016 workshop with City staff (Figure 1-2).

For planning purposes, four scenarios were identified:

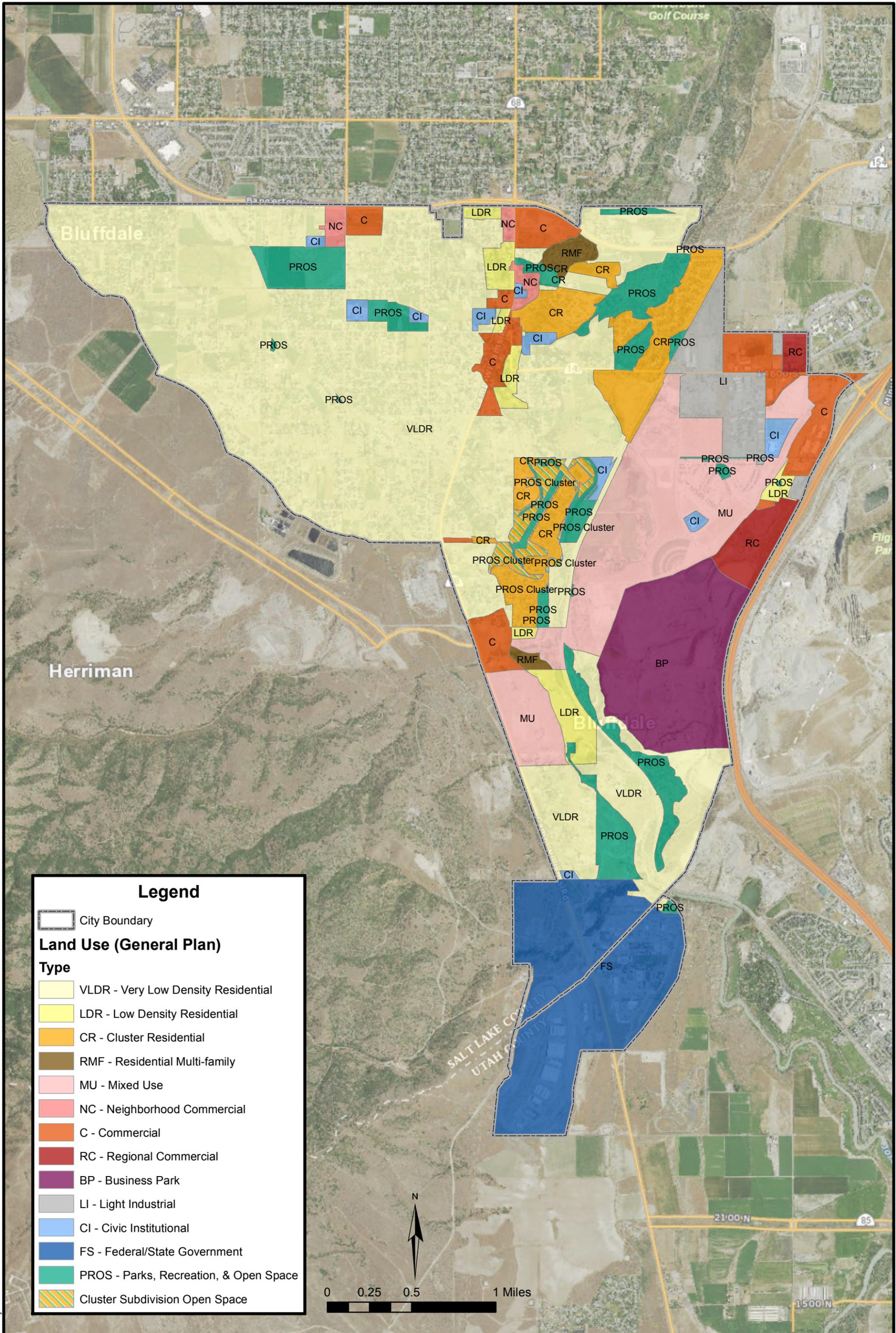
1. Irrigation by City pressurized irrigation systems (City owned, privately operated; built to City standards)
2. Irrigation by private pressurized irrigation systems (privately owned, privately operated), including dry pipelines
3. Irrigation by City drinking water system only (no pressurized irrigation system)
4. Undeveloped areas (future City pressurized irrigation systems)

The master plan assumes the following:

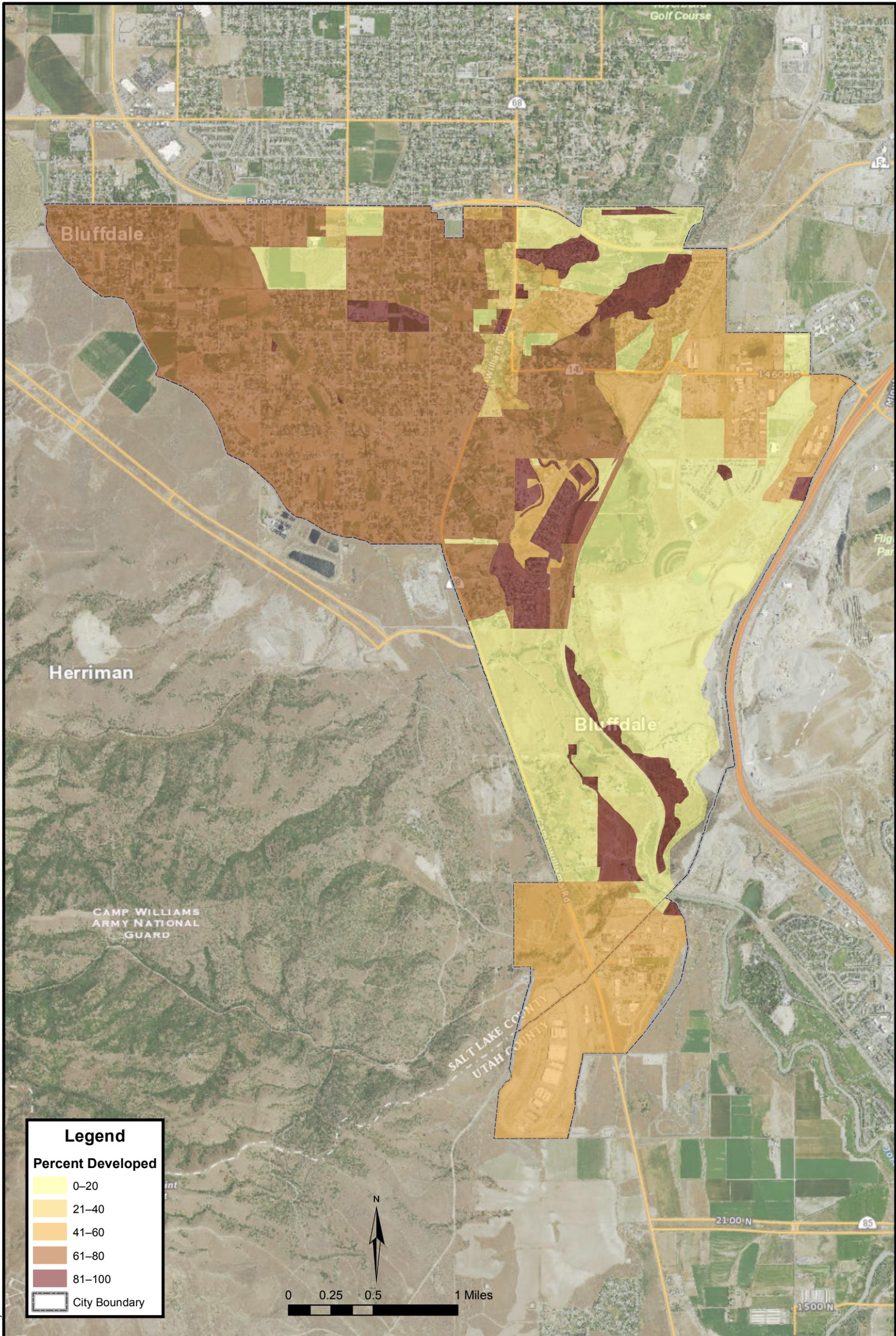
1. City pressurized irrigation systems will continue to irrigate their existing service areas. No drinking water demand for irrigation is assumed in these areas. Locations with dry pipelines (installed but not yet in service) will ultimately be supplied with a secondary water source.
2. Since the longevity of private pressurized irrigation systems is uncertain, irrigation demand in these areas will be planned as if supplied by the drinking water system.
3. Existing developments with only the City drinking water system (no pressurized irrigation) will continue to be irrigated with the City's drinking water system, except the area bounded by Redwood Road, 14400 South, 2700 West, and Bangerter Highway, which the City identified as a potential pressurized irrigation service area given an anticipated reclaimed water source. No new pressurized irrigation systems will be planned in areas already served by drinking water.
4. All new developments will require a working pressurized irrigation system constructed to City standards. The City will not allow any more private pressurized irrigation systems.

Both existing and future needs were evaluated in this master plan. Existing drinking water needs were calculated according to Utah Division of Drinking Water (DDW) requirements specified by state law and compared with actual drinking water use obtained from billing records, production data, and SCADA output. The extent of existing development was estimated from aerial imagery (AGRC 2014). Future drinking water use was projected by analyzing existing demands for each land use type in Bluffdale and applying the result to undeveloped areas according to the City's anticipated future land use as documented in the General Plan (Bluffdale 2014a, 2014b, 2015b). See Figures 1-3 and 1-4.

To facilitate the analysis of Bluffdale's drinking water system, a computerized hydraulic model was prepared in EPANET and analyzed in two steps. First, the performance of existing facilities with existing demands was analyzed. Next, projected future demands were input to the model and the analysis was repeated. Recommendations for system improvements were based on the



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Legend

Percent Developed

- 0-20
- 21-40
- 41-60
- 61-80
- 81-100

City Boundary

0 0.25 0.5 1 Miles

N

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results of these analyses. In general, this report follows the outline of the DDW requirements of section R309-510 of the Utah Administrative Code entitled “Minimum Sizing Requirements.”

KEY SYSTEM DESIGN CRITERIA

Tables 1-1 through 1-3 summarize the drinking water system design criteria. The design criteria, described in later chapters, were used to evaluate system performance and recommend future improvements. Since the drinking water system is the only source of irrigation in some parts of Bluffdale, the corresponding outdoor demand has been allocated to the drinking water system.

Since the drinking water system is regulated under state law, the design criteria, whether for indoor or outdoor use, follow the standards of R309-510. In HAL’s experience with numerous Utah water systems, the indoor criteria tend to be conservative and the outdoor criteria tend to be insufficient. For Bluffdale, a combination of both criteria will provide a sufficient level of service for both indoor and outdoor uses of drinking water.

It is important to clarify that demands were not computed from population estimates since such an approach would blur important local differences. Rather, HAL followed a more detailed approach that considered the different land uses, housing densities, and irrigated areas in the General Plan. The drinking water system’s service of both indoor and outdoor uses, as well as the heterogeneous development density proposed in the General Plan, merited a more rigorous approach to quantifying both types of demands in their respective geographic service areas.

Table 1-1: Key Drinking Water System Design Criteria (Indoor)

Parameter	Criteria	Existing Requirements (2015)	Estimated Build-Out Requirements (2045)
Equivalent Residential Connections	Calculated	3,434 ERC	12,277 ERC
Source			
Peak Day Demand ¹	800 gpd/ERC	1,908 gpm	6,820 gpm
Average Yearly Demand ¹	0.45 ac-ft/ERC	1,545 ac-ft	5,525 ac-ft
Storage			
Equalization ¹	400 gal/ERC	1.37 MG	4.91 MG
Fire Suppression ²	4,000 gpm × 4 hr × 2	1.92 MG	1.92 MG
Distribution			
Peak Instantaneous Flow ³	1.67 × Peak Day Demand	3,185 gpm	11,389 gpm
Minimum Fire Flow ²	1,500 gpm @ 20 psi	1,500 gpm	1,500 gpm
Max. Operating Pressure	City Preference	130 psi	130 psi
Min. Operating Pressure	City Preference	50 psi	50 psi

1. Utah Administrative Code R309-510 as of Jan. 1, 2016

2. Requirement to be determined by Bluffdale Fire Chief

3. Observed 2015 data suggests a peaking factor of 1.67

Table 1-2: Key Drinking Water System Design Criteria (Outdoor)

Parameter	Criteria	Existing Requirements (2015)	Estimated Build-Out Requirements (2045)
Irrigated Acreage	Calculated	600 irr-ac	1,482 irr-ac
Source			
Peak Day Demand ¹	4.52 gpm/irr-ac	2,712 gpm	6,698 gpm
Average Yearly Demand	2.69 ac-ft/irr-ac	1,614 ac-ft	3,987 ac-ft
Storage			
Equalization ¹	4,081 gal/irr-ac	2.45 MG	6.05 MG

1. Utah Administrative Code R309-510 as of Jan. 1, 2016

Table 1-3: Key Drinking Water System Design Criteria (Indoor and Outdoor)

Parameter	Existing Requirements (2015)	Estimated Build-Out Requirements (2045)
Approximate City Population¹	11,000	39,000
Source		
Peak Day Demand	4,620 gpm	13,518 gpm
Average Yearly Demand	3,159 ac-ft	9,512 ac-ft
Storage		
Equalization	3.82 MG	10.96 MG
Fire Suppression	1.92 MG	1.92 MG
Total	5.74 MG	12.88 MG
Distribution		
Peak Instantaneous Flow	7,713 gpm	22,575 gpm
Minimum Fire Flow	1,500 gpm	1,500 gpm
Max. Operating Pressure	130 psi	130 psi
Min. Operating Pressure	50 psi	50 psi

1. Existing estimate: USCB (2015). Build-out estimate: Horrocks Engineers (2015). Calculations are not based on population, but rather the equivalent residential connections and irrigated areas presented in Tables 1-1 and 1-2, respectively.

Table 1-4 summarizes observed demands over a one-year period based on deliveries from Jordan Valley Water Conservancy District (JVWCD 2015a). The values include both indoor and

outdoor uses. The peak day demand of 3,229 gpm was selected as the design flow for hydraulic modeling, where accurate results of flows, pressures, elevations, and water quality are desired.

Table 1-4: Observed 2014–2015 Drinking Water Use

Parameter	Unit Water Use ¹	Total Water Use ¹
Peak Day Demand	1,354 gpd/ERC	3,229 gpm
Average Yearly Demand	0.57 ac-ft/ERC	1,957 ac-ft

1. Based on JWCD deliveries, July 2014–June 2015. Includes indoor and outdoor use supplied by drinking water system.

PRESSURE ZONES

The City's drinking water system consists of three main pressure zones as shown in Figure 1-1 and Table 1-5, delineated by their respective hydraulic grade lines and physical boundaries. Note that Zones 2E and 2W (east and west) are hydraulically similar but geographically separated. These two zones may be connected with a pipeline through the planned Porter Rockwell Boulevard or some other convenient corridor.

The design criteria presented in this master plan are separated by pressure zone to enable zone-specific planning.

Table 1-5: Drinking Water Pressure Zones

Zone	Description	Approx. Head (ft)	Lower Service Elevation (ft)	Upper Service Elevation (ft)
1	Northern and central Bluffdale	4740	4440	4625
2E	Gravel pit	4900	4600	4785
2W	Western Bluffdale	4900	4600	4785
3	Southern Bluffdale (Camp Williams, Utah Data Center)	5010	4710	4895

CHAPTER 2 - CONNECTIONS

EXISTING CONNECTIONS

According to the Utah Division of Water Rights, the City's drinking water system included 2,698 connections in the year 2015 (DWR 2015). Since not all connections are equal, non-residential connections were converted to Equivalent Residential Connections (ERCs) for consistent analysis of indoor water demands. The number of ERCs served by the City's drinking water system was calculated in accordance with guidelines provided by R309-110-4 and summed by pressure zone. See Table 2-1. A geographic dataset built on area and land use from the General Plan (Figure 1-3), plus an estimate of existing development based on aerial imagery (Figure 1-4), was calibrated to match the number of observed ERCs reported to the Division of Water Rights.

Table 2-1: Existing Indoor Connections

Zone	Connections (ERC)
1	2,020
2E	92
2W	702
3	620
Total	3,434

Since the drinking water system provides some outdoor irrigation, these demands must be included. Existing irrigation density (i.e., the percentage of irrigated area relative to the gross development area) for each land use was estimated from 2014 NAIP aerial imagery (AGRC 2014) and summed by pressure zone as documented in Part II of this master plan. See Table 2-2. Like indoor demand, outdoor demand was computed area-by-area in a geographic dataset.

Table 2-2: Existing Outdoor Irrigation

Zone	Irrigated Area (irr-ac)
1	320
2E	4
2W	276
3	0
Total	600

BUILD-OUT CONNECTIONS

The number of build-out ERCs was determined by estimating demands for a fully built-out condition according to housing densities and land uses defined in the General Plan. As with existing demands, a geographic dataset was calibrated to match the total build-out estimate. See Table 2-4.

Table 2-3: Build-Out Indoor Connections

Zone	Connections (ERC)
1	8,240
2E	1,494
2W	1,826
3	717
Total	12,277

The projection of outdoor demands followed a similar process, where observed irrigation densities were applied to a fully built-out condition. See Table 2-5.

Table 2-4: Build-Out Outdoor Irrigation

Zone	Irrigated Area (irr-ac)
1	1,081
2E	4
2W	397
3	0
Total	1,482

CHAPTER 3 - SOURCES

EXISTING SOURCES

JVWCD currently provides all of Bluffdale's drinking water under a renewable contract. At the time of this master plan, six delivery locations are active and two more are planned as shown in Table 3-1 (JVWCD 2016a). The sources currently have a total capacity of 2,900 gpm and 1,710 ac-ft.

Table 3-1: Existing Drinking Water Sources

Source	Pressure Zone	Diameter (in.)	Contract Flow Capacity ² (gpm)	Contract Volume Capacity ³ (ac-ft)
JVWCD 14400 S 3200 W	1	12	650	383
JVWCD 14600 S Pony Express Rd	1	12 and 6	200	118
JVWCD 14600 S 850 W	1	12 and 6	150	88
JVWCD 14900 S Camp Williams Rd	1	10	350	207
JVWCD 15000 S Camp Williams Rd	1	18	750	442
JVWCD 15000 S 1000 W (Westgate) ¹	1	12	200	118
JVWCD 1260 W Jordan Narrows Rd ¹	1	12	150	88
JVWCD 15100 S 3200 W ⁴	2W	8	450	265
Total			2,900	1,710

1. Proposed 2016 delivery location

2. Maximum average over 24 hr period per contract

3. Approximate volume pending new contract

4. Relocated from 15300 S 3200 W

PUMP STATIONS

Bluffdale has two pump stations. See Table 3-2. The pump stations allow the City to supply water to zones that do not have their own sources. The rated capacity of a pump station is the total flow of the pump station with largest pump out of service.

Table 3-2: Existing Drinking Water Pump Stations

Name	Location	From Zone	To Zone	Pumps	Rated Capacity (gpm)
Camp Williams Pump Station	15000 S Camp Williams Rd	2W	3		750
Redundant Water Source Project	Jordan Narrow Rd			2 x 900 gpm @ 400 ft	900

EXISTING SOURCE REQUIREMENTS

State standards require that drinking water sources must be able to meet the expected demand for two conditions: peak day demand and average yearly demand. Peak day demand is the water demand on the day of the year with the highest water use and is used to determine the required source capacity under existing and build-out conditions. Water utilities must also be able to supply the average yearly demand. Average yearly demand is the average volume of water used during the course of one year.

Existing Peak Day Demand

According to state drinking water standards for the existing indoor and outdoor uses described in Chapter 2, the peak day source capacity required to meet the City’s existing drinking water demand is **4,620 gpm**. Table 3-3 presents existing source requirements for each pressure zone. Sources produce water, but pump stations only move water.

Existing Average Yearly Demand

According to state drinking water standards for the existing indoor and outdoor uses described in Chapter 2, the average yearly source capacity required to meet the City’s existing drinking water demand is **3,159 ac-ft**. Table 3-3 presents existing source requirements for each pressure zone.

Table 3-3: Existing Drinking Water Source Requirements

Pressure Zone	Peak Day Demand¹ (gpm)	Average Yearly Demand¹ (ac-ft)	Existing Capacity (gpm)	Existing Capacity (ac-ft)	Surplus (Deficit) Capacity (gpm)	Surplus (Deficit) Capacity (ac-ft)
1	2,568	1,770	2,450 ²	1,445 ²	(117)	(325)
2E	69	52	0	0	(69)	(52)
2W	1,638	1,058	450 ²	265 ²	(1,188)	(793)
3	344	279	750 ³	1,210 ³	406 ³	931 ³
Total	4,620	3,159	2,900 source 750 pump	1,710 source 1,210 pump	(1720 source) 406 pump	(1,449 source) 931 pump

1. Includes indoor and outdoor use on drinking water system
2. Approximate pending new JWWCD contract
3. Camp Williams Pump station

BUILD-OUT SOURCE REQUIREMENTS

Water demands will increase with development. Future source requirements were determined in the same manner as existing source requirements.

Build-Out Peak Day Demand

According to state drinking water standards for the future indoor and outdoor uses described in Chapter 2, the peak day source capacity required to meet the City’s build-out drinking water demand is **13,518 gpm**. Table 3-4 presents build-out source requirements for each pressure zone.

Build-Out Average Yearly Demand

According to state drinking water standards for the future indoor and outdoor uses described in Chapter 2, the average yearly source capacity required to meet the City’s build-out drinking water demand is **9,512 ac-ft**. Table 3-4 presents build-out source requirements for each pressure zone.

Table 3-4: Build-Out Drinking Water Source Requirements

Pressure Zone	Peak Day Demand ¹ (gpm)	Average Yearly Demand ¹ (ac-ft)	Existing Capacity (gpm)	Existing Capacity (ac-ft)	Surplus (Deficit) Capacity (gpm)	Surplus (Deficit) Capacity (ac-ft)
1	9,463	6,616	2,450 ²	1,445 ²	(7,013)	(5,171)
2E	848	683	0	0	(848)	(683)
2W	2,809	1,890	450 ²	265 ²	(2,359)	(1,625)
3	398	323	750 ³	1,210 ³	352 ³	887 ³
Total	13,518	9,512	2,900 source, 750 pump	1,710 source, 1,210 pump	(11,808 source) 352 pump	(7,802 source) 887 pump

1. Includes indoor and outdoor use on drinking water system

2. Approximate pending new JWCD contract

3. Camp Williams pump station

SOURCE RECOMMENDATIONS

The drinking water source requirements described in this chapter are prescribed by state law and are sufficiently conservative for most water systems. Bluffdale's observed demands are less than the calculated state requirements. As presented in Table 1-4, the observed peak day and average yearly demands are 3,229 gpm and 1,957 ac-ft, respectively, which are at least 30% less than the calculated requirement of 4,620 gpm and 3,159 ac-ft. The state requires certain source capacity for every water system, regardless of how much water is actually used. Bluffdale consumes less drinking water than the state requires. This is normal and includes redundancy in the case of source disruptions.

JWCD supplies 100% of Bluffdale's drinking water. The proposed contract for 2,900 gpm and 1,710 ac-ft approximates the observed demands and is sufficient for existing conditions. Even though the contract amount is less than the source requirement and the observed demand, the physical capacity for more water exists and the JWCD contract allows Bluffdale to purchase additional water if needed.

It is recommended that Bluffdale continue to contract with JWCD for drinking water. The City should monitor water use and update the contract accordingly. The contract amount should not exceed the amount of water the City can use in one year because the contract must be paid whether or not the City uses the water. The physical connection capacity, however, should be sufficient to satisfy the existing source requirements.

As undeveloped land in Bluffdale continues to be developed at higher density, additional source capacity will be necessary. The preferred location for a future JWCD connection, as identified from hydraulic modeling, is within Zone 1 at about 1000 West 15000 South. The future

connection should be installed along with a new transmission pipeline and storage reservoir as described in Chapters 4 and 5 of this report.

CHAPTER 4 - STORAGE

EXISTING STORAGE

The City's current drinking water system includes two storage facilities shown in Figure 1-1 with a total capacity of 6.0 MG. Table 4-1 presents their attributes.

Table 4-1: Existing Drinking Water Storage Tanks

Name	Zone	Volume (MG)
Camp Williams Tank	3	3.0
Metro Tank ¹	1	3.0

1. Bluffdale owns exclusive capacity of 3.0 MG in this tank

EXISTING STORAGE REQUIREMENTS

According to state standards, drinking water storage tanks must be able to provide equalization storage volume to make up the difference between the peak day flow rate and the peak instantaneous demand. The state requires equalization storage of 400 gallons per ERC. Additional fire suppression storage to supply water for firefighting beyond the usual equalization storage is also required.

State standards recommend that emergency storage be considered in the sizing of storage facilities (R309-510-8(1)(c)). Emergency storage is intended to provide a safety factor that can be used in the case of unexpectedly high demands, pipeline failures, equipment failures, electrical power outages, water supply contamination, or natural disasters. Based on HAL's previous experience developing master plans, no emergency storage has been recommended because the required equalization storage as set by R309-510-8 is sufficiently conservative such that additional storage for emergencies is not needed.

Table 4-2 summarizes the existing drinking water storage requirements by pressure zone. Overall, the City has an existing surplus of 0.26 MG in drinking water storage capacity, though certain zones are deficient in storage.

Equalization Storage

The need for equalization storage is highest during the irrigation season on days of peak water use. Equalization storage is used to meet peak demand during the time when demand exceeds the source capacity. For Bluffdale, the required equalization storage was calculated according to the guidelines outlined by R309-510-8(2). The existing equalization storage requirement for Bluffdale was found to be **3.82 MG**.

Table 4-2: Existing Drinking Water Storage Requirements

Pressure Zone	Required Storage (MG)			Existing Capacity (MG)	Surplus (Deficit) Capacity (MG)
	Equalization ¹ (MG)	Fire Suppression ² (MG)	Total (MG)		
1	2.11	0.00 ³	2.11	3.00	0.89
2E	0.05	0.00 ³	0.05	0.00	(0.05)
2W	1.41	0.00 ³	1.41	0.00	(1.41)
3	0.25	1.92	2.17	3.00	0.83
Total	3.82	1.92	5.74	6.00	0.26

1. Includes indoor and outdoor use on drinking water system

2. Assumes 4,000 gpm x 4 hr for two pressure zones

3. Assumes storage in Zone 3

Fire Suppression Storage

Fire suppression storage is required for water systems that provide water for firefighting. For master planning of Bluffdale’s drinking water storage facilities, a fire flow of 4,000 gpm for 4 hours in two pressure zones was assumed, for a total of **1.92 MG**. The City’s fire chief may determine different criteria according to the building with the highest fire flow requirement in each pressure zone.

In addition, the water system should be managed so that the storage volume dedicated to fire suppression is available to meet fire flow requirements whenever or wherever it is needed. This can be accomplished by designating minimum water levels that provide reserve storage equal to the required fire suppression storage. Although it is important to utilize equalization storage, typical daily water fluctuations in the tanks should never encroach on the established levels except during fire or emergency situations.

BUILD-OUT STORAGE REQUIREMENTS

The storage volumes required at build-out are based on the same criteria described for existing conditions. The build-out equalization storage will be higher than existing conditions, however, due to growth.

Table 4-3 summarizes the build-out drinking water storage requirements by pressure zone. Overall, the City has a deficit of 6.88 MG.

Table 4-3: Build-Out Drinking Water Storage Requirements

Pressure Zone	Required Storage (MG)			Existing Capacity (MG)	Surplus (Deficit) Capacity (MG)
	Equalization ¹ (MG)	Fire Suppression ² (MG)	Total (MG)		
1	7.71	0.00 ³	7.71	3.00	(4.71)
2E	0.61	0.00 ³	0.61	0.00	(0.61)
2W	2.35	0.00 ³	2.35	0.00	(2.35)
3	0.29	1.92	2.21	3.00	0.79
Total	10.96	1.92	12.88	6.00	(6.88)

1. Includes indoor and outdoor use on drinking water system

2. Assumes 4,000 gpm x 4 hr for two zones

3. Assumes storage in Zone 3

STORAGE RECOMMENDATIONS

To address existing and future storage deficiencies, it is recommended that Bluffdale first construct a 3 MG water tank in Zone 2 (assuming that Zones 2E and 2W will be connected). To address future storage deficiencies, it is recommended that Bluffdale later construct a 5 MG water tank in Zone 1.

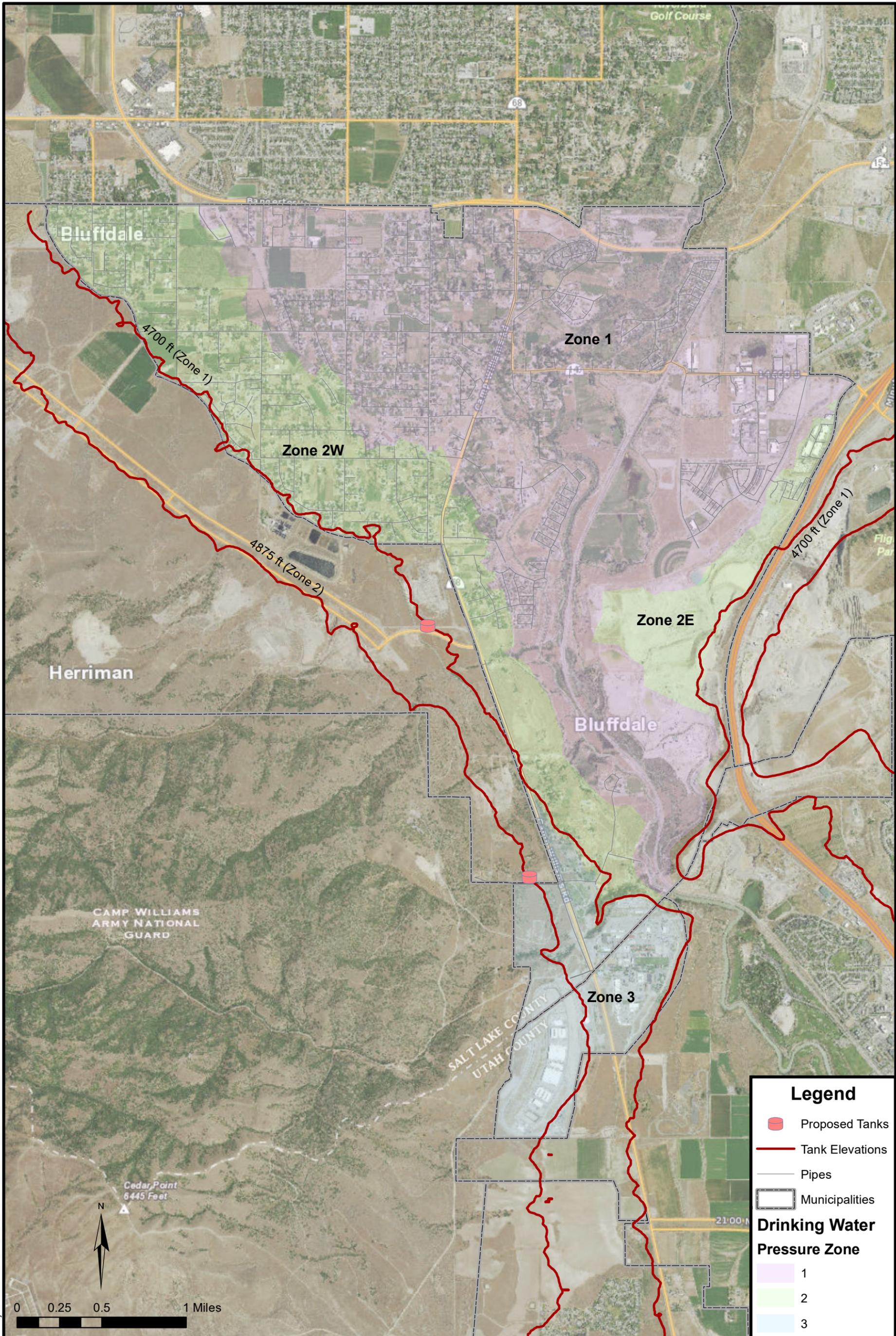
The planning of Bluffdale’s future water infrastructure hinges critically on the proper siting of drinking water and pressurized irrigation storage facilities. Their locations will influence the layout of major transmission pipelines, pump stations, and water sources.

Figure 4-1 shows recommended elevations for drinking water storage tanks. The elevations indicated correspond to the approximate hydraulic grade line of each pressure zone. To the degree possible, tanks should be located near these elevations in order to minimize pumping requirements and provide efficient and reliable service. Preferred locations are also shown for each tank. The preferred locations were selected in order to place the proposed tanks at the proper elevations, to make use of existing facilities where possible, and to minimize the costs associated with future infrastructure.

The recommended location for the Zone 1 tank is just north of Porter Rockwell Boulevard on the west side of Redwood Road. Herriman City is planning a park in this area and has expressed willingness to work with Bluffdale on siting a water tank there. The City’s master transportation plan shows a planned extension of Porter Rockwell Boulevard eastward across the Jordan River. The preferred Zone 1 tank site will allow the City to take advantage of the planned road construction to place a new Zone 1 transmission along the future street alignment. The new transmission line will connect the Zone 1 tank to the proposed JWWCD connection mentioned in Chapter 3 while also distributing source water throughout Zone 1.

The preferred site for the Zone 2 tank is just east of the existing Zone 3 tank. In order to place a Zone 2 tank at that location, several modifications will be needed within the distribution system. First, the 16-inch transmission pipeline in Redwood Road between 15400 South and the intersection with Jordan Narrows Road will need to be isolated as a Zone 2 transmission pipeline. Isolating the pipeline can be accomplished by opening the existing PRV at 15400 South Redwood Road and by reconfiguring the piping and valves at the intersection of Redwood Road and Jordan Narrows Road. The pipe and valves would be altered so that the Zone 2 tank would be connected to the pipeline north of Jordan Narrows Road and the Zone 3 tank would be connected to the pipeline to the south. The Camp Williams pump station would also need to be reequipped to pump to Zone 2 pressure rather than Zone 3 pressure. The final change that would be needed is to add a new pump station between the Zone 2 Tank and the Zone 3 supply pipeline.

There are several benefits associated with placing the Zone 2 tank at the recommended location. One benefit is that it allows the City to take advantage of the capacity in the existing 16-inch Redwood Road pipeline. The 16-inch pipeline has adequate capacity to meet the projected build-out demands for Zone 2. Using the capacity in this way reduces the need for future infrastructure. The new tank will also be conveniently located near the Zone 3 tank. The supply lines for the two tanks will be able to share the same right-of-way and adding a new pump station to pump from Zone 2 to Zone 3 will be straightforward. In addition, homes in the area of Jordan Narrows Road are served by Zone 3 and have very high pressures, reaching over 200 psi. After adding the Zone 2 tank, these homes could be served off the Zone 2 portion of the Redwood Road pipeline. Switching the homes to the Zone 2 would reduce pressures to about 140 psi.



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CHAPTER 5 - DISTRIBUTION SYSTEM

EXISTING DISTRIBUTION SYSTEM

The drinking water distribution system consists of all pipelines, valves, fittings, and other appurtenances used to convey water from water sources and storage tanks to water users. The existing pipe network contains about 80 mi of pipe.

EXISTING DISTRIBUTION SYSTEM REQUIREMENTS

Utah Administrative Code R309-105-9 requires the following minimum water pressure constraints for drinking water distribution systems: (a) 20 psi during conditions of fire flow experienced during peak day demand; (b) 30 psi during peak instantaneous demand; and (c) 40 psi during peak day demand. Bluffdale prefers that the distribution system maintain a minimum of 50 psi at all points in the system under peak instantaneous conditions to avoid complaints.

Existing Peak Day plus Fire Flow Demand

The distribution system must be able to deliver fire flow to a specified location within the system while supplying the peak day demand (4,620 gpm) and to maintain a **20 psi** minimum pressure at all service connections (R309-105-9(2)(a)). A minimum fire flow capacity of 1,500 gpm is recommended for all fire hydrants in the system. Larger fire flows are required at larger structures throughout the system based on the International Fire Code and recommendations from the Bluffdale Fire Department. The scenario was modeled with a peak day demand of 4,620 gpm plus a minimum fire flow of 1,500 gpm.

Existing Peak Instantaneous Demand

Pipes in the distribution system must be large enough to convey the peak instantaneous demand while maintaining a minimum pressure of **30 psi** at all service connections (R309-105-9(2)(b)). The observed peak instantaneous demand was 5,392 gpm (JVWCD 2015b). For modeling, the calculated existing peak instantaneous demand of 7,713 gpm was used for analysis.

Existing Peak Day Demand

Pipes in the distribution system must be large enough to convey the peak day demand while maintaining a minimum pressure of **40 psi** at all service connections (R309-105-9(2)(c)). The observed peak day demand was 3,229 gpm (JVWCD 2015b). For modeling, the calculated peak day demand of 4,620 gpm was used for analysis.

BUILD-OUT DISTRIBUTION SYSTEM REQUIREMENTS

The existing system distribution requirements for minimum pressures also apply to the projected build-out system.

Build-Out Peak Day plus Fire Flow Demand

The build-out peak day plus fire flow scenario was evaluated in a similar manner as compared to the existing peak day plus fire flow scenario. It was assumed that the fire flow requirements would not change between the existing and build-out conditions. Generally, this is a conservative assumption as, over time, older buildings are replaced with newer buildings constructed in accordance with updated building codes. The build-out fire flow scenario was modeled with a peak day demand of 13,518 gpm plus a minimum fire flow of 1,500 gpm.

Build-Out Peak Instantaneous Demand

The build-out peak day design flow for the distribution system is 13,518 gpm. Assuming the same observed peaking factor of 1.67 applies to the build-out peak day demand, peak instantaneous demand as build-out is 22,575 gpm.

Build-Out Peak Day Demand

The build-out peak day design flow for the distribution system is 13,518 gpm.

HYDRAULIC MODEL

A computerized hydraulic model of the City's water distribution system was developed to analyze the performance of the existing and future distribution system and to prepare solutions for existing facilities that cannot meet the design criteria for water system pressures. The software used for the model was EPANET 2.0. This program, developed by the U.S. Environmental Protection Agency, models the hydraulic behavior of pipe networks. At the beginning of the master plan study, Bluffdale provided HAL with a drinking water model that HAL then updated to existing conditions with data and direction from City staff.

Hydraulic models were developed for three phases of water system development. The first phase was the development of a model of the existing system (existing model). This model was used for calibration and to identify deficiencies in the existing system. A second model was developed which was used to identify those corrections necessary to improve existing system deficiencies (corrected existing model). The third phase was the development of a future model to indicate those improvements that will be necessary for the projected "build-out" condition (future model).

MODEL COMPONENTS

The two basic elements of the hydraulic model are pipes and nodes. A pipe is described by its inside diameter, overall length, minor friction loss factors, and a roughness value associated with friction head losses. A pipe can include elbows, bends, valves, pumps, and other operational elements. Nodes are the endpoints of a pipe and can be categorized as junction nodes or boundary nodes. A junction node is a point where two or more pipes meet, where a change in pipe diameter occurs, or where flow is put in or taken out of the system. A boundary node is a point where the hydraulic grade is known (a reservoir or PRV).

The hydraulic model of the water distribution system is not an exact replica of the actual water system. Pipeline locations used in the model are approximate and every pipeline may not be included in the model, although efforts were made to make the model as complete and accurate as possible. It is not necessary to include all of the distribution system pipes in the model to accurately simulate its performance.

Pipe Network

The pipe network was provided in the City's original hydraulic model delivered to HAL for this project. HAL assumed the layout, connectivity, and sizing to be accurate as provided.

Demands

Drinking water demands were geocoded from June 2015 billing data (Bluffdale 2015a) and input into the model. "Geocoded" means that the addresses associated with the water uses were translated into X and Y coordinates so the water uses would be represented in their actual geographic location, rather than allocating the water uses throughout the system in some other, more approximate way. The peak monthly demands were then scaled to peak day conditions determined from SCADA observations (JWWCD 2015b). Modeling for distribution system sizing used the design criteria, which are greater than the observed peak day demand.

A demand pattern was developed from SCADA data provided by JWWCD (2015b). The non-dimensional demand curve is shown in Figure 5-1.

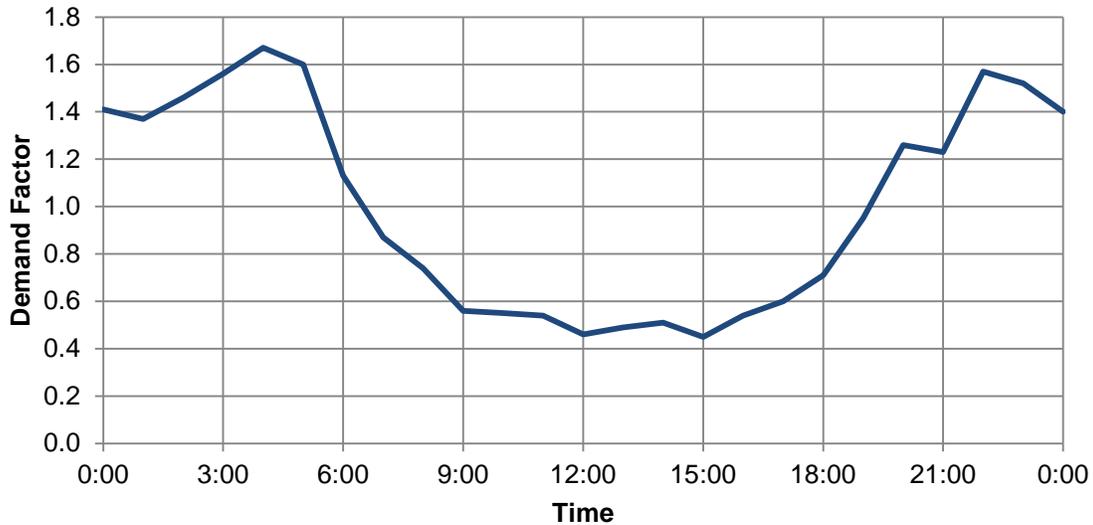


Figure 5-1: Non-dimensional Peak Day Demand Pattern for Drinking Water

The peak instantaneous demand occurs overnight, presumably due to irrigation supplied by the drinking water system.

Sources and Storage Tanks

The sources of water in the model are six JVVCD connections and the City's two storage facilities. The levels in the tanks are modeled in the extended-period model scenario. The extended-period model predicts the levels in the tanks as they fill from sources and empty to meet demand in the system.

MODEL CALIBRATION

A hydraulic model should be calibrated before it may be relied on to accurately simulate the performance of the distribution system. Calibration is a comparison of the computer results, field tests, and actual system performance. Calibration is especially useful for identifying pipe sizes that are not correct and PRVs or isolation valves that are not operating as expected. Pipe roughness is an additional characteristic which may also be adjusted during calibration.

With assistance from Aquaveo, the model was calibrated through SCADA data provided by JVVCD (2015b), as well as fire flow tests and pressure readings provided by the City. The model was calibrated by adjusting source flows, elevations, and PRV settings so that the overall behavior of network was reproduced within the model. Calibration results are included in Appendix C. The overall patterns in the model matched the observed values very well.

ANALYSIS METHODOLOGY

EPANET models were used to analyze the performance of the water system for existing and projected future demands under the three scenarios regulated by R309-105-9, plus a high-pressure condition that occurs during low flow. Results are discussed below.

ANALYSIS RESULTS OF THE EXISTING SYSTEM

Peak Day Demand plus Fire Flow Conditions

Modeling indicates that many fire hydrants, mostly in Zone 2, cannot maintain a fire flow of 1,500 gpm without causing service connections to drop below 20 psi. See Figure 5-2.

Peak Instantaneous Demand Conditions

Modeling of the existing peak instantaneous demand of 7,713 gpm indicates that all service connections comply with the required minimum pressure of 30 psi. The minimum simulated pressure is 36 psi.

Most connections also satisfy the City's preference for a 50 psi minimum pressure. Exceptions occur on the far east side, where existing industrial development connected to Zone 1 is actually too high and should eventually be reconfigured into Zone 2. Other exceptions are Silverpoint Way and River View Drive at the upper edge of Zone 2. See Figure 5-3.

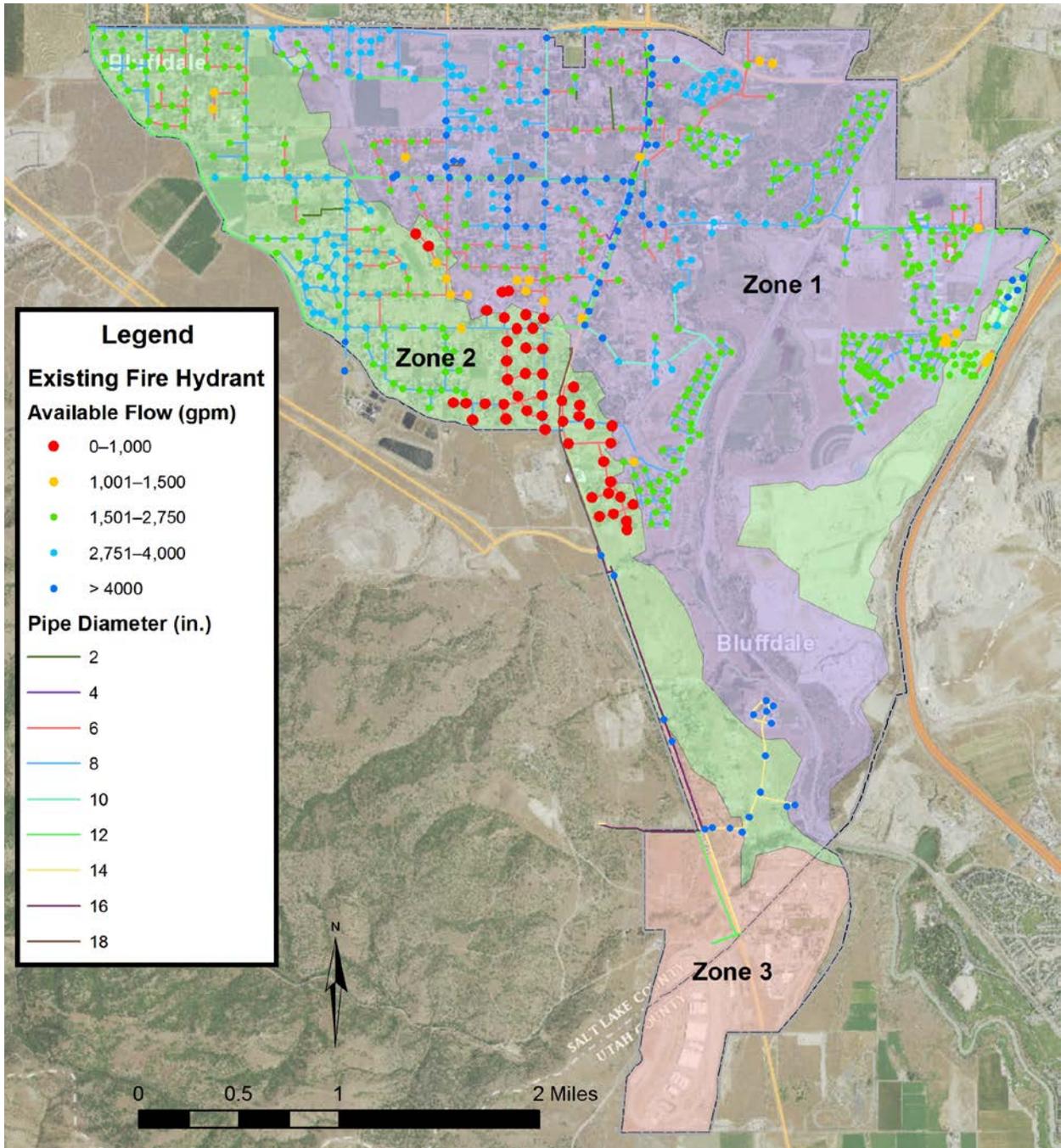


Figure 5-2: Existing Fire Flow Capacity

Peak Day Conditions

Modeling of the existing peak day demand of 4,620 gpm indicates that all service connections comply with the required minimum pressure of 40 psi. The minimum simulated pressure is 42 psi.

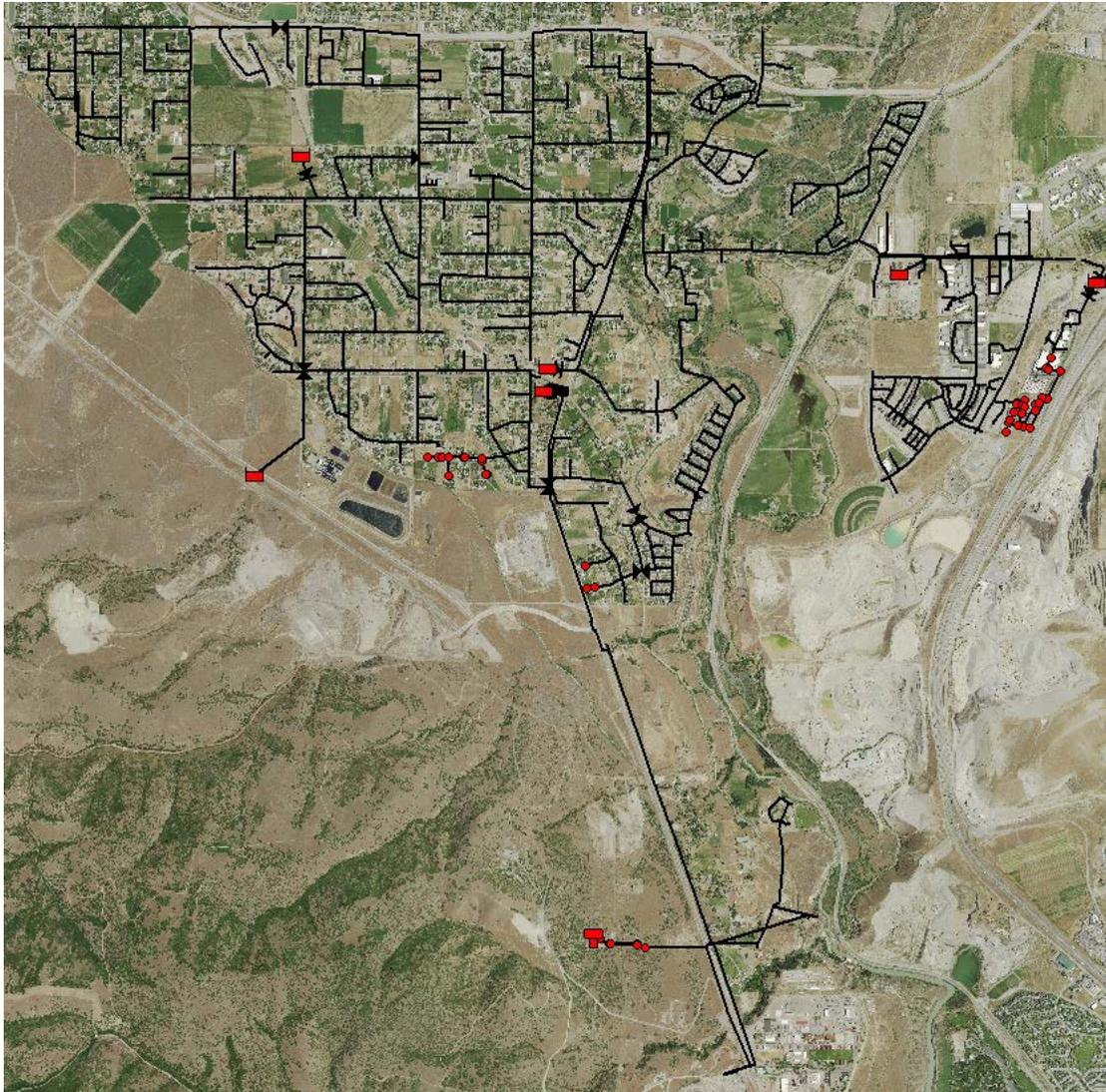


Figure 5-3: Existing Pressures below 50 psi under Peak Instantaneous Conditions

High Pressure Conditions

A few parts of the city exceed the preferred maximum pressure of 130 psi during low-flow conditions. See Figure 5-4.

One large area is the Jordan River valley east of Redwood Road and north of 14800 South. This includes Spring View Farms, the Bluffs, Wood Duck Hollow, Sage Estates, River Willow Court, and connections along 14600 South. The highest simulated pressures of 154 psi occur in Home Front Circle, which nearly matches a pressure of 150 psi the City observed at a fire hydrant there.

Another area with high pressures is the vicinity of 13800 South and 3600 West, including Pony Lane, Wasatch Vista Drive, Oxfordshire Drive, and Lincolnshire Court. The highest simulated pressures of 150 psi occur at the end of Lincolnshire Court.

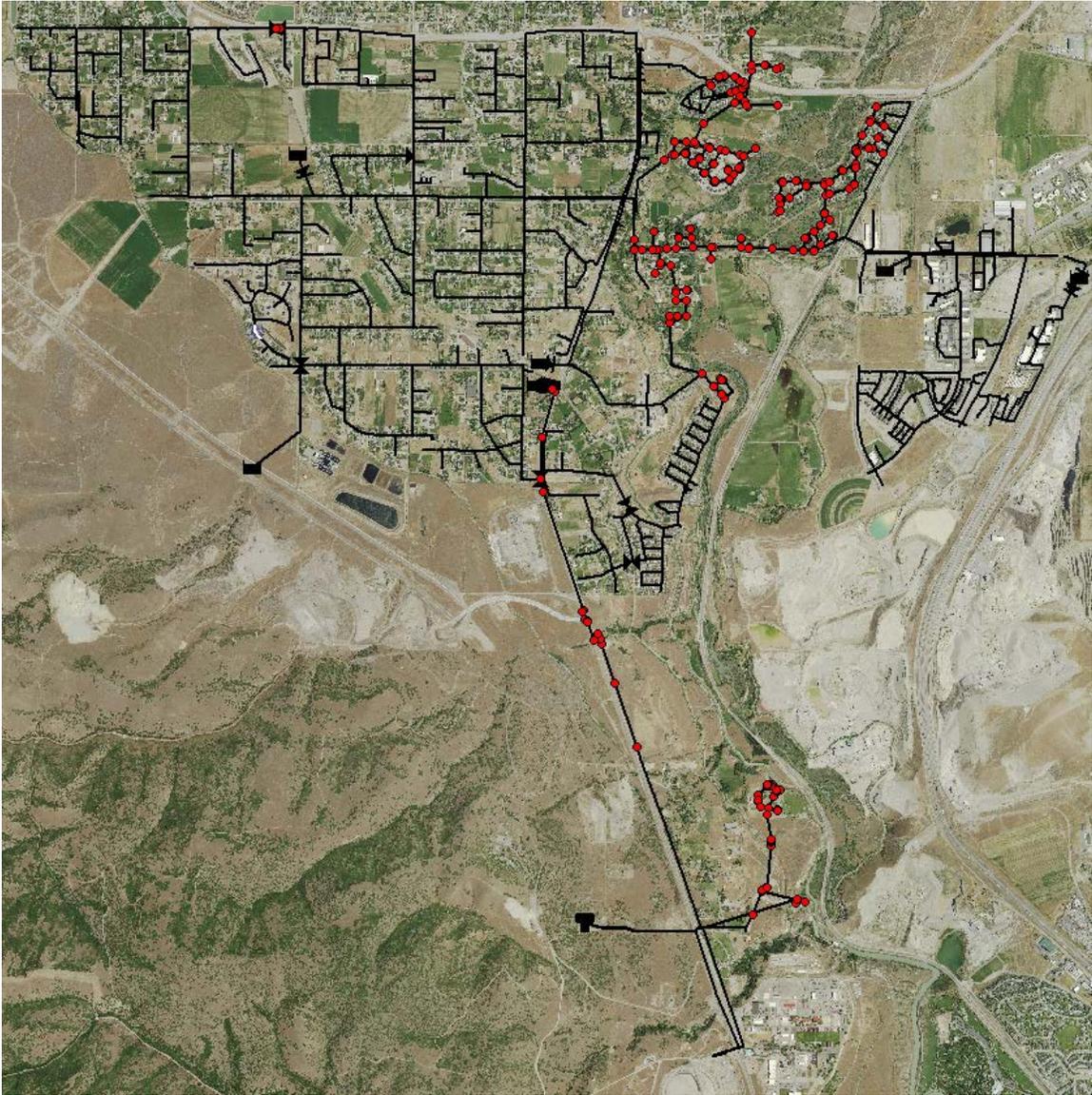


Figure 5-4: Existing Pressures Exceeding 130 psi

Finally, simulated pressures in and near Jordan Narrows Park exceed 200 psi, which is consistent with a pressure of 205 psi the City observed at a fire hydrant there.

EXISTING DISTRIBUTION SYSTEM RECOMMENDATIONS

While the existing distribution system is adequate for peak day and peak instantaneous conditions, many areas do not meet the requirements for fire flow. The storage recommendations of Chapter 4 will help resolve this deficiency when combined the necessary transmission. HAL recommends the following distribution projects for addressing the identified deficiencies as well as for improving general system operation:

- Install 640 feet of 12-inch pipe in 15000 South between Redwood Road and 2200 West to connect the existing lines.
- Install 12,380 feet of 16-inch pipe to connect Zone 2W and Zone 2E. This pipe will follow the alignment of Porter Rockwell Boulevard from Redwood Road to the area of Royal Mile Drive, where it will connect to the existing pipeline.
- Install 12,675 feet of 24-inch pipe from the proposed pressure Zone 1 tank site to the proposed future JWCD connection. This pipe would follow the alignment of Porter Rockwell Boulevard to 1000 West, then extend north along 1000 West to the JWCD connection.
- Install 3,305 feet of 10-inch pipe between 14400 South and Kailie Lane. This pipe will run along the west side of the ULDC trail and cross the canal at 14000 South.
- Replace existing pipe along 2200 West between 14400 South and Pinehollow Lane with 12-inch pipe. Connect this pipe to the existing line in Redwood Road with 12-inch pipe through Pinehollow Lane. This will require approximately 4,685 feet of 12-inch pipe.
- Connect Wasatch Vista Drive to the end of Shropshire Drive with approximately 2,070 feet of 10-inch pipe. This pipe would follow a road alignment of a future development.
- Connect the south end of Shropshire Drive to 14400 South by installing approximately 2,650 feet of 10-inch pipe.

Even with the aforementioned projects, some local fire flow deficiencies remain, primarily due to existing 6-inch pipes that lack capacity for high flows. See Figure 5-5. In general, 6-inch pipelines should be upsized to minimum 8-inch diameter pipes during pipeline replacement projects. More specifically, the following projects are recommended, in addition to the above projects, to supply the preferred minimum 1,500 gpm fire flow at each hydrant:

- Replace the existing pipe in Country Classic Drive between 2700 West and 2920 West with 8-inch pipe. Replace line in 2920 West with 8-inch pipe. This will require about 1,520 feet of 8-inch pipe.
- Connect the existing pipe in Ten Sleep Circle to the existing pipe in 14600 South with 930 feet of 8-inch pipe.
- Replace the existing pipe along 1300 West, starting at the southern entrance of The Bluffs Apartments and heading north to 13920 South. Replace the existing pipe in 13920 South from 1300 West to the end of the cul-de-sac. This will require approximately 1,825 feet of 8-inch pipe.
- Replace existing pipes in Apple Crest Lane and 14850 South with 8-inch pipe. Connect the new pipelines along their western ends. This will require roughly 2,590 feet of pipe.
- Install 335 feet of 8-inch pipe starting from the existing line at 2620 West 15250 South, going south through undeveloped land, and connect to the existing pipe in Silverpoint Way.
- Connect the two existing water lines in Broad Stripes Drive with 60 feet of 8-inch pipe.
- Install 1,300 feet of 8-inch pipe in Pheasant Hollow Lane between 3600 West and 3755 West and in 3755 West between Pheasant Hollow Lane and 14125 South.

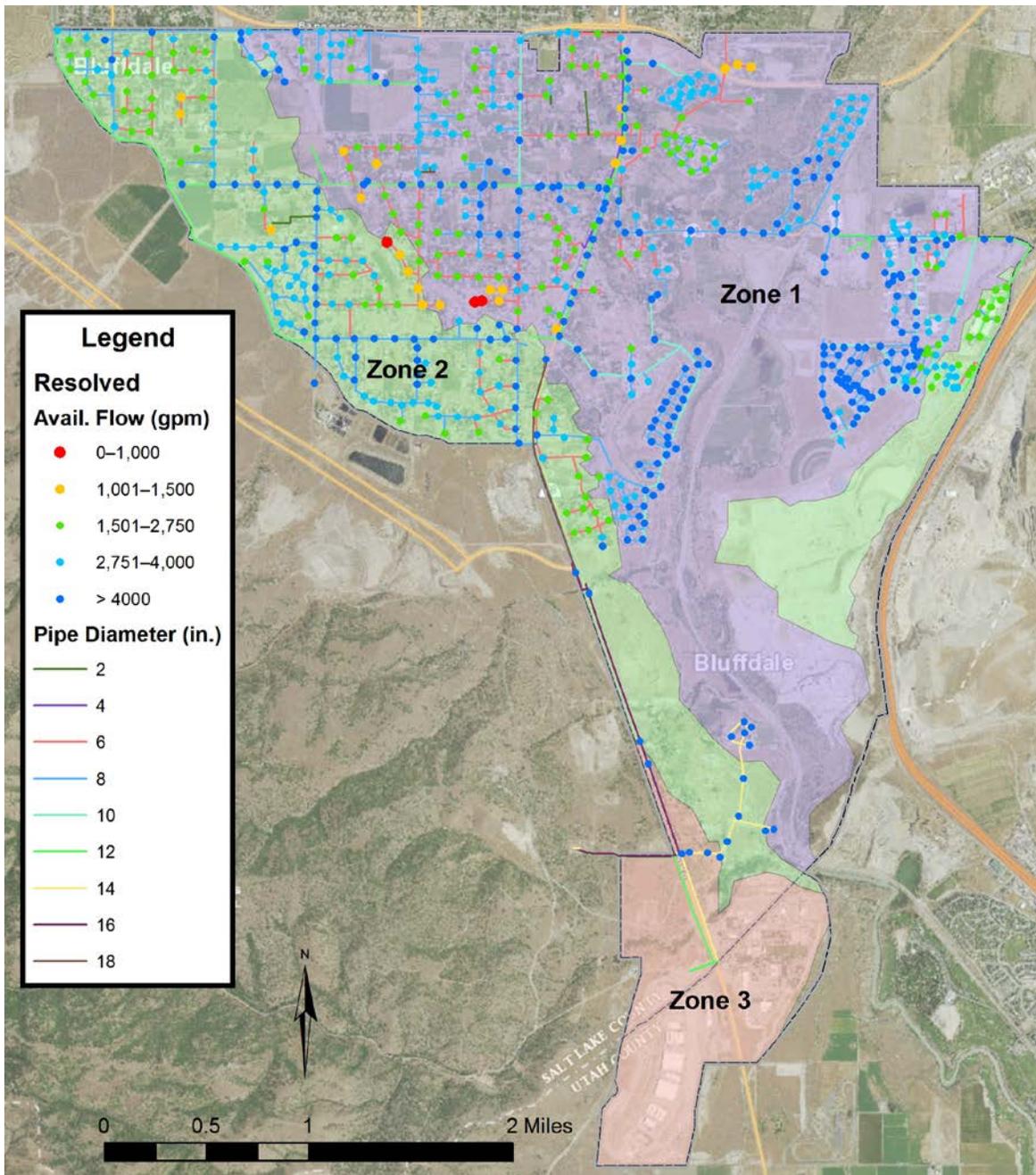


Figure 5-5: Local Fire Flow Deficiencies

The industrial development on the far east side of Bluffdale is currently connected to Zone 1 and cannot meet the preferred 50 psi minimum pressure. The City may consider reconfiguring this area into Zone 2, once Zone 2 sources and storage are established. While connections on Silverpoint Way and River View Drive do not meet the City’s preference, they still satisfy the state’s minimum pressure and need not be improved unless the City chooses to do so.

While there is no state standard for maximum pressures, pressures exceeding 160 psi should be monitored carefully. Where pressures are near 200 psi along Jordan Narrows Road, the

storage and transmission recommendations described in Chapter 4 will help resolve this problem if this area is reconfigured into Zone 2 instead of Zone 3.

ANALYSIS RESULTS OF THE BUILD-OUT SYSTEM

Peak Day Demand plus Fire Flow Conditions

The capital projects and fire flow projects recommended for existing conditions also resolve the projected future fire flow deficiencies.

Peak Instantaneous Demand Conditions

Modeling of the build-out peak instantaneous demand of 22,575 gpm indicates good performance with respect to low pressures. See Figure 5-6. None of the service connections have a minimum pressure less than 30 psi and nearly all areas are able to maintain 50 psi. One exception is the higher elevation industrial areas served by Zone 1 on the east side of the City.

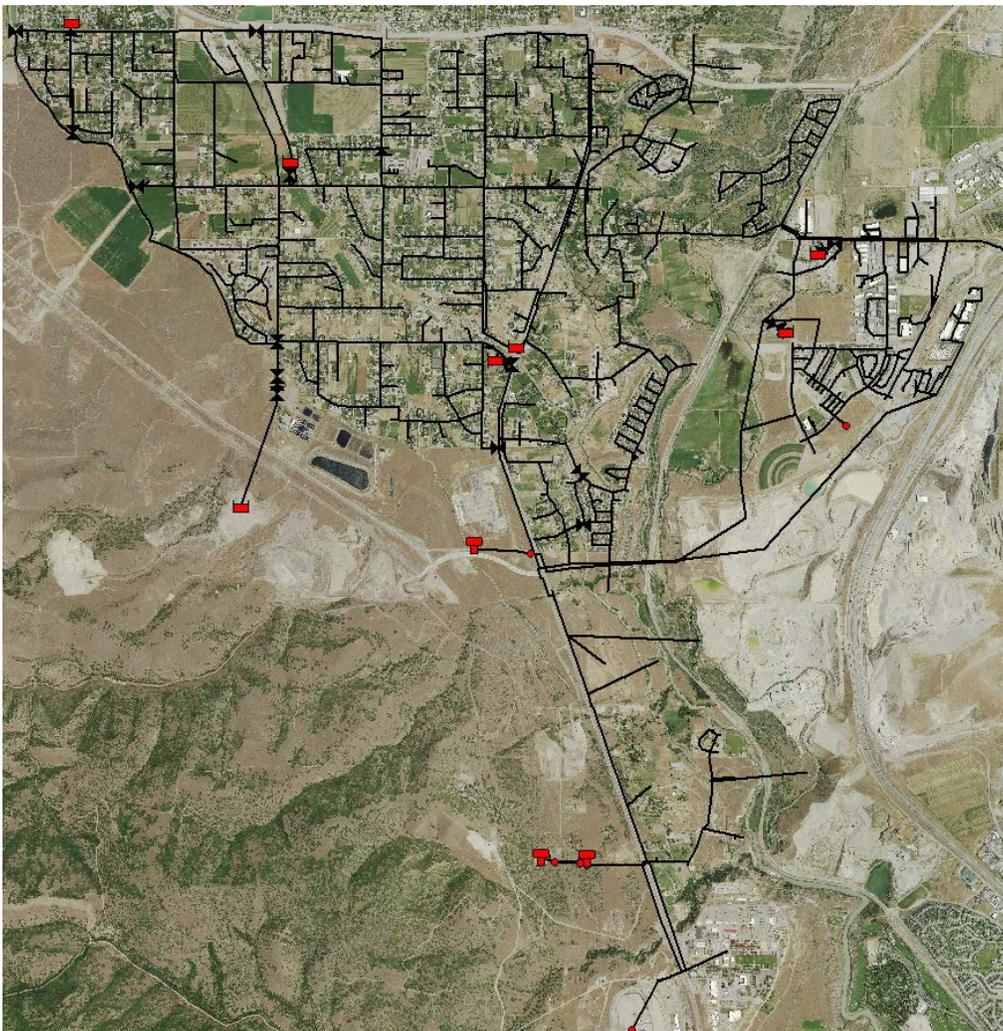


Figure 5-6: Build-Out Pressures below 30 psi under Peak Instantaneous Conditions

Peak Day Conditions

Modeling of the build-out peak day demand of 13,518 gpm indicates that all service connections are able to provide a minimum pressure of 40 psi. See Figure 5-7.

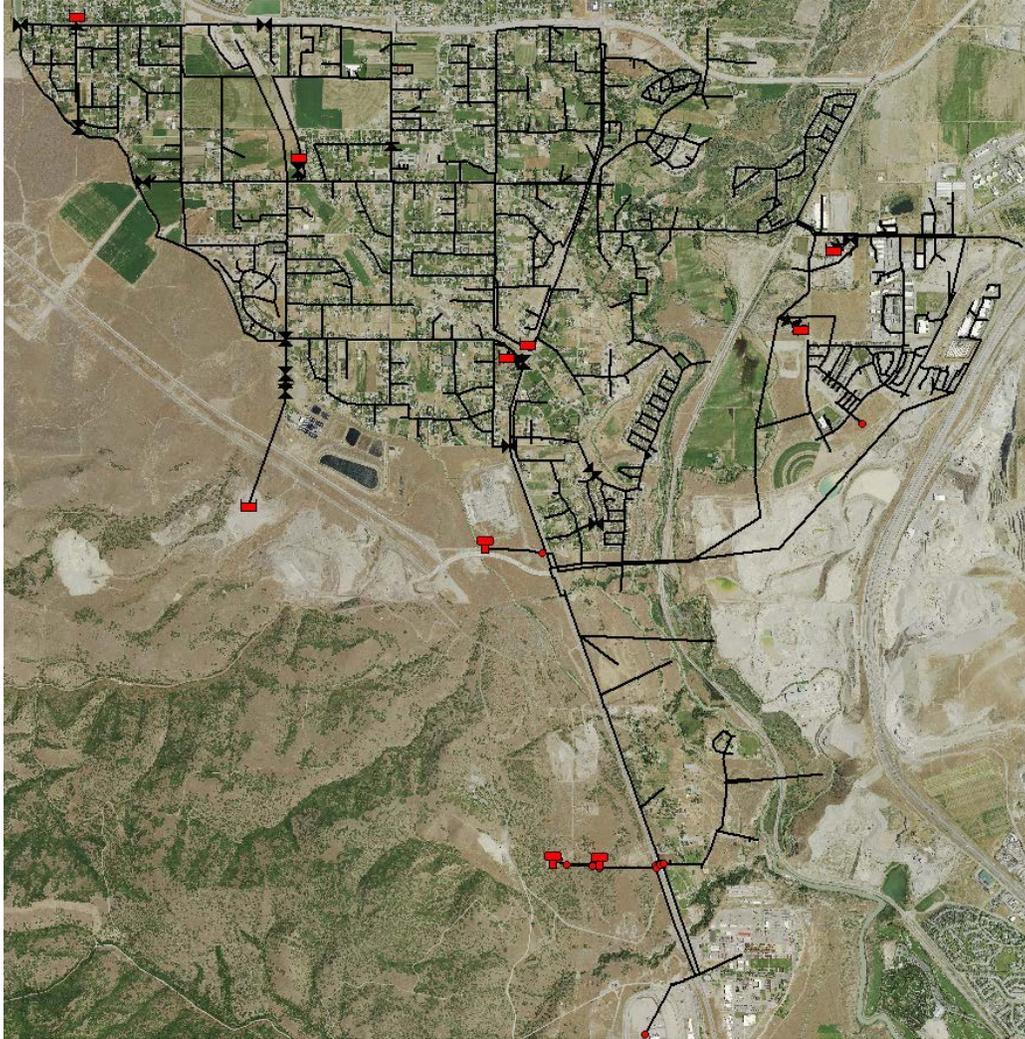


Figure 5-7: Build-Out Pressures below 40 psi under Peak Day Conditions

High Pressure Conditions

A few parts of the city exceed the preferred maximum pressure of 130 psi during build-out conditions with low demands. See Figure 5-8. High pressure areas include the lower elevations of Zones 1 and 2 and also the area near Jordan Narrows Park.

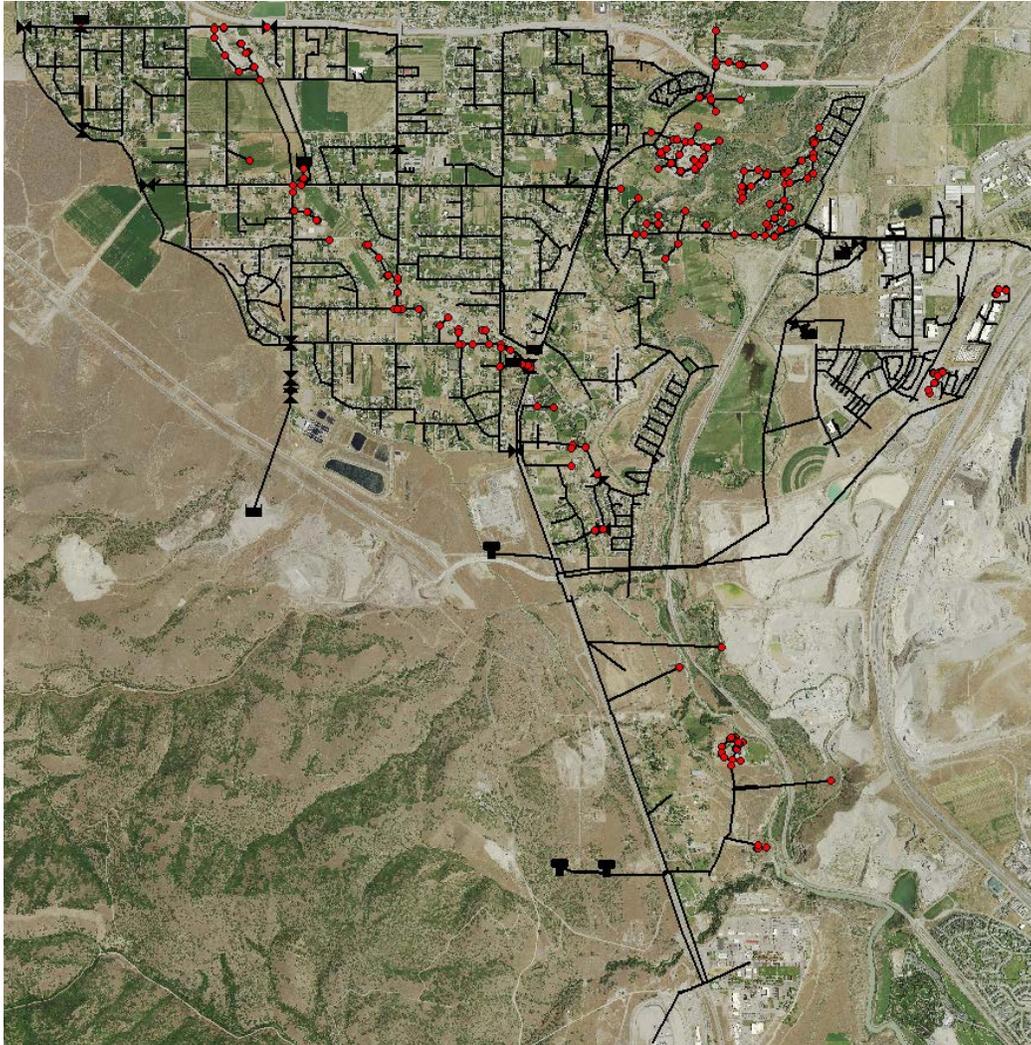


Figure 5-8: Build-Out Pressures Exceeding 130 psi

BUILD-OUT DISTRIBUTION SYSTEM RECOMMENDATIONS

Under build-out conditions, the highest observed pressures were about 145 psi. The maximum and minimum pressures within a pressure zone represent a tradeoff. The maximum pressure at the lower elevations can be decreased, but not without also reducing the minimum pressures at the upper elevations. Under build-out conditions, the pressures in Zones 1 and 2 are controlled by the proposed storage reservoirs. The elevations of the reservoirs were chosen in order to balance the maximum and minimum pressures in Zones 1 and 2. Therefore, it is recommended that the City should accept the elevated pressures that are projected for the lower elevation areas of Zones 1 and 2. However, one exception is the area around Jordan Narrows Park. The high pressures in that area could be easily addressed by installing a PRV in the pipeline that supplies water to the area or by reconfiguring this area to be in Zone 2 instead of Zone 3 as described in Chapter 4.

PIPELINE REPLACEMENT

It is recommended that the City fund a pipeline replacement program if it has not already. Pipelines should be scheduled for replacement based on priority as well as to take advantage of road resurfacing projects and other situations of convenience. Pipelines smaller than 8 inches in diameter, older pipelines, and pipelines where frequent repairs have been needed should all be considered as high priority for replacement. The state recommends that at least 5% of the annual drinking water budget be set aside for facility replacement.

CONTINUED USE OF THE HYDRAULIC MODEL

It is recommended that the City continue updating the hydraulic model as the drinking water system changes. The model can help City staff determine:

- The effect on the system if individual facilities are added or removed from service
- The selection of pipe diameters and location of proposed water mains
- Capacity of the water system to provide fire flows in specific areas
- Water age for water quality monitoring
- Residual chlorine and fluoride levels in the system

The hydraulic model should be maintained for future use. Necessary data required for continued use of the program are:

- The location, length, diameter, pipe material, and ground elevation at each end of each new pipeline constructed
- Changes in water supply location and characteristics
- Hydraulic characteristics of major new facilities such as pump stations, wells, and water tanks
- Location and demand for new large customers
- Changes in chlorine and fluoride dosing rates and procedures

CHAPTER 6 - CAPITAL IMPROVEMENTS PLAN

Throughout the master planning process, the three main components of the City's water system (source, storage, and distribution) were analyzed to determine the system's ability to meet existing demands and the anticipated future demands at build-out. Capital improvements were recommended to correct deficiencies.

PRECISION OF COST ESTIMATES

When considering cost estimates, there are several levels or degrees of precision, depending on the purpose of the estimate and the percentage of detailed design that has been completed. The following levels of precision are typical:

<u>Type of Estimate</u>	<u>Precision</u>
Conceptual (Master Planning)	±50%
Preliminary Design	±30%
Final Design or Bid	±10%

For example, at the master planning level (or conceptual or feasibility design level), if a project is estimated to cost \$1,000,000, then the precision or reliability of the cost estimate would typically be expected to range between approximately \$500,000 and \$1,500,000. While this may seem very imprecise, the purpose of master planning is to develop general sizing, location, cost, and scheduling information on a number of individual projects that may be designed and constructed over a period of many years. Master planning also typically includes the selection of common design criteria to help ensure uniformity and compatibility among future individual projects. Details such as the exact capacity of individual projects, the level of redundancy, the location of facilities, the alignment and depth of pipelines, the extent of utility conflicts, the cost of land and easements, the construction methodology, the types of equipment and material to be used, the time of construction, interest and inflation rates, permitting requirements, etc., are typically developed during the more detailed levels of design.

At the preliminary or 10% design level, some of the aforementioned information will have been developed. Major design decisions such as the size of facilities, selection of facility sites, pipeline alignments and depths, and the selection of the types of equipment and material to be used during construction will typically have been made. At this level of design the precision of the cost estimate for a \$1,000,000 project would typically be expected to range between approximately \$700,000 and \$1,300,000.

After the project has been completely designed, and is ready to bid, all design plans and technical specifications will have been completed and nearly all of the significant details about the project should be known. At this level of design, the precision of the cost estimate for the same \$1,000,000 project would typically be expected to range between approximately \$900,000 and \$1,100,000.

SYSTEM IMPROVEMENT PROJECTS

As discussed in previous chapters, several source, storage and distribution system deficiencies were identified during the system analysis. Project costs for water system improvements are presented in Table 6-1. Each recommendation includes a conceptual cost estimate.

Unit costs for the construction cost estimates are based on conceptual-level engineering. Sources used to estimate construction costs include:

1. RSMMeans Heavy Construction Cost Data
2. Price quotes from equipment suppliers
3. Recent construction bids for similar work

All costs are presented in 2016 dollars. Recent price and economic trends indicate that future costs are difficult to predict with certainty. Engineering cost estimates provided in this study should be regarded as conceptual level for use as a planning guide. Only during final design can a definitive and more accurate estimate be provided for each project.

Table 6-1: Project Costs for Drinking Water System Improvements

ID	Project	Description	Timeframe	Cost Estimate
F-1	Country Classic Dr. Pipeline	Install 1,520 ft of 8-inch pipeline @\$114/LF	0–5 years	\$173,000
F-2	14600 South Pipeline	Install 925 ft of 8-inch pipeline @\$114/LF	0–5 years	\$105,000
F-3	1300 West Pipeline	Install 1,825 ft of 8-inch pipeline @\$114/LF	0–5 years	\$208,000
F-4	Apple Crest Ln and 14850 South Pipelines	Install 2,590 ft of 8-inch pipeline @\$114/LF	0–5 years	\$295,000
F-5	Silverpoint Way Pipeline	Install 335 ft of 8-inch pipeline @\$114/LF	0–5 years	\$38,000
F-6	Broad Stripes Drive Pipeline	Install 60 ft of 8-inch pipeline @\$114/LF	0–5 years	\$7,000
F-7	Pheasant Hollow Lane Pipeline	Install 1,300 ft of 8-inch pipeline @\$114/LF	0–5 years	\$148,000
C-1	Zone 2 Tank	Construct 3 MG enclosed drinking water storage facility (@ \$1/gal)	0–5 years	\$3,000,000
C-2	15000 South Pipeline	Install 640 ft of 12-inch pipeline @\$138/LF	0–5 years	\$88,000
C-3	Zone 1 Main Transmission	Install 1,698 ft of 24-inch pipeline @\$245/LF	0–5 years	\$416,000
C-4	Zone 3 Booster Station	New 400 gpm Zone 3 Booster Station	0–5 years	\$200,000
C-5	Zone 1 Tank	Construct 5 MG enclosed drinking water storage facility (@ \$1/gal)	0–5 years	\$5,000,000

Table 6-1: Continued

ID	Project	Description	Timeframe	Cost Estimate
C-6	Zone 1 Transmission Pipeline	Install 5,505 ft of 12-inch pipeline @\$138/LF	0–5 years	\$760,000
C-7	Zone 1 Main Transmission	Install 6,065 ft of 16-inch pipeline @\$165/LF	0–5 years	\$1,001,000
C-8	Zone 1 Main Transmission	Install 5,585 ft of 16-inch pipeline @\$165/LF	0–5 years	\$922,000
C-9	2200 West Pipeline	Install 4,685 ft of 12-inch pipeline @\$138/LF	0–5 years	\$647,000
C-10	Zone 1 Transmission Pipeline	Install 4,132 ft of 12-inch pipeline @\$138/LF	0–5 years	\$570,000
C-11	Zone 1 Transmission Pipeline	Install 2,830 ft of 16-inch pipeline @\$165/LF	0–5 years	\$467,000
C-12	New Zone 2 Pipeline	Install 2,650 ft of 10-inch pipeline @\$124/LF	With development	\$329,000
C-13	Zone 1 Transmission Pipeline	Install 3,300 ft of 10-inch pipeline @\$124/LF	With development	\$409,000
C-14	New Zone 2 Pipeline	Install 2,070 ft of 10-inch pipeline @\$124/LF	With development	\$257,000
C-15	Zone 1 Transmission Pipeline	Install 3,775 ft of 10-inch pipeline @\$124/LF	With development	\$468,000
			Total	\$15,508,000

Figure 6-1 shows the location of each project listed in Table 6-1.

FUNDING OPTIONS

Funding options for the recommended projects, in addition to water use fees, could include the following: general obligation bonds, revenue bonds, State/Federal grants and loans, and impact fees. The City is already planning a water rate change to help fund priority projects and may need to consider a combination of these other funding options.

With respect to water use fees, it is recommended that the City reevaluate water rates periodically. Rates should be high enough to cover the full cost of producing and delivering water so that it is not necessary to subsidize water delivery with other funding sources. Charging customers for the true cost of water reinforces the idea that water is a valuable commodity. In addition, charging too little for water can erode the financial stability of a water system and interfere with conservation efforts.

General Obligation Bonds

This form of debt enables the City to issue general obligation bonds for capital improvements and replacement. General Obligation (G.O.) Bonds would be used for items not typically financed through the Water Revenue Bonds (for example, the purchase of water source to

ensure a sufficient water supply for the City's in the future). G.O. bonds are debt instruments backed by the full faith and credit of the City, which would be secured by an unconditional pledge of the City to levy assessments, charges or ad valorem taxes necessary to retire the bonds. G.O. bonds are the lowest-cost form of debt financing available to local governments and can be combined with other revenue sources such as specific fees, or special assessment charges to form a dual security through the City's revenue generating authority. These bonds are supported by the City as a whole, so the amount of debt issued for the water system is limited to a fixed percentage of the real market value for taxable property within the City.

Revenue Bonds

This form of debt financing is also available to the City for utility related capital improvements. Unlike G.O. bonds, revenue bonds are not backed by the City as a whole, but constitute a lien against the water service charge revenues of a Water Utility. Revenue bonds present a greater risk to the investor than do G.O. bonds, since repayment of debt depends on an adequate revenue stream, legally defensible rate structure and sound fiscal management by the issuing jurisdiction. Due to this increased risk, revenue bonds generally require a higher interest rate than G.O. bonds, although currently interest rates are at historic lows. This type of debt also has very specific coverage requirements in the form of a reserve fund specifying an amount, usually expressed in terms of average or maximum debt service due in any future year. This debt service is required to be held as a cash reserve for annual debt service payment to the benefit of bondholders. Typically, voter approval is not required when issuing revenue bonds.

State/Federal Grants and Loans

Historically, both local and county governments have experienced significant infrastructure funding support from state and federal government agencies in the form of block grants, direct grants in aid, interagency loans, and general revenue sharing. Federal expenditure pressures and virtual elimination of federal revenue sharing dollars are clear indicators that local government may be left to its own devices regarding infrastructure finance in general. However, state/federal grants and loans should be further investigated as a possible funding source for needed water system improvements.

It is also important to assess likely trends regarding federal / state assistance in infrastructure financing. Future trends indicate that grants will be replaced by loans through a public works revolving fund. Local governments can expect to access these revolving funds or public works trust funds by demonstrating both the need for and the ability to repay the borrowed monies, with interest. As with the revenue bonds discussed earlier, the ability of infrastructure programs to wisely manage their own finances will be a key element in evaluating whether many secondary funding sources, such as federal/state loans, will be available to the City.

Impact Fees

Impact fees can be applied to water related facilities under the Utah Impact Fees Act. The Utah Impacts Fees Act is designed to provide a logical and clear framework for establishing new development assessments. It is also designed to establish the basis for the fee calculation which the City must follow in order to comply with the statute. However, the fundamental objective for the fee structure is the imposition on new development of only those costs associated with providing or expanding water infrastructure to meet the capacity needs created by that specific new development. Also, impact fees cannot be applied retroactively.

SUMMARY OF RECOMMENDATIONS

Several recommendations were made throughout the master report. The following is a summary of the recommendations organized by category.

Source

- Continue contracting with JWCD for drinking water deliveries. Monitor water use and adjust the contract as necessary.
- Consider an additional connection as land develops. The new connection is recommended at 1000 West 15000 South.

Storage

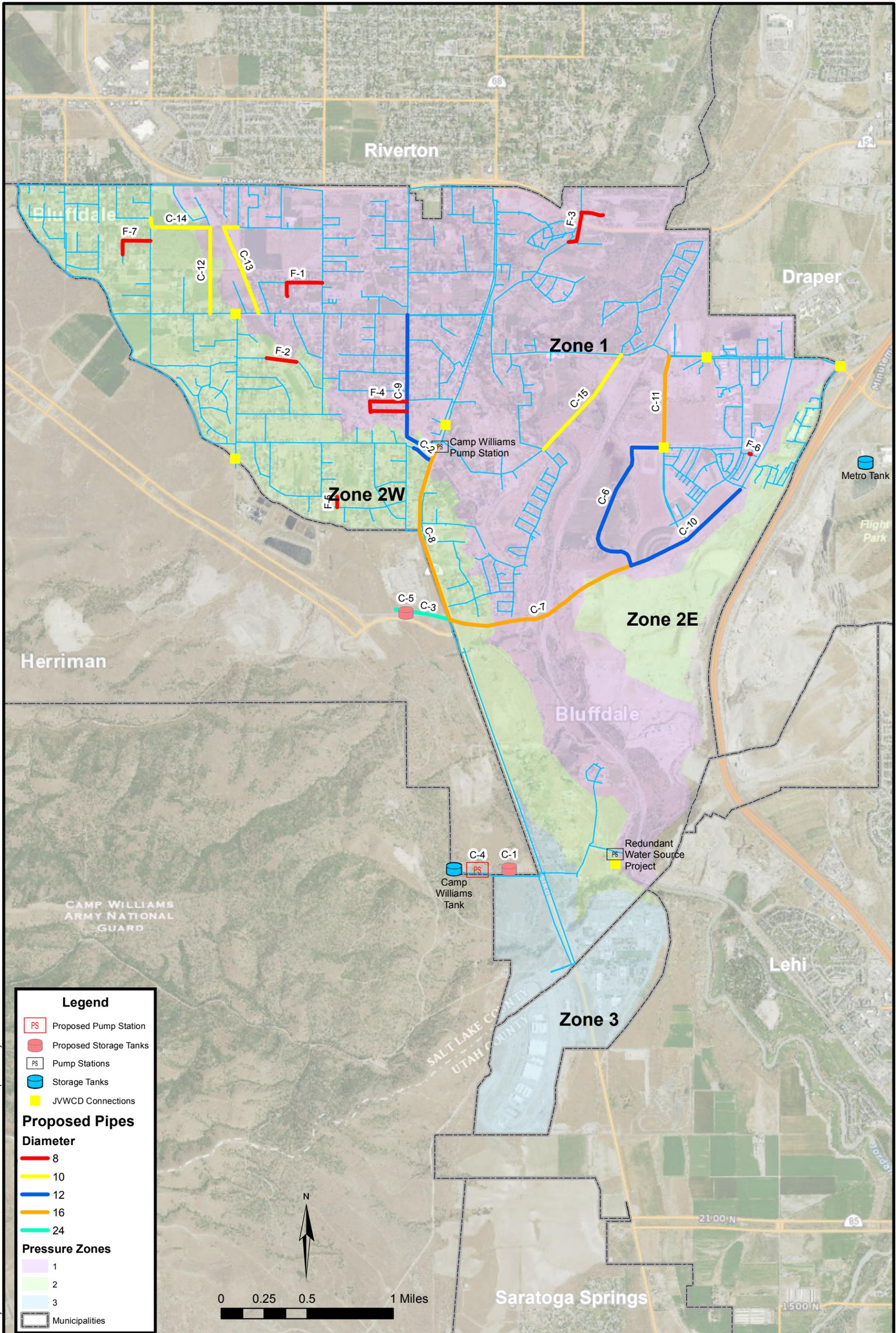
- Construct a Zone 2 tank (3 MG) to meet existing equalization storage and fire suppression requirements.
- Construct a Zone 1 tank (5 MG) to meet existing and future equalization storage and fire suppression requirements.

Distribution

- Complete fire flow projects within the next five years.
- Complete other capital projects as needed or to take advantage road construction projects or other situations of convenience.

General

- Encourage indoor and outdoor water conservation as outlined in the City's recent Water Conservation Plan.
- Maintain the hydraulic model.



Legend

- PS Proposed Pump Station
- Proposed Storage Tanks
- PS Pump Stations
- Storage Tanks
- JWCD Connections

Proposed Pipes

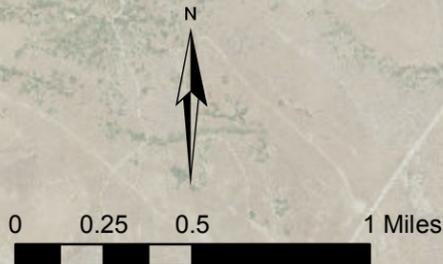
Diameter

- 8
- 10
- 12
- 16
- 24

Pressure Zones

- 1
- 2
- 3

Municipalities



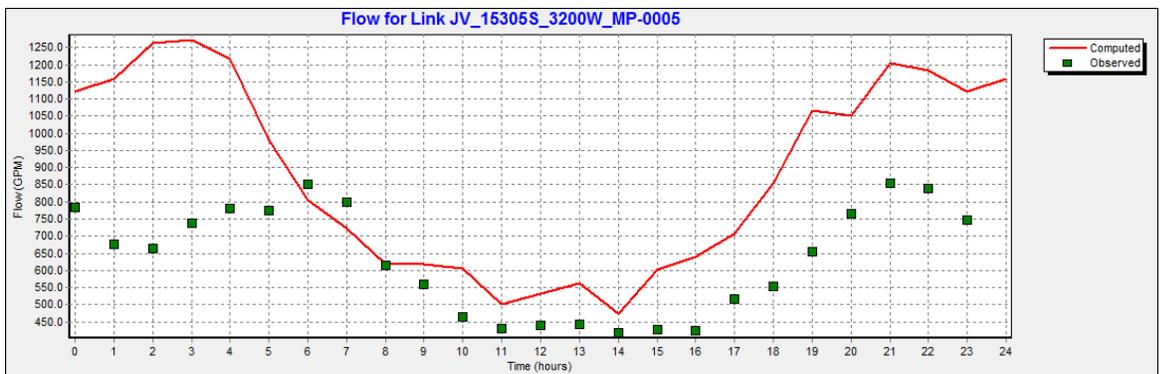
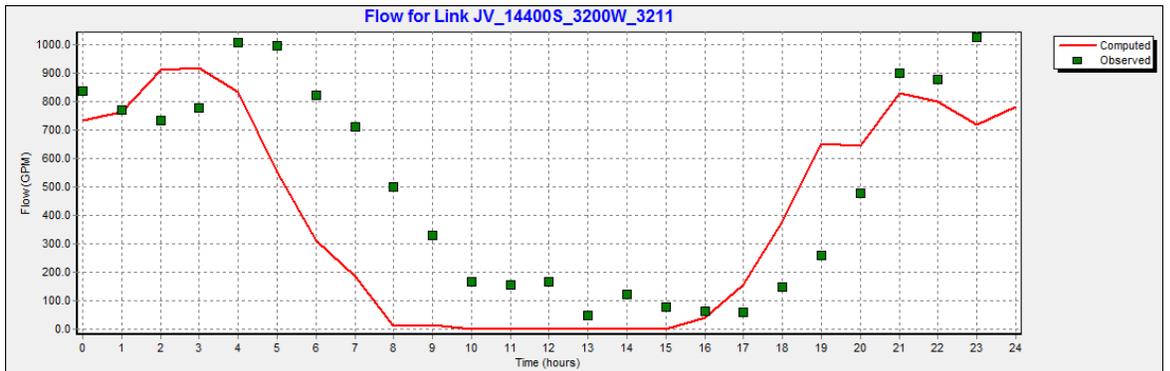
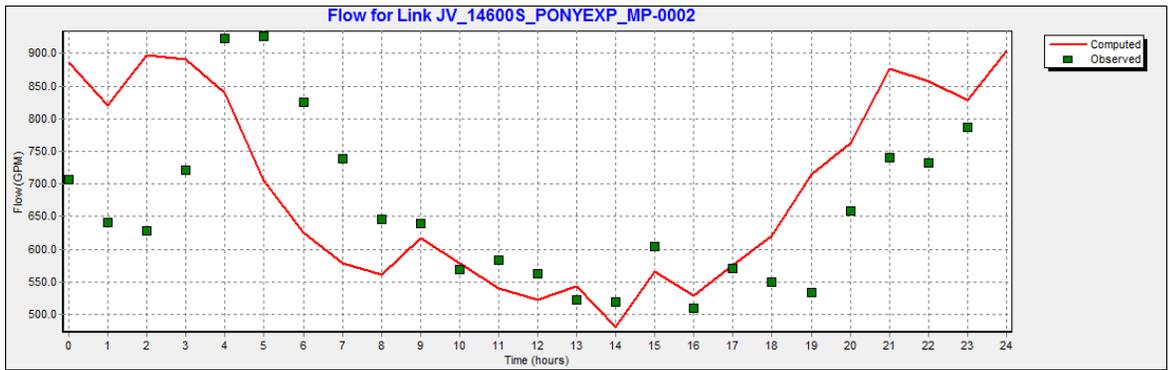
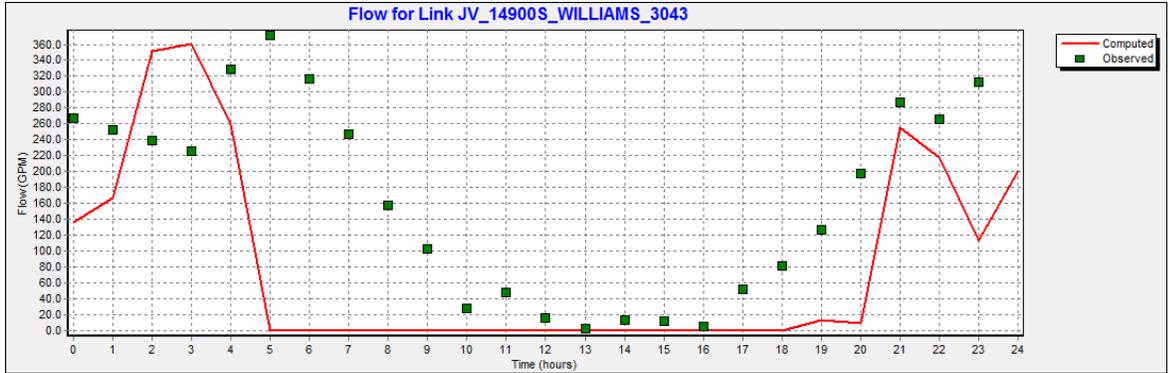
Date: 10/10/2016 Document Path: H:\Projects\394 - Bluffdale\01.100 Water Master Plan\GIS\DW Proposed Projects.mxd

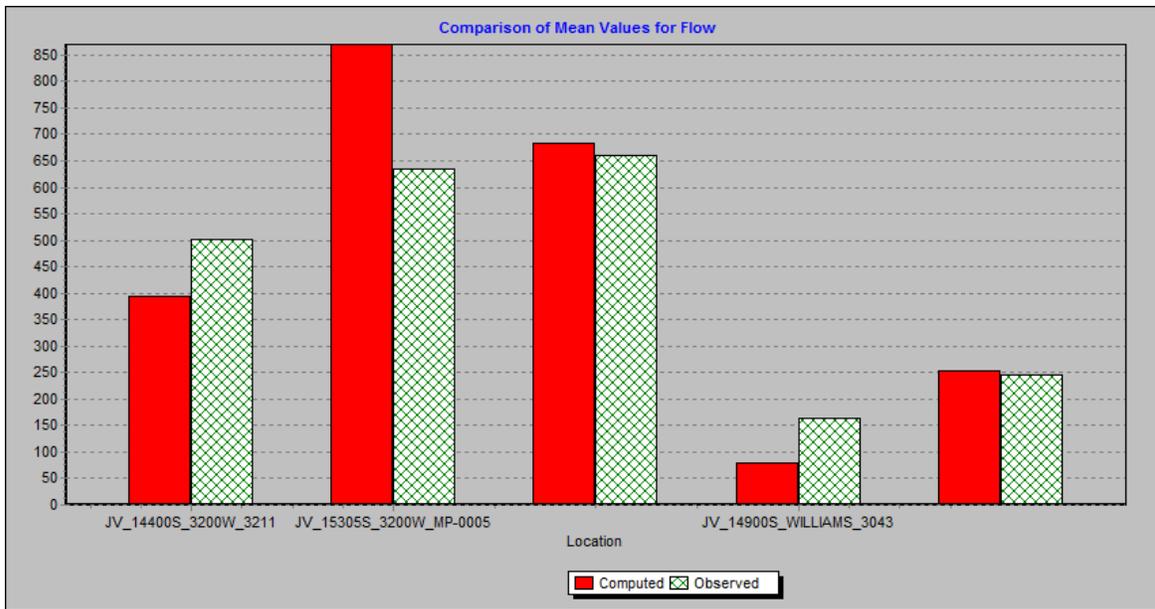
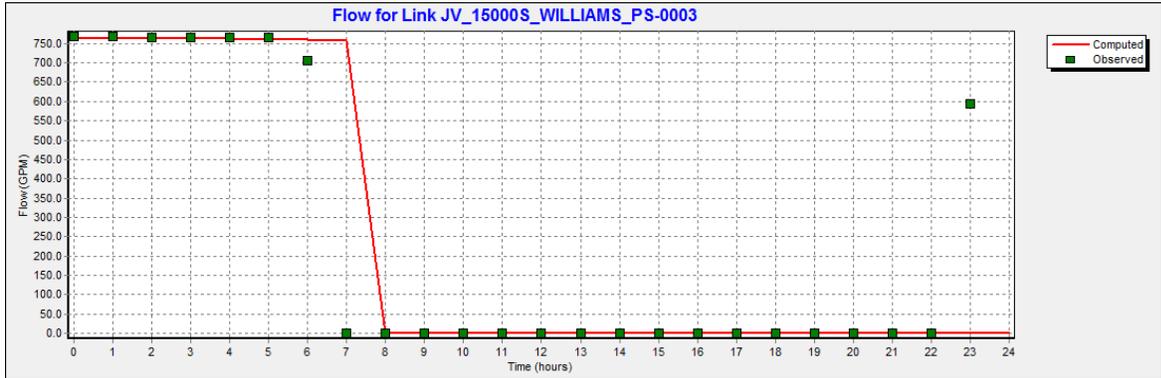
REFERENCES

- AGRC (Utah Automated Geographic Reference Center). 2014. "2014 NAIP 1 Meter Orthophotography." <http://gis.utah.gov/data/aerial-photography/2014-naip-1-meter-orthophotography>.
- Bluffdale, City of. 2014a. *City of Bluffdale General Plan*.
<http://www.bluffdale.com/DocumentCenter/Home/View/1037>.
- . 2014b. *City of Bluffdale General Plan Land Use Map*.
<http://www.bluffdale.com/DocumentCenter/Home/View/1029>.
- . 2015a. Meter Report, July 2014–June 2015. Spreadsheet, monthly data. Email from Marcia Adler, Sept. 23.
- . 2015b. Land Use Designations. GIS dataset. Email from Alan Peters, Oct. 5.
- DWR (Utah Division of Water Rights). 2015. Bluffdale Water System. Public Water Supplier Information. http://www.waterrights.utah.gov/cgi-bin/wuseview.exe?Modinfo=Pwsview&SYSTEM_ID=1264.
- Horrocks Engineers. 2015. *Bluffdale Capital Facilities Plan*.
- JVWCD (Jordan Valley Water Conservancy District). 2015a. Bluffdale Water Deliveries. Spreadsheet, monthly data, Jan. 2009–Aug. 2015. Email from Ron Kidd, Sept. 24.
- . 2015b. Bluffdale SCADA Download. Spreadsheet, hourly data, Jan. 1, 2013–Sept. 23, 2015.
- . 2016a. Points of Delivery, Capacity, and Flow Rates. Email from Dave McLean, Feb. 16.
- USCB (U.S. Census Bureau). 2016. Incorporated Places and Minor Civil Divisions Datasets: Subcounty Resident Population Estimates: April 1, 2010 to July 1, 2015. Last modified May 19. <http://www.census.gov/popest/data/cities/totals/2015/SUB-EST2015.html>.

APPENDIX A

Hydraulic Model Calibration Data

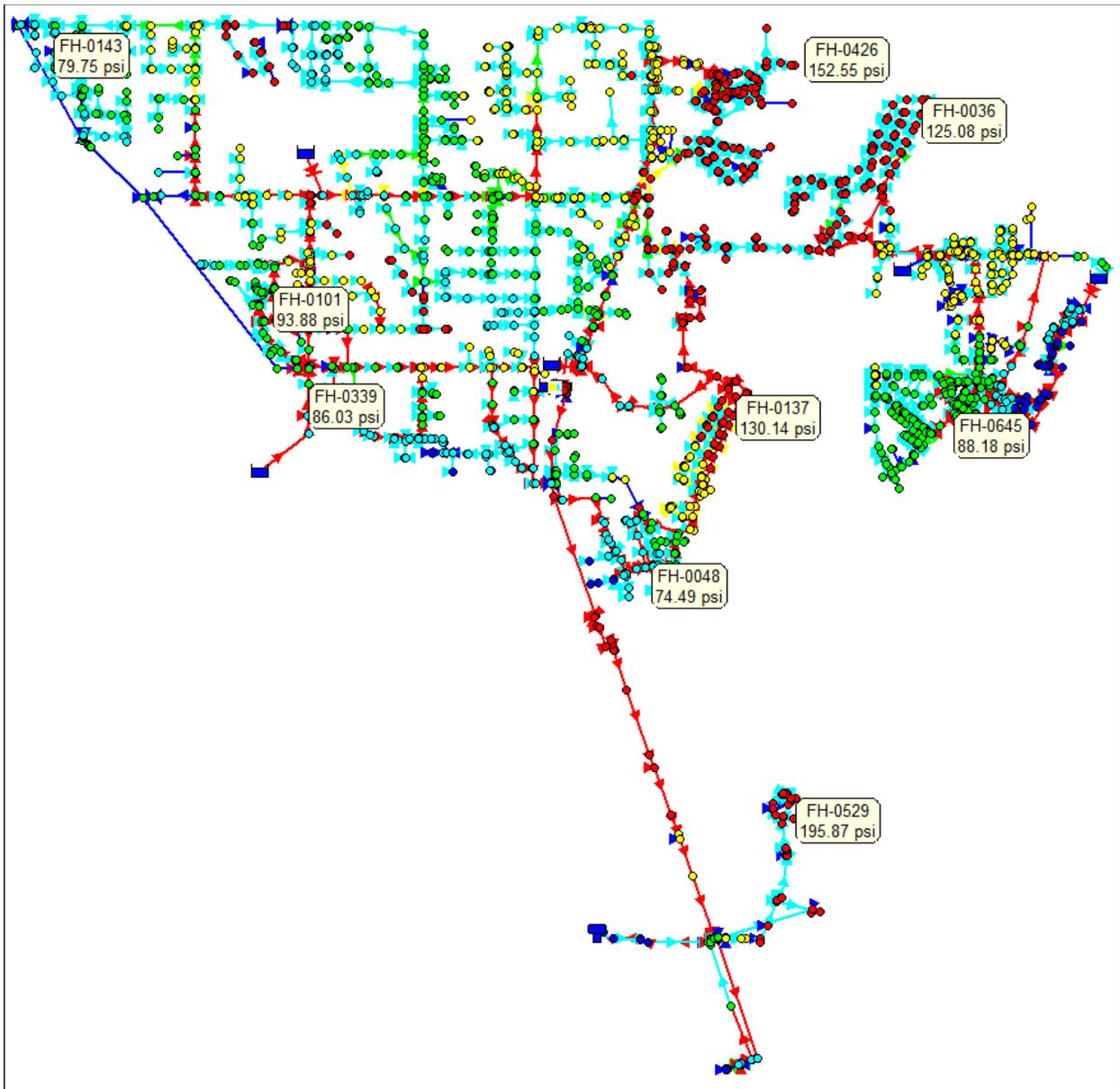




Calibration Statistics for Flow

Location	Num Obs	Observed Mean	Computed Mean	Mean Error	RMS Error
JV_14400S_3200W_3211	24	501.94	394.09	207.952	259.824
JV_15305S_3200W_MP-0005	24	634.57	870.16	245.853	297.225
JV_14600S_PONYEXP_MP-0002	24	660.02	683.89	101.691	126.891
JV_14900S_WILLIAM_S_3043	24	164.97	78.5	107.17	144.306
JV_15000S_WILLIAM_S_PS-0003	24	245.78	253.98	59.604	196.889
Network	120	441.46	456.13	144.454	215.194

Correlation Between Means: 0.934



APPENDIX B

Checklist for Hydraulic Model Design Elements Report

CHECKLIST FOR HYDRAULIC MODEL DESIGN ELEMENTS REPORT

This hydraulic model checklist identifies the components included in the Hydraulic Model Design Elements Report for

(Project Name or Description)

(Water System Number)

(Water System Name)

(Date)

The checkmarks **and/or** P.E. initials after each item indicate the conditions supporting P.E. Certification of this Report.

1. At least 80% of the total pipe lengths in the distribution system affected by the proposed project are included in the model. [R309-511-5(1)] _____
2. 100% of the flow in the distribution system affected by the proposed project is included in the model. If customer usage in the system is metered, water demand allocations in the model account for at least 80% of the flow delivered by the distribution system affected by the proposed project. [R309-511-5(2)] _____
3. All 8-inch diameter and larger pipes are included in the model. Pipes smaller than 8-inch diameter are also included if they connect pressure zones, storage facilities, major demand areas, pumps, and control valves, or if they are known or expected to be significant conveyers of water such as fire suppression demand. [R309-511-5(3)]

4. All pipes serving areas at higher elevations, dead ends, remote areas of a distribution system, and areas with known under-sized pipelines are included in the model. [R309-511-5(4)] _____
5. All storage facilities and accompanying controls or settings applied to govern the open/closed status of the facility for standard operations are included in the model. [R309-511-5(5)] _____
6. Any applicable pump stations, drivers (constant or variable speed), and accompanying controls and settings applied to govern their on/off/speed status for various operating conditions and drivers are included in the model. [R309-511-5(6)] _____

7. Any control valves or other system features that could significantly affect the flow of water through the distribution system (i.e. interconnections with other systems, pressure reducing valves between pressure zones) for various operating conditions are included in the model. [R309-511-5(7)] _____
8. Imposed peak day and peak instantaneous demands to the water system's facilities are included in the model. The Hydraulic Model Design Elements Report explains which of the Rule-recognized standards for peak day and peak instantaneous demands are implemented in the model (i.e., (i) peak day and peak instantaneous demand values per R309-510, *Minimum Sizing Requirements*, (ii) reduced peak day and peak instantaneous demand values approved by the Director per R309-510-5, *Reduction of Requirements*, or (iii) peak day and peak instantaneous demand values expected by the water system in excess of the values in R309-510, *Minimum Sizing Requirements*). The Hydraulic Model Design Elements Report explains the multiple model simulations to account for the varying water demand conditions, or it clearly explains why such simulations are not included in the model. The Hydraulic Model Design Elements Report explains the extended period simulations in the model needed to evaluate changes in operating conditions over time, or it clearly explains (e.g., in the context of the water system, the extent of anticipated fire event, or the nature of the new expansion) why such simulations are not included in the model. [R309-511-5(8) & R309-511-6(1)(b)] _____
9. The hydraulic model incorporates the appropriate demand requirements as specified in R309-510, *Minimum Sizing Requirements*, and R309-511, *Hydraulic Modeling Rule*, in the evaluation of various operating conditions of the public drinking water system. The Report includes:
- the methodology used for calculating demand and allocating it to the model;
 - a summary of pipe length by diameter;
 - a hydraulic schematic of the distribution piping showing pressure zones, general pipe connectivity between facilities and pressure zones, storage, elevation, and sources; and
 - a list or ranges of values of friction coefficient used in the hydraulic model according to pipe material and condition in the system. In accordance with Rule stipulation, all coefficients of friction used in the hydraulic analysis are consistent with standard practices.
- [R309-511-7(4)] _____
10. The Hydraulic Model Design Elements Report documents the calibration methodology used for the hydraulic model and quantitative summary of the calibration results (i.e., comparison tables or graphs). The hydraulic model is sufficiently accurate to represent conditions likely to be experienced in the water delivery system. The model is calibrated to adequately represent the actual field conditions using field measurements and observations. [R309-511-4(2)(b), R309-511-5(9), R309-511-6(1)(e) & R309-511-7(7)] _____
11. The Hydraulic Model Design Elements Report includes a statement regarding whether fire hydrants exist within the system. Where fire hydrants are connected to the distribution system, the model incorporates required fire suppression flow standards. The statement that appears in the Report also identifies the local fire authority's name,

address, and contact information, as well as the standards for fire flow and duration explicitly adopted from *R309-510-9(4), Fireflows*, or alternatively established by the local fire suppression agency, pursuant to *R309-510-9(4), Fireflows*. The Hydraulic Model Design Elements Report explains if a steady-state model was deemed sufficient for residential fire suppression demand, or acknowledges that significant fire suppression demand warrants extended model simulations and explains the run time used in the simulations for the period of the anticipated fire event. [*R309-511-5(10) & R309-511-7(5)*]

12. If the public drinking water system provides water for outdoor use, the Report describes the criteria used to estimate this demand. If the irrigation demand map in *R309-510-7(3), Estimated Outdoor Use*, is not used, the report provides justification for the alternative demands used in the model. If the irrigation demands are based on the map in *R309-510-7(3), Estimated Outdoor Use*, the Report identifies the irrigation zone number, a statement and/or map of how the irrigated acreage is spatially distributed, and the total estimated irrigated acreage. The indicated irrigation demands are used in the model simulations in accordance with Rule stipulation. The model accounts for outdoor water use, such as irrigation, if the drinking water system supplies water for outdoor use. [*R309-511-5(11) & R309-511-7(1)*]

13. The Report states the total number of connections served by the water system including existing connections and anticipated new connections served by the water system after completion of the construction of the project. [*R309-511-7(2)*]

14. The Report states the total number of equivalent residential connections (ERC) including both existing connections as well as anticipated new connections associated with the project. In accordance with Rule stipulation, the number of ERC's includes high as well as low volume water users. In accordance with Rule stipulation, the determination of the equivalent residential connections is based on flow requirements using the anticipated demand as outlined in *R309-510, Minimum Sizing Requirements*, or is based on alternative sources of information that are deemed acceptable by the Director. [*R309-511-7(3)*]

15. The Report identifies the locations of the lowest pressures within the distribution system, and areas identified by the hydraulic model as not meeting each scenario of the minimum pressure requirements in *R309-105-9, Minimum Pressure Requirements*. [*R309-511-7(6)*]

16. The Hydraulic Model Design Elements Report identifies the hydraulic modeling method, and if computer software was used, the Report identifies the software name and version used. [*R309-511-6(1)(f)*]

17. For community water system models, the community water system management has been provided with a copy of input and output data for the hydraulic model with the simulation that shows the worst case results in terms of water system pressure and flow. [*R309-511-6(2)(c)*]

18. The hydraulic model predicts that new construction will not result in any service connection within the new expansion area not meeting the minimum distribution system pressures as specified in *R309-105-9, Minimum Pressure Requirements*. [R309-511-6(1)(c)]

19. The hydraulic model predicts that new construction will not decrease the pressures within the existing water system to such that the minimum pressures as specified in *R309-105-9, Minimum Pressure Requirements* are not met. [R309-511-6(1)(d)] _____

20. The velocities in the model are not excessive and are within industry standards.

APPENDIX C
JVWCD Water Storage Agreement

WATER STORAGE AGREEMENT

THIS WATER STORAGE AGREEMENT (this "Agreement") is made this 10th day of April, 2007 (the "Execution Date"), between Bluffdale City, a municipal corporation organized under the laws of the State of Utah ("Bluffdale"), and the Jordan Valley Water Conservancy District, a water conservancy district organized under the laws of the State of Utah (the "District").

RECITALS:

- A. The District is a water conservancy district organized and existing pursuant to the Utah Water Conservancy Act, as amended, Utah Code Ann. (Supp. 2006) §§ 17A-2-1401 et seq., for the purposes, among others, of conserving, acquiring, appropriating, developing, storing, selling, leasing, distributing, and stabilizing supplies of water for domestic, manufacturing, and other beneficial uses;
- B. Bluffdale is a municipality organized under the laws of the State of Utah, which provides retail water service to residents within its boundaries and to other customers;
- C. Bluffdale purchases water from the District;
- D. Bluffdale and the District have a beneficial and cooperative relationship, and they voluntarily coordinate operations of certain features of their water systems for their mutual benefit;
- E. Bluffdale desires to have three (3) million gallons of finished water storage capacity available to it;

F. The District is willing: (i) contemporaneously with the execution of this Agreement, to enter into the Facilities Cooperation Agreement with the Metropolitan Water District of Salt Lake & Sandy ("Metro"), and thereby purchase three (3) million gallons of finished water storage capacity in a new water reservoir constructed by Metro at the site of its Point of the Mountain Water Treatment Plant ("POMWTP") in Draper City, Utah; (ii) to employ that storage capacity for Bluffdale's benefit; (iii) to coordinate the operation of the storage reservoir for the benefit of Bluffdale; (iv) to pay the operation and maintenance costs associated with the storage capacity; and, (v) to provide Bluffdale peak demand credits on water purchases in recognition of the downstream location of Bluffdale's meter stations, all in accordance with the terms and conditions of this Agreement; and,

G. Bluffdale is willing to pay the District One Million Three Hundred Twenty-Three Thousand and 00/100 Dollars (\$1,323,000.00) for the purchase of the storage capacity, all in accordance with the terms and conditions of this Agreement.

TERMS:

The parties agree as follows:

1. Purchase of Storage Capacity. Bluffdale shall purchase three (3) million gallons of finished water storage capacity in a water reservoir constructed by Metro at its Point of the Mountain Water Treatment Plant in Draper City, Utah (the "Bluffdale

Storage"). Purchase of the Bluffdale Storage shall be completed by payment from Bluffdale to the District as set forth below.

2. Storage Capacity for Bluffdale's Benefit. The Bluffdale Storage shall be for Bluffdale's benefit during the term of this Agreement.

3. Bluffdale's Payment to the District. In consideration for the District's participation in the ongoing maintenance, and as payment for the Bluffdale Storage, Bluffdale shall pay the District One Million Three Hundred Twenty-Three Thousand and 00/100 Dollars (\$1,323,000.00) on the Execution Date. Bluffdale shall tender the full payment to the District on the Execution Date, and the District hereby acknowledges receipt of full payment.

4. Costs.

(a) The District shall pay all routine operation costs associated with the Bluffdale Storage, which shall include those costs attributable to normal, day-to-day operations, limited to direct costs, labor, energy and utilities, travel, training, office supplies, liability and hazard insurance, vehicles, uniforms, tools and equipment, laboratory expenses, safety and security expenses, water quality testing, treatment chemicals, and data processing, plus any administrative fee(s).

(b) The District shall pay all routine maintenance, repair, and replacement costs associated with the Bluffdale Storage, which shall include those costs attributable to normal maintenance, repair, and/or replacement which is conducted on a regular or periodic basis to maintain it in good repair, working order, and operating condition, limited to direct costs, labor, energy and utilities, travel, training, office supplies, property insurance (specifically including earthquake

coverage), vehicles, uniforms, tools and equipment, laboratory expenses, water quality testing, and data processing, plus any administrative fee(s).

(c) Bluffdale shall pay all extraordinary maintenance, repair, and replacement costs associated with the Bluffdale Storage, which shall include those costs attributable to unforeseen or extraordinary operation, maintenance, repair, or replacement, including but not limited to those costs attributable to the elimination of severe, recurring problems, and to acts of terrorism and to force majeure.

(d) Bluffdale shall pay all capital improvement costs associated with the Bluffdale Storage. No capital improvements shall be made without Bluffdale's prior approval, which approval shall not be unreasonably withheld or delayed.

5. General Operations.

(a) The District shall coordinate with others the administration and management of the operations, maintenance, repair, and replacement of the Bluffdale Storage in a manner consistent with this Agreement for the benefit of Bluffdale.

(b) Extraordinary operation, maintenance, repair, and replacement costs and capital improvement costs shall be billed quarterly as incurred, and all invoices shall be due and payable within thirty (30) days of billing.

(c) The District shall provide Bluffdale with reasonably detailed invoices and supporting documentation showing the total extraordinary operation, maintenance, repair, and replacement costs, and capital improvement costs.

(d) The operations of the Bluffdale Storage may be suspended temporarily, in whole or in part, for operation, maintenance, repair, and replacement

work. The District shall make good faith efforts to coordinate and schedule OMR&R work with others based on Bluffdale's reasonable requests.

(e) Any payment under this Agreement not made when due shall bear simple, annual interest at the Utah Public Treasurer's Investment Fund Rate, commencing the day after the due date and accruing until paid in full.

6. Peak Demand Credit.

(a) The parties acknowledge: (i) the Bluffdale Storage is for the benefit of Bluffdale; (ii) as of the Execution Date, Bluffdale purchased the Storage; and, (iii) Bluffdale's meter stations are at locations where the effect of storage moderating Bluffdale's peak demands from the District cannot be measured directly.

(b) When the Bluffdale Storage is complete and operational and being used for the benefit of Bluffdale, Bluffdale shall be given a total demand credit of two thousand five hundred twenty (2,520) gallons per minute on the peak hourly demands of its flows measured at any meter station(s) along the 150th South Pipeline and the 150th South Pipeline Extension.

(c) The adjusted peak hourly demands, as calculated in subparagraph 6(b), shall be used by the District to calculate Bluffdale's annual water rate in accordance with the District's then-current rate methodology, policies, rules, and procedures. On the Execution Date, the District used the Base-Extra Capacity Method of the American Water Works Association, as interpreted and implemented by the District. The District may choose periodically to change methodologies and/or to change its interpretation and implementation of any methodology it selects, and/or to

adopt, amend, or abandon its policies, rules, and regulations, and, as a consequence, the demand credit may provide different rate benefits to Bluffdale or none at all.

7. Representations and Warranties. The parties make the following respective representations and warranties as of the Execution Date, which representations and warranties shall survive that date and any termination of this Agreement:

(a) By Bluffdale. Bluffdale is a municipality duly organized under the laws of the State of Utah and is duly authorized to conduct business in the State of Utah. The persons signing this Agreement for Bluffdale have full authority to do so, and Bluffdale has undertaken and obtained whatever formalities and approvals are necessary to enter into and to carry out this Agreement, and this Agreement, when executed, is legally binding on Bluffdale.

(b) By the District. The District is a water conservancy district organized under the laws of the State of Utah. The persons signing this Agreement for the District have full authority to do so, and the District has undertaken and obtained whatever formalities and approvals may be necessary to enter into and to carry out this Agreement, and this Agreement, when executed, is legally binding on the District.

(c) By Both Parties. There are no actions, claims, proceedings, litigation, or investigations pending or, to the best of the party's knowledge, threatened before or by any court or governmental entity that could adversely affect the party's ability to fulfill the obligations undertaken hereby.

8. Term.

(a) The parties acknowledge: (i) Bluffdale has the benefit of finished water storage capacity as granted by the District under this Agreement; (ii) the District's rights to that capacity arise from and are subject to applicable terms and conditions of the Facilities Cooperation Agreement between the District and Metro; and, (iii) therefore, Bluffdale's rights to the Bluffdale Storage capacity are subject to the terms and conditions of the Facilities Cooperation Agreement.

(b) This Agreement shall commence on the Execution Date and shall terminate on the first to occur of the following: (i) the written agreement of the parties; or, (ii) expiration or termination of the Facilities Cooperation Agreement.

9. No Assignment. Neither this Agreement nor any rights under this Agreement may be assigned in whole or in part by either party without the other party's prior written consent.

10. Interlocal Act Representations. To the extent this Agreement is governed by the Utah Interlocal Cooperation Act, Utah Code Ann. (Supp. 2006) §§ 11-13-1 et seq. (the "Act"), the parties represent, acknowledge, and agree that this Agreement:

(a) Has been approved by each party's governing authority, which is also each party's respective "legislative body," as that term is used in the Act;

(b) Prior to its execution, has been submitted to each party's attorney authorized to represent it for review of proper form and compliance with applicable law;

(c) Specifies: (i) its duration; (ii) its purposes; (iii) the manner of financing, establishing, and maintaining a budget for the parties' joint and cooperative undertakings; (iv) the manner of acquiring, holding, and disposing of real and personal

property used in the parties' joint and cooperative undertakings; and, (v) the methods to accomplish the partial or complete termination of the Agreement and for disposing of property upon termination; and,

(d) Provides for operation and management of the storage capacity by the District, which is the administrator of the parties' joint involvement and activity in the reservoir, as the term "administrator" is used in the Act.

11. Miscellaneous.

(a) Notices. Any notice, communication, or payment required or allowed by this Agreement shall be in writing and delivered by hand or sent by United States mail or express courier addressed as set forth below:

If to Bluffdale:

Bluffdale City
Attn: Mayor
14350 South 2200 West
Bluffdale, UT 84065

If to the District:

Jordan Valley Water Conservancy District
Attn: General Manager
8215 South 1300 West
P. O. Box 70
West Jordan, UT 84088-0070

Either party may, by written notice delivered to the other, change the address to which delivery shall thereafter be made. Any such communication shall be deemed effective as of the date and time it is actually received.

(b) Construction and Enforcement. Each party and counsel for each party have reviewed this Agreement and, accordingly, the normal rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not be

employed in the interpretation of this Agreement. The parties agree that this Agreement may be specifically enforced.

(c) Severability; Waiver. In the event a court, governmental agency, or regulatory agency with proper jurisdiction determines that any provision of this Agreement is unlawful, that provision shall terminate. If a provision is terminated, but the parties can legally, commercially, and practicably continue to perform this Agreement without the terminated provision, the remainder of this Agreement shall continue in effect. One or more waivers by either party of any provision, term, condition, or covenant shall not be construed by the other party as a waiver of any subsequent breach of the same by the other party.

(d) Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective successors and assigns, if any.

(e) Attorney Fees. In any action arising out of this Agreement, the prevailing party shall be entitled to costs and reasonable attorney fees.

(f) No Third Party Beneficiaries. This Agreement is not intended to and shall not create any rights in any person or entity not a party to this Agreement.

(g) Entirety of Agreement. This Agreement represents the entire agreement between the parties with respect to its subject matter and, with the exception of paragraphs 6 and 8, shall be construed without reference to any prior or other agreement(s) between the parties. Except as set forth in paragraph 6, this Agreement does not modify, amend, or change the "City of Bluffdale Water Purchase Agreement and Class B Petition" between the parties, as it may be amended, dated January 1, 1999. Other than good faith and fair dealing, there are no terms or conditions, express

or implied, other than herein stated. This Agreement may not be amended or supplemented except by an instrument in writing signed by both parties.

(h) Legal Compliance. The parties shall comply with all applicable federal, state, and local laws and ordinances in the performance of this Agreement. Any terms which the parties as governmental entities are mandated by law to include in this Agreement shall be considered part of this Agreement. The parties acknowledge and agree that their rights and obligations under this Agreement are subject to their compliance with the applicable provisions of the Utah Water Conservancy Act, the Utah Metropolitan Water District Act, and applicable Utah and federal laws and regulations.

(i) Force Majeure. Neither party shall be deemed in violation of this Agreement if it is prevented from performing any of its obligations by reason of earthquakes or other natural disaster; strikes or other labor unrest; power failures; civil or military emergencies; acts of legislative, judicial, executive, or administrative authorities; or any other circumstances which are not within its reasonable control.

(j) Defined Terms. The following terms shall have the meaning(s) given them in the Facilities Cooperation Agreement: "150th South Pipeline"; "150th South Pipeline Extension"; and, "OMR&R."

"Bluffdale":

BLUFFDALE CITY

By:

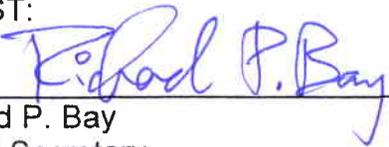

Claudia Anderson
Its Mayor

ATTEST:


City Recorder



ATTEST:



Richard P. Bay
District Secretary

"District":

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

By:



Steven L. Taggart
Its Vice Chair

STATE OF UTAH)
 : ss.
COUNTY OF SALT LAKE)

The foregoing instrument was acknowledged before me this 15 day of May, 2007, by Claudia Anderson, the Mayor of Bluffdale City, a Utah municipality, on its behalf.



Jennifer Crum
NOTARY PUBLIC, residing in
Bluffdale Ut

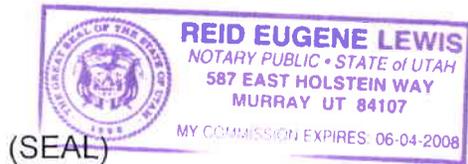
My commission expires:

3/31/08



STATE OF UTAH)
 : ss.
COUNTY OF SALT LAKE)

The foregoing instrument was acknowledged before me this 13th day of June, 2007, by Steven L. Taggart, the Vice Chair of the Jordan Valley Water Conservancy District, a water conservancy district organized under the laws of the State of Utah, on its behalf.



Reid Eugene Lewis
NOTARY PUBLIC, residing in
Murray, Ut.

My commission expires:

JUNE 4, 2008



**WATER MASTER PLAN
PART II: PRESSURIZED IRRIGATION**

(HAL Project No.: 394.01.100)

DRAFT

October 2016

CITY OF BLUFFDALE

WATER SYSTEM MASTER PLAN
PART II: PRESSURIZED IRRIGATION

(HAL Project No.: 394.01.100)

Steven C. Jones, P.E.
Principal, Project Manager



October 2016

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Hansen, Allen & Luce thanks the following individuals for their contributions to this project:

City of Bluffdale

Derk Timothy, Mayor

Mark Reid, City Manager

Michael Fazio, City Engineer

Grant Crowell, City Planner and Economic Development Director

Blaine Dietrich, Public Works Operations Manager

GLOSSARY

Average Daily Flow: The average yearly demand volume expressed in a flow rate.

Average Yearly Demand: The volume of water used during an entire year.

Build-out: When the development density reaches maximum allowed by planned development.

Demand: Required water flow rate or volume.

Distribution System: The network of pipes, valves and appurtenances contained within a water system.

Drinking Water: Water of sufficient quality for human consumption. Also referred to as culinary or potable water.

Dynamic Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is flowing through the system.

Equivalent Residential Connection: A measure used in comparing water demand from non-residential connections to residential connections.

Fire Flow Requirements: The rate of water delivery required to extinguish a particular fire. Usually it is given in rate of flow (gallons per minute) for a specific period of time (hours).

Head: A measure of the pressure in a distribution system that is exerted by the water. Head represents the height of the free water surface (or pressure reduction valve setting) above any point in the hydraulic system.

Head Loss: The amount of pressure lost in a distribution system under dynamic conditions due to the wall roughness and other physical characteristics of pipes in the system.

Peak Day: The day(s) of the year in which a maximum amount of water is used in a 24-hour period.

Peak day Demand: The average daily flow required to meet the needs imposed on a water system during the peak day(s) of the year.

Peak Instantaneous Demand: The flow required to meet the needs imposed on a water system during maximum flow on a peak day.

Pressure-Reducing Valve (PRV): A valve used to reduce excessive pressure in a water distribution system.

Pressure Zone: An area within a distribution system in which water pressure is maintained within specified limits.

Service Area: Typically, the area within the boundaries of the entity or entities that participate in the ownership, planning, design, construction, operation, and maintenance of a water system.

Static Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is not flowing through the system, i.e., during periods of little or no water use.

Storage Reservoir: A facility used to store, contain and protect drinking water until it is needed by the customers of a water system. Also referred to as a Storage Tank.

Transmission Pipeline: A pipeline that transfers water from a source to a reservoir or from a reservoir to a distribution system.

Water Conservation: Planned management of water to prevent waste.

ABBREVIATIONS

ac	acre [area]
ac-ft	acre-foot (1 ac-ft = 325,851 gal) [volume]
DIP	Ductile Iron Pipe
EPA	U.S. Environmental Protection Agency
EPANET	EPA hydraulic network modeling software
ERC	Equivalent Residential Connection
ft	foot [length]
ft/s	feet per second [velocity]
gal	gallon [volume]
gpd	gallons per day [flow rate]
gpm	gallons per minute [flow rate]
HAL	Hansen, Allen & Luce, Inc.
hp	horsepower [power]
hr	hour [time]
in.	inch [length]
irr-ac	irrigated acre [area]
JVWCD	Jordan Valley Water Conservancy District
kgal	thousand gallons [volume]
LF	linear foot [length]
MG	million gallons [volume]
MGD	million gallons per day [flow rate]
NAIP	National Agricultural Imagery Program
mi	mile [length]
psi	pounds per square inch [pressure]
s	second [time]
SCADA	Supervisory Control And Data Acquisition
yr	year [time]

CHAPTER 1 - INTRODUCTION

PURPOSE AND SCOPE

The purpose of this part of the Water Mater Plan is to provide direction to the City of Bluffdale (the City) regarding decisions that will be made over the next 5 to 10 years to provide an adequate pressurized irrigation system for customers within the system's service area. Recommendations are based on water use, growth projections, standards of the Utah Division of Drinking Water (DDW), the City's General Plan, and standard engineering practices. The planning horizon for the master plan is build-out.

This part of the master plan is a study of the City's pressurized irrigation system. It addresses source requirements, storage requirements, and distribution system requirements. Capital improvements needed to meet the requirements have been identified and conceptual-level cost estimates have been provided.

The results of the study are limited by the accuracy of growth projections, data provided by the City, and other assumptions used in preparing the study. It is expected that the City will review and update this master plan every 5–10 years as new information about development, system performance, or water use becomes available.

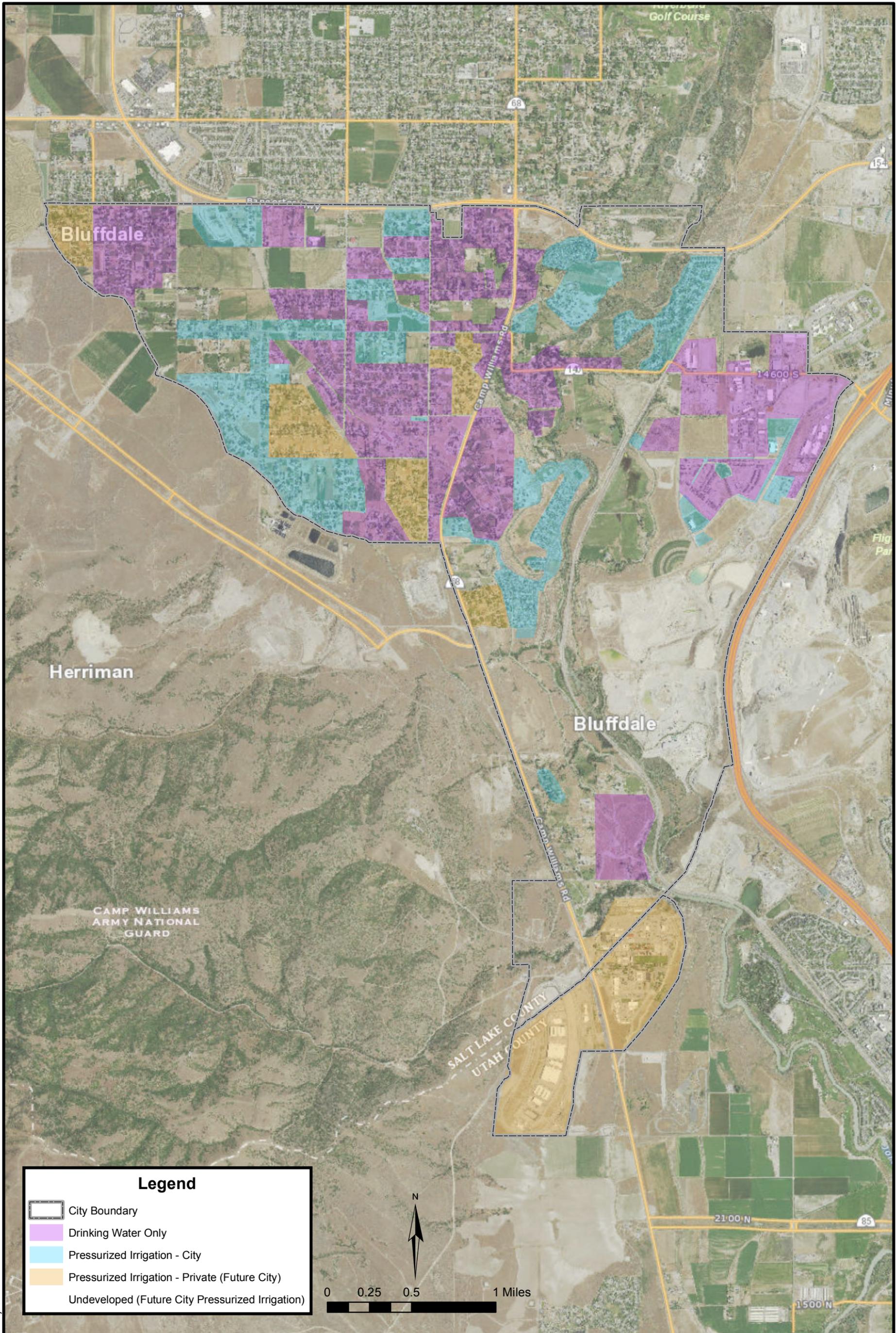
BACKGROUND

Bluffdale is located primarily in Salt Lake County, Utah, with a portion located in Utah County, Utah. The City is home to open spaces, dramatic views of the Wasatch Range, and a significant stretch of the Jordan River. Its unique semirural lifestyle has attracted many new residents and businesses, increasing the population in the last 20 years from about 1,700 to 8,000 and incurring rapid housing and infrastructure expansion (Bluffdale 2014a).

MASTER PLANNING APPROACH

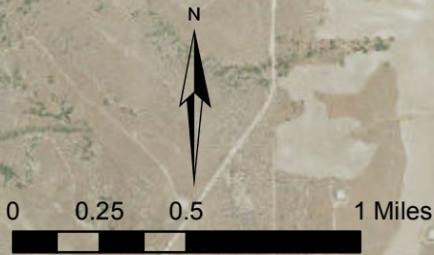
About 40 independent City-owned and private pressurized irrigation (PI) systems serve portions of Bluffdale. The City's drinking water system provides water for outdoor use to other parts of the city. Service areas for both drinking water and pressurized irrigation systems were delineated during a March 2016 workshop with City staff (Figure 1-1).

The City's pressurized irrigation system consists of water sources, pumps, storage facilities, valves, and pipes. The system must be able to responding to daily and seasonal variations in demand. In order to meet these goals, each of the system components must be properly designed and operated. Furthermore, careful planning is required in order to ensure that the system is capable of meeting the City's needs through build-out.



Legend

-  City Boundary
-  Drinking Water Only
-  Pressurized Irrigation - City
-  Pressurized Irrigation - Private (Future City)
-  Undeveloped (Future City Pressurized Irrigation)



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**BLUFFDALE CITY
 WATER MASTER PLAN**

**OUTDOOR WATER USE
 SERVICE AREAS**

**FIGURE
 1-1**

For planning purposes, four scenarios were identified:

1. Irrigation by City pressurized irrigation systems (City owned, privately operated; built to City standards)
2. Irrigation by private pressurized irrigation systems (privately owned, privately operated)
3. Irrigation by City drinking water system only (no pressurized irrigation system)
4. Undeveloped areas (future City pressurized irrigation systems)

The master plan assumes the following:

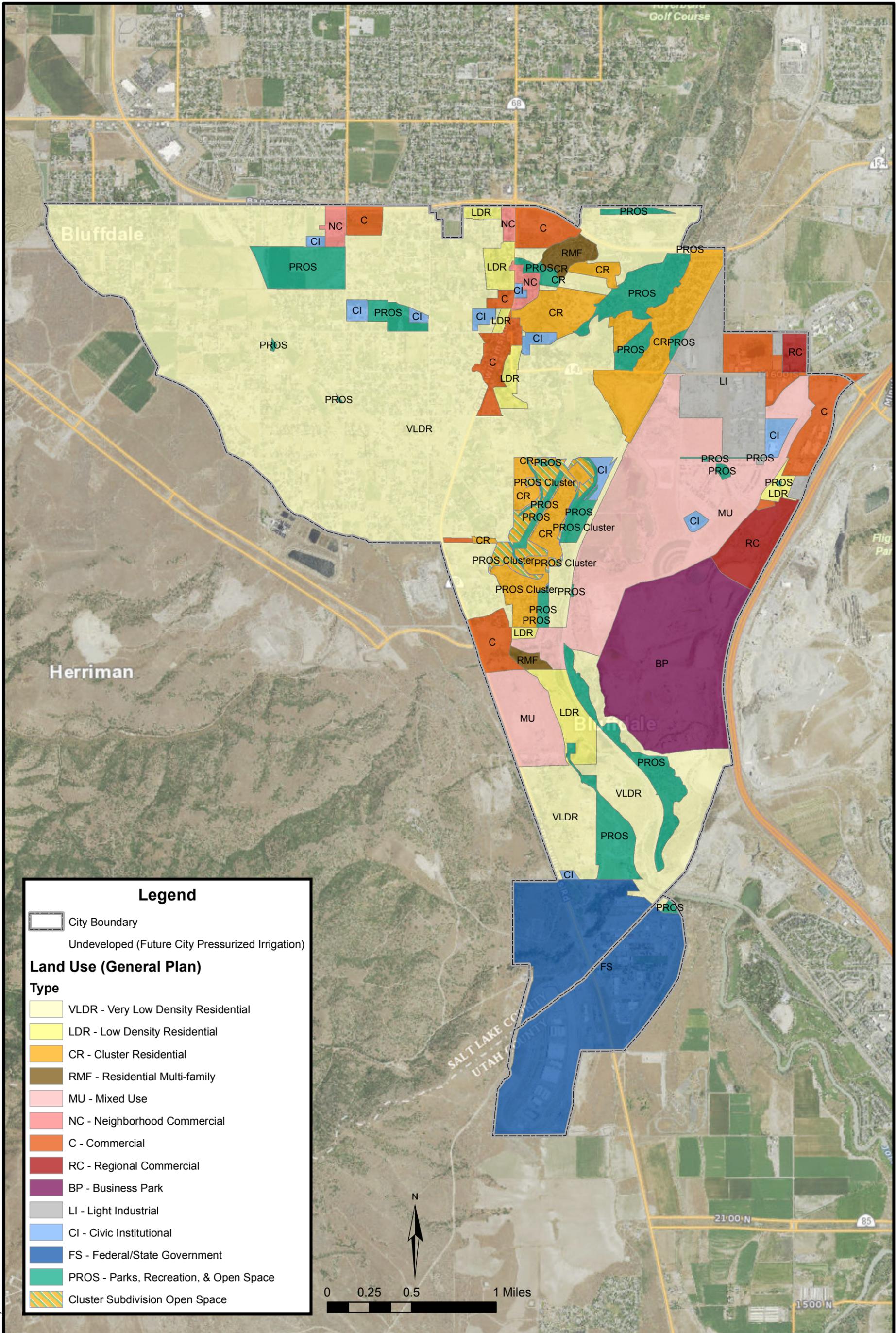
1. City pressurized irrigation systems will continue to irrigate their existing service areas. No drinking water demand for irrigation is assumed in these areas.
2. Since the longevity of private pressurized irrigation systems is uncertain, irrigation demand in these areas will be planned as if supplied by the drinking water system.
3. Existing developments with only the City drinking water system (no pressurized irrigation) will continue to be irrigated with the City's drinking water system, except the area bounded by Redwood Road, 14400 South, 2700 West, and Bangerter Highway, which the City identified as a potential pressurized irrigation service area given an anticipated reclaimed water source. Otherwise, no new pressurized irrigation systems will be planned in areas already served by drinking water.
4. All new developments will require a working pressurized irrigation system constructed to City standards. The City will not allow any more private pressurized irrigation systems.

Both existing and future needs were evaluated in this master plan. Existing pressurized irrigation demands were calculated according to HAL's experience with similar systems and an analysis of existing irrigated area. Future water demands were projected by analyzing existing demands for each land use type in Bluffdale and applying the result to undeveloped areas according to the City's anticipated future land use as documented in the General Plan (Bluffdale 2014a, 2014b, 2015a). See Figures 1-2 and 1-3.

In order to facilitate the analysis of Bluffdale's pressurized irrigation system, a hydraulic model was prepared in EPANET and analyzed for future conditions. Recommendations for system improvement were prepared based on the results of these analyses.

KEY SYSTEM DESIGN CRITERIA

Table 1-1 summarizes key pressurized irrigation system design criteria. The design criteria, described in later chapters, were used to evaluate system performance and recommend future improvements. Pressurized irrigation systems are not regulated by the Utah Division of Drinking Water. Since the state standards for outdoor water use have been observed to be inadequate



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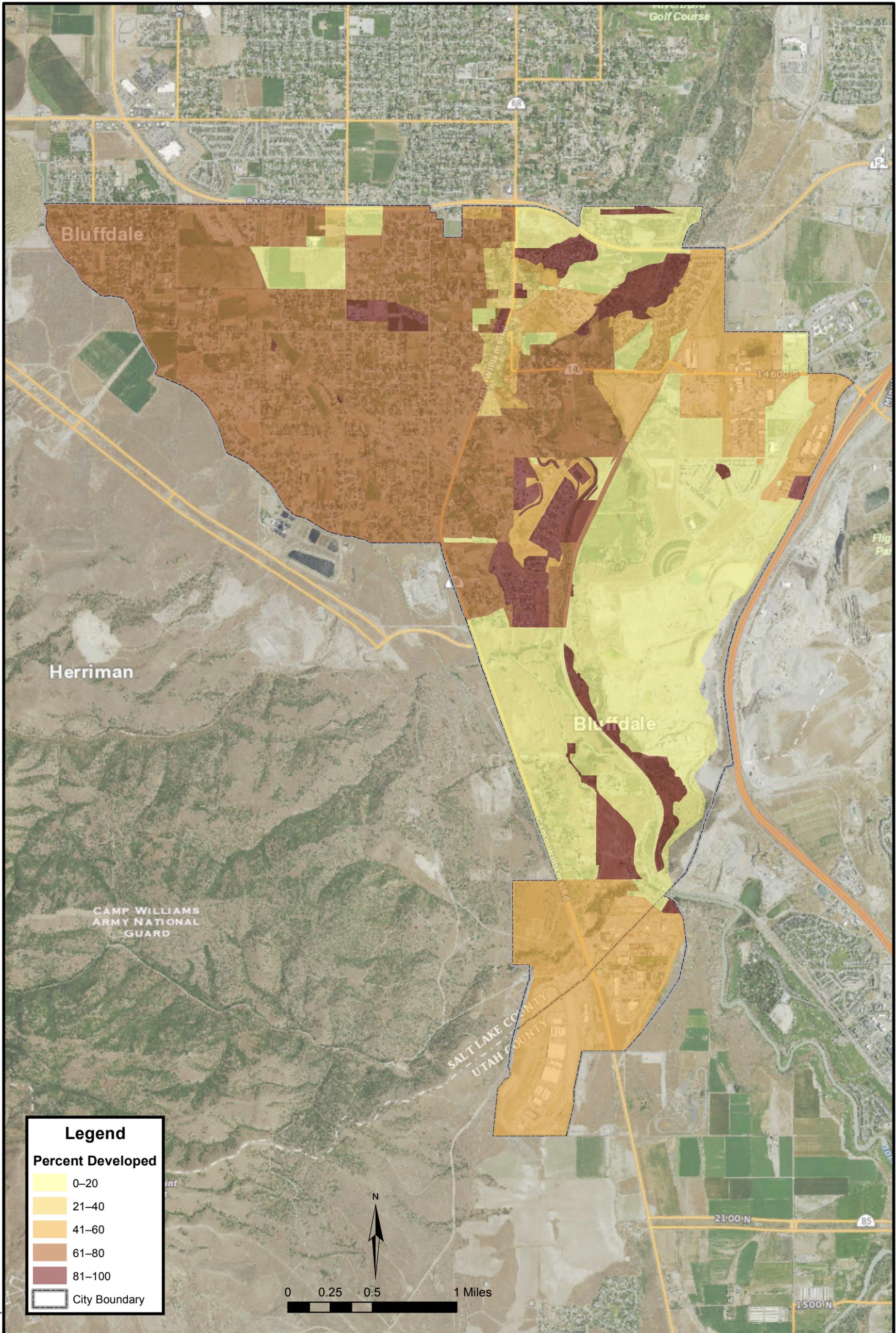
- City Boundary
- Undeveloped (Future City Pressurized Irrigation)

Land Use (General Plan)

Type

- VLDR - Very Low Density Residential
- LDR - Low Density Residential
- CR - Cluster Residential
- RMF - Residential Multi-family
- MU - Mixed Use
- NC - Neighborhood Commercial
- C - Commercial
- RC - Regional Commercial
- BP - Business Park
- LI - Light Industrial
- CI - Civic Institutional
- FS - Federal/State Government
- PROS - Parks, Recreation, & Open Space
- Cluster Subdivision Open Space

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Percent Developed

- 0-20
- 21-40
- 41-60
- 61-80
- 81-100

City Boundary

0 0.25 0.5 1 Miles

N

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for such systems, this master plan proposes design criteria that exceed the state standards and represent more realistic pressurized irrigation demands observed in other Utah cities.

Table 1-1: Key Pressurized Irrigation System Design Criteria

Parameter	Criteria ¹	Existing Requirements	Estimated Build-Out Requirements
Irrigated Acreage	Calculated	803 irr-ac	1,030 irr-ac
Source			
Peak Day Demand	7.50 gpm/irr-ac	6,023 gpm	7,725 gpm
Average Yearly Demand	3.13 ac-ft/irr-ac	2,513 ac-ft	3,224 ac-ft
Storage			
Equalization	0.0283 ac-ft/irr-ac	22.7 ac-ft	29.1 ac-ft
Distribution			
Peak Instantaneous Flow	15.00 gpm/irr-ac	12,045 gpm	15,450 gpm
Max. Operating Pressure	City Preference	100 psi	100 psi
Min. Operating Pressure	City Preference	40 psi	40 psi

1. Design criteria proposed here exceed those of Utah Administrative Code R309-510 for outdoor use: peak day demand, 4.52 gpm/irr-ac; average yearly demand, 2.69 ac-ft/irr-ac; equalization 0.0125 ac-ft/irr-ac; and peak instantaneous flow, 9.04 gpm/irr-ac

PRESSURE ZONES

Since many separate pressurized irrigation systems exist in Bluffdale, no specific pressure zones have been designated. For planning purposes, HAL recommends five approximate zones as presented in Table 1-2 and Figure 1-4. Note that Zones 3E and 3W (east and west) are hydraulically similar but geographically separated. These two zones may be connected with a pipeline through the planned Porter Rockwell Boulevard or some other convenient corridor.

The design criteria presented in this master plan are separated by pressure zone.

Table 1-2: Recommended Pressurized Irrigation Pressure Zones

Zone	Description	Approx. Head (ft)	Lower Service Elevation (ft)	Upper Service Elevation (ft)
1	Northern Bluffdale; Utah Lake Distributing Canal by gravity	4570	4350	4480
2	Central Bluffdale; Welby–Jacob Canal by gravity	4700	4480	4610
3E	Gravel pit	4810	4610	4720
3W	West edge	4810	4610	4720
4	Camp Williams, Utah Data Center	5090	4720	5000

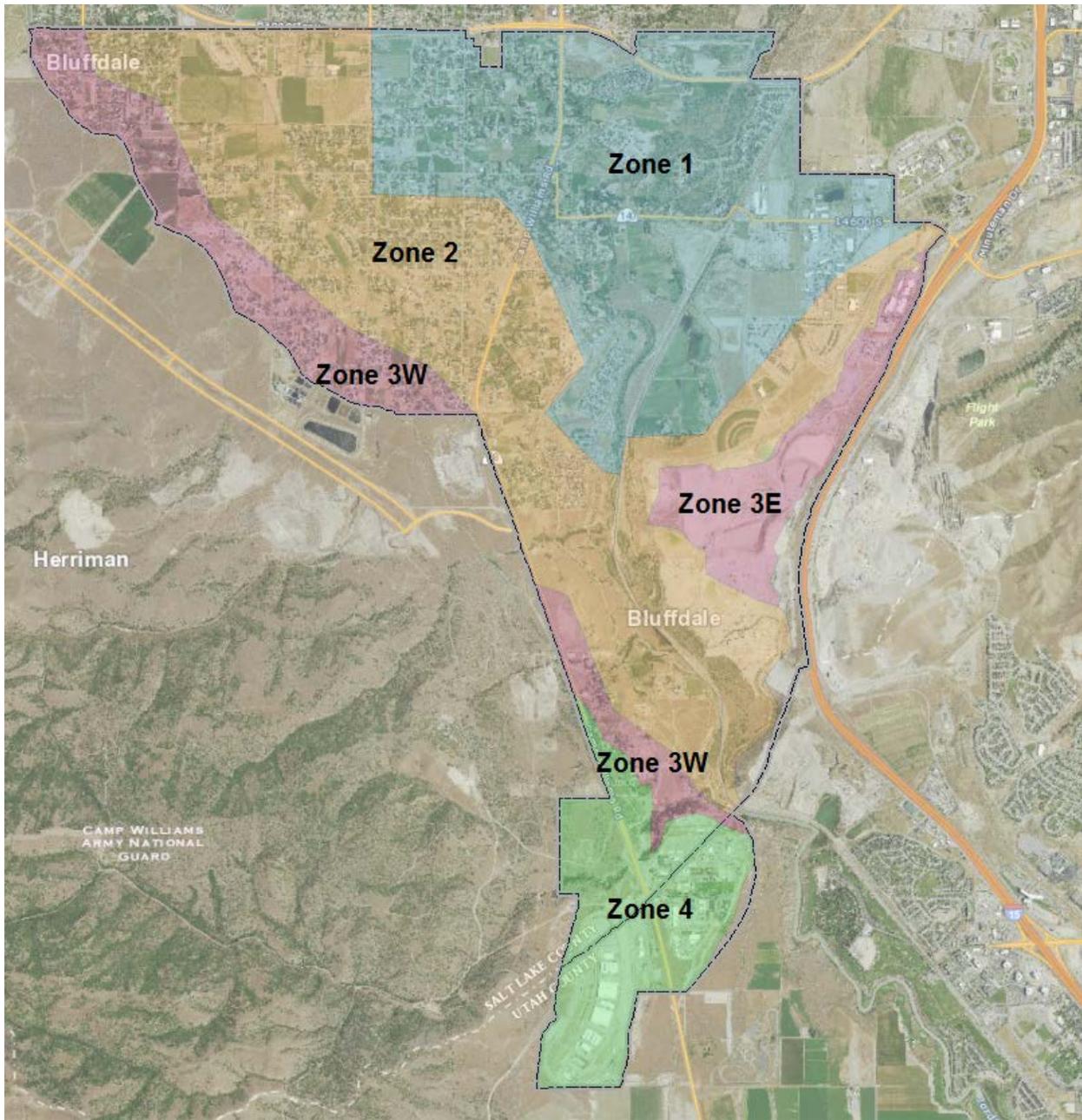


Figure 1-4: Recommended Pressurized Irrigation Pressure Zones

CHAPTER 2 - IRRIGATED AREA

TYPICAL IRRIGATION DENSITIES

For this master plan, HAL analyzed aerial imagery (AGRC 2014) and land use (Bluffdale 2014a, 2014b, 2015a) in Bluffdale to quantify typical irrigation densities, i.e., the proportion of a given land use that is irrigated. A representative sample of each developed land use was examined and the irrigated area measured relative to the gross development area. For land uses which do not yet exist, values of similar land uses were assumed. Table 2-1 presents these results. These densities were used in computing irrigated areas for existing and build-out conditions for both the pressurized irrigation system and the drinking water system.

Table 2-1: Typical Irrigation Densities

Land Use ¹	Typical Irrigation Density ²
VLDR - Very Low Density Residential	57%
LDR - Low Density Residential	41%
CR - Cluster Residential	36%
RMF - Residential Multifamily	32%
MU - Mixed Use	18%
NC - Neighborhood Commercial	43%
C - Commercial	7%
RC - Regional Commercial ³	7%
BP - Business Park ³	7%
LI - Light Industrial	2%
CI - Civic Industrial	45%
FS - Federal/State Government	7%
PROS - Parks, Recreation, Open Space	40%
Cluster Subdivision Open Space ⁴	0%

1. See General Plan Land Use Map (Bluffdale 2014b).

2. Irrigated area divided by gross development area.

3. Not yet developed. Assumed similar to Commercial.

4. Natural open space (not irrigated).

EXISTING IRRIGATED AREA

The existing estimated area irrigated by the pressurized irrigation system is 803 irr-ac. Irrigation provided by private irrigation systems and the City's drinking water system were excluded from these estimates per the assumptions presented in Chapter 1.

Existing pressurized irrigation service areas and their demands were tabulated in a geographic dataset and summed by pressure zone. Table 2-2 presents the irrigated areas associated with each recommended irrigation pressure zone under existing conditions.

Table 2-2: Existing Irrigated Area

Zone	Irrigated Area (irr-ac)
1	343
2	302
3E	3
3W	145
4	10
Total	803

BUILD-OUT IRRIGATED AREA

The amount of irrigated area at build-out was estimated by applying the values of Table 2-1 to a fully built-out condition for each land use. The estimated area irrigated by the pressurized irrigation system at build-out is 1,030 irr-ac.

Future pressurized irrigation service areas and their demands were tabulated in a geographic dataset and summed by pressure zone. Table 2-3 presents the irrigated areas associated with each potential irrigation pressure zone under build-out conditions.

The increase in irrigated area assigned to the pressurized irrigation system is attributed to the development of privately irrigated or unirrigated land.

Table 2-3: Build-Out Irrigated Area

Zone	Irrigated Area (irr-ac)
1	403
2	427
3E	22
3W	152
4	26
Total	1,030

CHAPTER 3 - SOURCES

EXISTING SOURCES

Table 3-1 summarizes the City's existing pressurized irrigation sources.

Table 3-1: Existing Pressurized Irrigation Sources

Source	Pressure Zone	Diameter (in.)	Capacity (gpm)	Capacity (ac-ft)
Total				

PUMP STATIONS

Table 3-2 presents the City's existing pressurized irrigation pump stations.

Table 3-2: Existing Pressurized Irrigation Pump Stations

Name	Location	From Zone	To Zone	Pumps	Rated Capacity (gpm)

EXISTING SOURCE REQUIREMENTS

Pressurized irrigation sources should be able to meet the expected demand for two conditions: peak day demand and average yearly demand. Peak day demand is the water demand on the day of the year with the highest water use and is used to determine the required source capacity under existing and build-out conditions. Irrigation systems should also be able to supply the

average yearly demand. Average yearly demand is the average volume of water used during the course of one year.

Existing Peak day Demand

For the existing irrigated area described in Chapter 2, the peak day source capacity required to meet the City’s existing pressurized irrigation demands is **6,023 gpm**. Table 3-3 presents existing source requirements for each potential pressure zone.

Existing Average Yearly Demand

For the existing irrigated area described in Chapter 2, the average yearly source capacity required to meet the City’s existing pressurized irrigation demands is **2,513 ac-ft**. Table 3-3 presents existing source requirements for each potential pressure zone.

Table 3-3: Existing Pressurized Irrigation Source Requirements

Pressure Zone	Peak day Demand (gpm)	Average Yearly Demand (ac-ft)	Existing Capacity (gpm)	Existing Capacity (ac-ft)	Surplus (Deficit) Capacity (gpm)	Surplus (Deficit) Capacity (ac-ft)
1	2,573	1,074				
2	2,265	945				
3E	23	9				
3W	1,087	454				
4	75	31				
Total	6,023	2,513				

BUILD-OUT SOURCE REQUIREMENTS

Pressurized irrigation demands will increase with development. Future source requirements were determined in the same manner as existing source requirements after calculating the number of projected irrigated acres.

Build-Out Peak Day Demand

For the build-out irrigated area described in Chapter 2, the peak day source capacity required to meet the City’s build-out pressurized irrigation demands is **7,725 gpm**. Table 3-4 presents build-out source requirements for each potential pressure zone.

Build-Out Average Yearly Demand

For the build-out irrigated area described in Chapter 2, the average yearly source capacity required to meet the City’s build-out pressurized irrigation demands is **3,224 ac-ft**. Table 3-4 presents build-out source requirements for each potential pressure zone.

Table 3-4: Build-Out Pressurized Irrigation Source Requirements

Pressure Zone	Peak day Demand ¹ (gpm)	Average Yearly Demand (ac-ft)	Existing Capacity (gpm)	Existing Capacity (ac-ft)	Surplus (Deficit) Capacity (gpm)	Surplus (Deficit) Capacity (ac-ft)
1	3,022	1,261				
2	3,203	1,337				
3E	165	69				
3W	1,140	476				
4	195	81				
Total	7,725	3,224				

SOURCE RECOMMENDATIONS

It is recommended that Bluffdale pursue additional secondary water sources to supply its pressurized irrigation system. These may include:

- Canal shares
- Shallow groundwater
- Conversion of abandoned private wells
- Other secondary water wells
- Reclaimed water from Jordan Basin Water Reclamation Facility
- Geneva Rock wells in Zone 3E when land is developed

CHAPTER 4 - STORAGE

EXISTING STORAGE

The City currently has no secondary water storage, though an irrigation pond is being planned.

EXISTING STORAGE REQUIREMENTS

Pressurized irrigation storage facilities should be able to provide equalization to meet peak demands during the time when demand exceeds the capacity of the sources. The existing storage requirement for Bluffdale's pressurized irrigation system is **22.7 ac-ft**. Table 4-1 summarizes the storage requirements by pressure zone.

Table 4-1: Existing Pressurized Irrigation Storage Requirements

Zone	Equalization (ac-ft)	Existing Capacity (MG)	Surplus (Deficit) Capacity (ac-ft)
1	9.7	0.0	(9.7)
2	8.5	0.0	(8.5)
3E	0.1	0.0	(0.1)
3W	4.1	0.0	(4.1)
4	0.3	0.0	(0.3)
Total	22.7	0.0	(22.7)

BUILD-OUT STORAGE REQUIREMENTS

The storage volumes required at build-out are based on the same criteria described for existing conditions. The build-out storage requirement for Bluffdale's pressurized irrigation system is **29.1 ac-ft**. Table 4-2 summarizes the storage requirements by pressure zone.

Table 4-2: Build-Out Pressurized Irrigation Storage Requirements

Zone	Equalization (ac-ft)	Existing Capacity (MG)	Surplus (Deficit) Capacity (ac-ft)
1	11.4	0.0	(11.4)
2	12.1	0.0	(12.1)
3E	0.6	0.0	(0.6)
3W	4.3	0.0	(4.3)
4	0.7	0.0	(0.7)
Total	29.1	0.0	(29.1)

STORAGE RECOMMENDATIONS

To address existing and future storage deficiencies, it is recommended that Bluffdale construct irrigation storage ponds in each zone, beginning with Zone 1 (11.4 ac-ft) and Zone 2 (12.1 ac-ft).

The planning of Bluffdale’s future water infrastructure hinges critically on the proper siting of drinking water and pressurized irrigation storage facilities. Their locations will influence the layout of major transmission pipelines, pump stations, and water sources.

Figure 4-1 shows recommended elevations and locations for pressurized irrigation storage ponds. The elevations indicated correspond to the approximate hydraulic grade line of each pressure zone (the elevation of the free water surface). To the degree possible, ponds should be located near these elevations in order to minimize pumping requirements and provide efficient and reliable service. This figure is a starting point; as a next step, a more detailed siting study is recommended to identify potential pond sites and select the most feasible ones.

The City is already exploring the feasibility of a large irrigation pond in southern Bluffdale near the existing 2 MG recycled-water tank and the Welby–Jacob Canal. An existing 16-inch-diameter pipeline conveys recycled water from the Utah Data Center from the tank to the city park. Since the terrain is steep here, it may be possible to construct ponds for both Zones 1 and 2 near each other but at different elevations.

The City may consider whether this pond should also be designed to accommodate recreational uses similar to Riverton’s Blackridge Reservoir, provided that the recreational aspects do not impair its hydraulic purpose to equalize irrigation demands.

In Utah, three types of open reservoirs are common for secondary water storage: concrete, earthen, and polypropylene. Enclosed tanks may be used for secondary water, although they are discouraged as it is difficult to remove sediment from them and they are the most expensive.

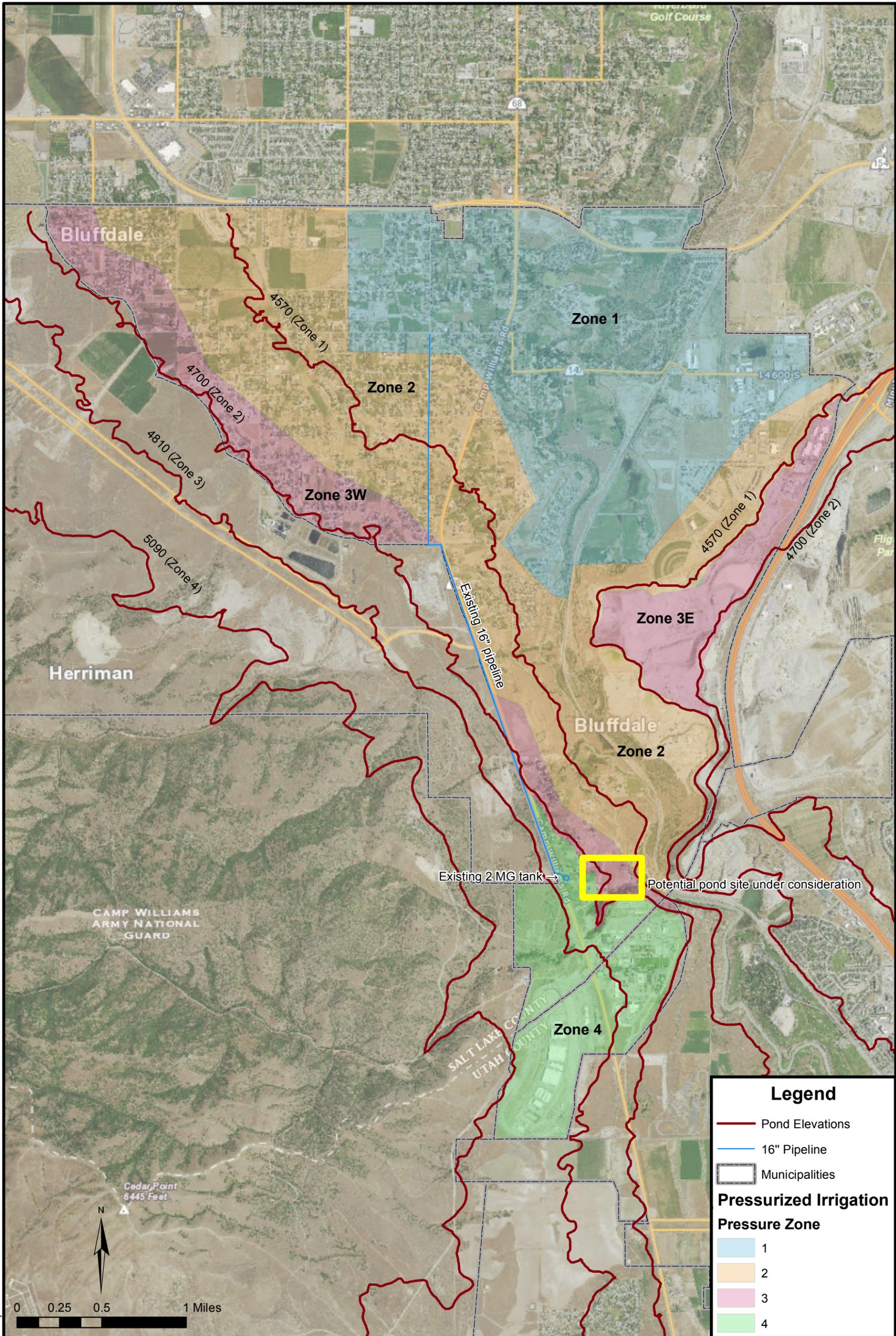
Larger ponds require permitting through the Division of Water Rights' Dam Safety program, when over 10 ac-ft and posing a hazard. Ponds over 20 ac-ft with an embankment requires a dam safety permit.

HAL's experience is that the concrete-lined ponds are the most durable; however, they are the most costly. A recent project placed costs at \$120,000/ac-ft.

The next most costly pond is an earthen pond, with a concrete floor for housekeeping. Costs are dependent on type of soil material in the area. A recent large 25 ac-ft pond had a cost of \$90,000/ac-ft.

The least expensive initial cost is typically a pond with a polypropylene liner with a concrete floor. A recent project had a cost of \$77,000/ac-ft. However, a polypropylene liner may only have a design life of 20 years. After the liner fails, it will need to be replaced.

A geotechnical report will assist in identifying a least expensive pond type by assessing the soil types and if import materials will be required for building the embankment. Costs cited here do not include property acquisition. For planning purposes, this master plan assumes an earthen pond with a cost of \$90,000/ac-ft.



Date: 7/27/2016
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**BLUFFDALE CITY
 WATER MASTER PLAN**

**PRESSURIZED IRRIGATION
 POND ELEVATIONS**

**FIGURE
 4-1**

CHAPTER 5 - DISTRIBUTION SYSTEM

EXISTING DISTRIBUTION SYSTEM

The pressurized irrigation distribution system consists of all pipelines, valves, fittings, and other appurtenances used to convey water from water sources and storage ponds to water users.

EXISTING DISTRIBUTION SYSTEM REQUIREMENTS

Bluffdale prefers a minimum pressure of 40 psi and a maximum pressure of 100 psi in its pressurized irrigation system. Minimum pressures occur during peak instantaneous demand, which for existing conditions is estimated at **12,045 gpm**.

BUILD-OUT DISTRIBUTION SYSTEM REQUIREMENTS

The existing system requirements also apply to the projected build-out system. Minimum pressures occur during peak instantaneous demand, which for build-out conditions is estimated at **15,450 gpm**.

HYDRAULIC MODEL

A computerized hydraulic model of the City's water distribution system was developed to analyze the performance of the existing and future distribution system and to prepare solutions for existing facilities that cannot meet the design criteria. The software used for the model was EPANET 2.0. This program, developed by the U.S. Environmental Protection Agency, models the hydraulic behavior of pipe networks.

HAL developed a future pressurized irrigation model based on the irrigation demands described in Chapter 2. The model contains major demand nodes in each pressure zone and existing major pipelines.

ANALYSIS METHODOLOGY

The EPANET model was used to analyze the performance of the pressurized irrigation system for projected future demands relative to the design criteria and City preferences of Chapter 1. The results of the model for each of the conditions are discussed below.

DISTRIBUTION SYSTEM RECOMMENDATIONS

Transmission pipelines should accompany the ponds recommended in Chapter 4. Since the exact locations of the ponds have not yet been determined, HAL has assumed nominal lengths for each transmission segment according to central demand nodes and the suggested ponds sites along the elevations shown in Figure 4-1.

CHAPTER 6 - WATER RIGHTS

In the course of the master planning process, the City requested HAL's assistance with matters pertaining to water rights, namely an exaction policy and change application recommendations.

WATER RIGHT EXACTION – OUTDOOR USE

The City should adopt a policy for water right exaction based on the following points. These matters were discussed with and/or circulated to City staff in March 2016 and received firm support.

HAL recommends that the City of Bluffdale exact water rights at 5.0 acre-feet per irrigated acre (ac-ft/irr-ac) from new developments for the purposes of outdoor irrigation. An additional exaction for indoor use is also required. Under Utah law, 5.0 ac-ft/irr-ac is the full irrigation duty in this part of the state—the water right required to legally irrigate an acre of land.

Regardless of the water rights, the actual irrigation water use may differ from the exaction depending on user behavior, climate, and other factors. (At the two properties on Apple Crest Lane in Bluffdale, the only two installed secondary meters at the time of this study, observed use was 3.1 and 7.4 ac-ft/irr-ac over a one-year period). Even with the full duty exacted, the City should continue to encourage outdoor water conservation to reduce demand. Water resources vary seasonally and annually, and in drought conditions, the full amount may not be available.

Developers may cite R309-510 as requiring only 2.69 ac-ft/irr-ac in Bluffdale (Map Zone 5). This is a minimum value based on the actual water consumption of a particular grass type. The rule states that the water supplier must then “consider water losses due to factors such as evaporation, irrigation delivery method, overwatering, pipe leaks, etc.” and “apply a safety factor to the irrigation demand in the design accordingly.” The 5.0 ac-ft/irr-ac duty is consistent with Utah water law and provides a sufficient safety factor for the City of Bluffdale.

Where possible, it is recommended that the actual irrigated area in a proposed development be calculated for the exaction. This means the actual, planned landscaped area on which the irrigation water will be applied (turf, shrubs, flowers, etc.). Otherwise, the gross-area values in Table 2-2 may be used.

CHAPTER 7 - CAPITAL IMPROVEMENTS PLAN

Throughout the master planning process, the three main components of the City's pressurized irrigation system (source, storage, and distribution) were analyzed to determine the system's ability to meet existing demands and the anticipated future demands at build-out. Capital improvements were recommended to correct deficiencies.

PRECISION OF COST ESTIMATES

When considering cost estimates, there are several levels or degrees of precision, depending on the purpose of the estimate and the percentage of detailed design that has been completed. The following levels of precision are typical:

<u>Type of Estimate</u>	<u>Precision</u>
Conceptual (Master Planning)	±50%
Preliminary Design	±30%
Final Design or Bid	±10%

For example, at the master planning level (or conceptual or feasibility design level), if a project is estimated to cost \$1,000,000, then the precision or reliability of the cost estimate would typically be expected to range between approximately \$500,000 and \$1,500,000. While this may seem very imprecise, the purpose of master planning is to develop general sizing, location, cost, and scheduling information on a number of individual projects that may be designed and constructed over a period of many years. Master planning also typically includes the selection of common design criteria to help ensure uniformity and compatibility among future individual projects. Details such as the exact capacity of individual projects, the level of redundancy, the location of facilities, the alignment and depth of pipelines, the extent of utility conflicts, the cost of land and easements, the construction methodology, the types of equipment and material to be used, the time of construction, interest and inflation rates, permitting requirements, etc., are typically developed during the more detailed levels of design.

At the preliminary or 10% design level, some of the aforementioned information will have been developed. Major design decisions such as the size of facilities, selection of facility sites, pipeline alignments and depths, and the selection of the types of equipment and material to be used during construction will typically have been made. At this level of design the precision of the cost estimate for a \$1,000,000 project would typically be expected to range between approximately \$700,000 and \$1,300,000.

After the project has been completely designed, and is ready to bid, all design plans and technical specifications will have been completed and nearly all of the significant details about the project should be known. At this level of design, the precision of the cost estimate for the same \$1,000,000 project would typically be expected to range between approximately \$900,000 and \$1,100,000.

SYSTEM IMPROVEMENT PROJECTS

As discussed in previous chapters, several source, storage and distribution system deficiencies were identified during the system analysis. Project costs for water system improvements are presented in Table 7-1. Each recommendation includes a conceptual cost estimate for construction.

Unit costs for the construction cost estimates are based on conceptual level engineering. Sources used to estimate construction costs include:

1. RSMMeans Heavy Construction Cost Data
2. Price quotes from equipment suppliers
3. Recent construction bids for similar work

All costs are presented in 2016 dollars. Recent price and economic trends indicate that future costs are difficult to predict with certainty. Engineering cost estimates provided in this study should be regarded as conceptual level for use as a planning guide. Only during final design can a definitive and more accurate estimate be provided for each project.

Table 7-1: Project Costs for Pressurized Irrigation System Improvements

Project	Description	Timeframe	Cost Estimate
Zone 1 Pond	11.4 ac-ft earthen impoundment (@ \$90,000/ac-ft)	0–5 years	\$1,026,000
Zone 1 Transmission	Assume 20-inch dia., 5,000 LF @ \$200/LF	0–5 years	\$1,000,000
Zone 2 Pond	12.1 ac-ft earthen impoundment (@ \$90,000/ac-ft)	0–5 years	\$1,089,000
Zone 2 Transmission	Assume 20-inch dia., 1,000 LF @ \$200/LF	0–5 years	\$200,000
Zone 3 Pond(s)	4.9 ac-ft earthen impoundment (@ \$90,000/ac-ft)	5–10 years	\$441,000
Zone 3 Transmission	Assume 12-inch dia., 3,000 LF @ \$138/LF	5–10 years	\$414,000
Zone 1 Pump Station	Pump station for reclaimed water from JBWRF	10–20 years	\$500,000
Zone 4 Pond	0.7 ac-ft earthen impoundment (@ \$90,000/ac-ft)	10–20 years	\$63,000
Zone 4 Transmission	Assume 12-inch dia., 1,000 LF @ \$138/LF	10–20 years	\$138,000
Total			\$4,871,000

In addition to the listed existing projects, the City will also need to plan for pipeline replacement.

FUNDING OPTIONS

In addition to water use fees, funding options for the recommended projects could include the following: general obligation bonds, revenue bonds, State/Federal grants and loans, and impact fees. In reality, the City may need to consider a combination of these funding options. The following discussion describes each of these options.

With respect to water use fees, it is recommended that the City reevaluate water rates periodically. Rates should be high enough to cover the full cost of producing and delivering water so that it is not necessary to subsidize water delivery with other funding sources. Charging customers for the true cost of water reinforces the idea that water is a valuable commodity. In addition, charging too little for water can erode the financial stability of a water system and interfere with conservation efforts.

General Obligation Bonds

This form of debt enables the City to issue general obligation bonds for capital improvements and replacement. General Obligation (G.O.) Bonds would be used for items not typically financed through the Water Revenue Bonds (for example, the purchase of water source to ensure a sufficient water supply for the City in the future). G.O. bonds are debt instruments backed by the full faith and credit of the City, which would be secured by an unconditional pledge of the City to levy assessments, charges or ad valorem taxes necessary to retire the bonds. G.O. bonds are the lowest-cost form of debt financing available to local governments and can be combined with other revenue sources such as specific fees, or special assessment charges to form a dual security through the City's revenue generating authority. These bonds are supported by the City as a whole, so the amount of debt issued for the water system is limited to a fixed percentage of the real market value for taxable property within the City.

Revenue Bonds

This form of debt financing is also available to the City for utility related capital improvements. Unlike G.O. bonds, revenue bonds are not backed by the City as a whole, but constitute a lien against the water service charge revenues of a Water Utility. Revenue bonds present a greater risk to the investor than do G.O. bonds, since repayment of debt depends on an adequate revenue stream, legally defensible rate structure and sound fiscal management by the issuing jurisdiction. Due to this increased risk, revenue bonds generally require a higher interest rate than G.O. bonds, although currently interest rates are at historic lows. This type of debt also has very specific coverage requirements in the form of a reserve fund specifying an amount, usually expressed in terms of average or maximum debt service due in any future year. This debt service is required to be held as a cash reserve for annual debt service payment to the benefit of bondholders. Typically, voter approval is not required when issuing revenue bonds.

State/Federal Grants and Loans

Historically, both local and county governments have experienced significant infrastructure funding support from state and federal government agencies in the form of block grants, direct grants in aid, interagency loans, and general revenue sharing. Federal expenditure pressures and virtual elimination of federal revenue sharing dollars are clear indicators that local government may be left to its own devices regarding infrastructure finance in general. However, state/federal grants and loans should be further investigated as a possible funding source for needed water system improvements.

It is also important to assess likely trends regarding federal / state assistance in infrastructure financing. Future trends indicate that grants will be replaced by loans through a public works revolving fund. Local governments can expect to access these revolving funds or public works trust funds by demonstrating both the need for and the ability to repay the borrowed monies, with interest. As with the revenue bonds discussed earlier, the ability of infrastructure programs to wisely manage their own finances will be a key element in evaluating whether many secondary funding sources, such as federal/state loans, will be available to the City.

Impact Fees

Impact fees can be applied to water related facilities under the Utah Impact Fees Act. The Utah Impacts Fees Act is designed to provide a logical and clear framework for establishing new development assessments. It is also designed to establish the basis for the fee calculation which the City must follow in order to comply with the statute. However, the fundamental objective for the fee structure is the imposition on new development of only those costs associated with providing or expanding water infrastructure to meet the capacity needs created by that specific new development. Also, impact fees cannot be applied retroactively.

SUMMARY OF RECOMMENDATIONS

Several recommendations were made throughout the master report. The following is a summary of the recommendations organized by category.

Source

- Continue to account for all canal shares and other secondary water sources.
- Pursue reclaimed water from Jordan Basin Water Reclamation Facility.
- Pursue additional groundwater sources, including new and abandoned wells.

Storage

- Construct adequate storage ponds for each pressure zone. The City currently has no irrigation storage facilities.

Distribution

- Construct transmission from each pond to a central service area.
- Consider a pipeline replacement program to replace undersized or aged pipes.

General

- Encourage indoor and outdoor water conservation as outlined in the City's recent Water Conservation Plan.

REFERENCES

- AGRC (Utah Automated Geographic Reference Center). 2014. "2014 NAIP 1 Meter Orthophotography." <http://gis.utah.gov/data/aerial-photography/2014-naip-1-meter-orthophotography>.
- Bluffdale, City of. 2014a. *City of Bluffdale General Plan*.
<http://www.bluffdale.com/DocumentCenter/Home/View/1037>.
- . 2014b. *City of Bluffdale General Plan Land Use Map*.
<http://www.bluffdale.com/DocumentCenter/Home/View/1029>.
- . 2015a. Meter Report, July 2014–June 2015. Spreadsheet, monthly data. Email from Marcia Adler, Sept. 23.
- . 2015b. Land Use Designations. GIS dataset. Email from Alan Peters, Oct. 5.
- DWR (Utah Division of Water Rights). 2015. Bluffdale Water System. Public Water Supplier Information. http://www.waterrights.utah.gov/cgi-bin/wuseview.exe?Modinfo=Pwsview&SYSTEM_ID=1264.
- Horrocks Engineers. 2015. *Bluffdale Capital Facilities Plan*.
- JVWCD (Jordan Valley Water Conservancy District). 2015a. Bluffdale Water Deliveries. Spreadsheet, monthly data, Jan. 2009–Aug. 2015. Email from Ron Kidd, Sept. 24.
- JVWCD (Jordan Valley Water Conservancy District). 2015b. Bluffdale SCADA Download. Spreadsheet, hourly data, Jan. 1, 2013–Sept. 23, 2015.
- JVWCD (Jordan Valley Water Conservancy District). 2016a. Points of Delivery, Capacity, and Flow Rates. Email from Dave McLean, Feb. 16.
- USCB (U.S. Census Bureau). 2016. Incorporated Places and Minor Civil Divisions Datasets: Subcounty Resident Population Estimates: April 1, 2010 to July 1, 2015. Last modified May 19. <http://www.census.gov/popest/data/cities/totals/2015/SUB-EST2015.html>.



14175 Redwood Road, Bluffdale, Utah 84065; Tel. 801-559-7781; mfazio@bluffdale.com

Memo

Date: 7 October 2016

From: Michael Fazio, P.E. 

To: Mark Reid, City Manager
Mayor Timothy
City Council

CC:

RE: Geographical Information System (GIS) Strategic Plan – Presentation

The City is trying to understand how to best use their resources in regards to mapping and asset management and other needs related to a geographical information. GIS is a mapping tool where we track all our infrastructure, related data. It is used as a planning tool and engineering tool to evaluate and present options. Bio-West, is working with the City to create “road map” or a strategic plan to fulfill the City needs in regards to geographical information. The current on-line maps were created by Bio-West for the City.

Glen Bush of Bio-West has interviewed all the City departments to assess their GIS needs and would like to understand what the City Council vision and goals for GIS are so that can be implemented in the strategic plan. This presentation provides the opportunity for the City Council to share their vision for the City GIS system.



REQUEST FOR CITY COUNCIL ACTION

To: Mayor and City Council
From: Jennifer Robison, Senior Planner
Date: 5 October 2016
Business Date: 12 October 2016
Subject: Preliminary and Final Subdivision Applications for The Preserves at Springview Farms for eighteen (18) residential lots on a private right of way.
Staff Presentation: Jennifer Robison

RECOMMENDATION: To approve The Preserves at Springview Farms and Final Subdivision Plat Applications as recommended by the Planning Commission on October 5, 2016.

BACKGROUND:

The applicant recently came before the Planning Commission and City Council to amend the General Plan and Zoning Map for the subject property. The applications were evaluated and approved by the City Council on May 25, 2016 to Low Density Residential for the General Plan in this area and R-1-10 zoning with an Infill Overlay. The Infill Overlay as approved with a Concept Plan allows the applicant to develop the subject property with additional or modified requirements specific to this project.

The Planning Commission recommended approval with the following conditions:

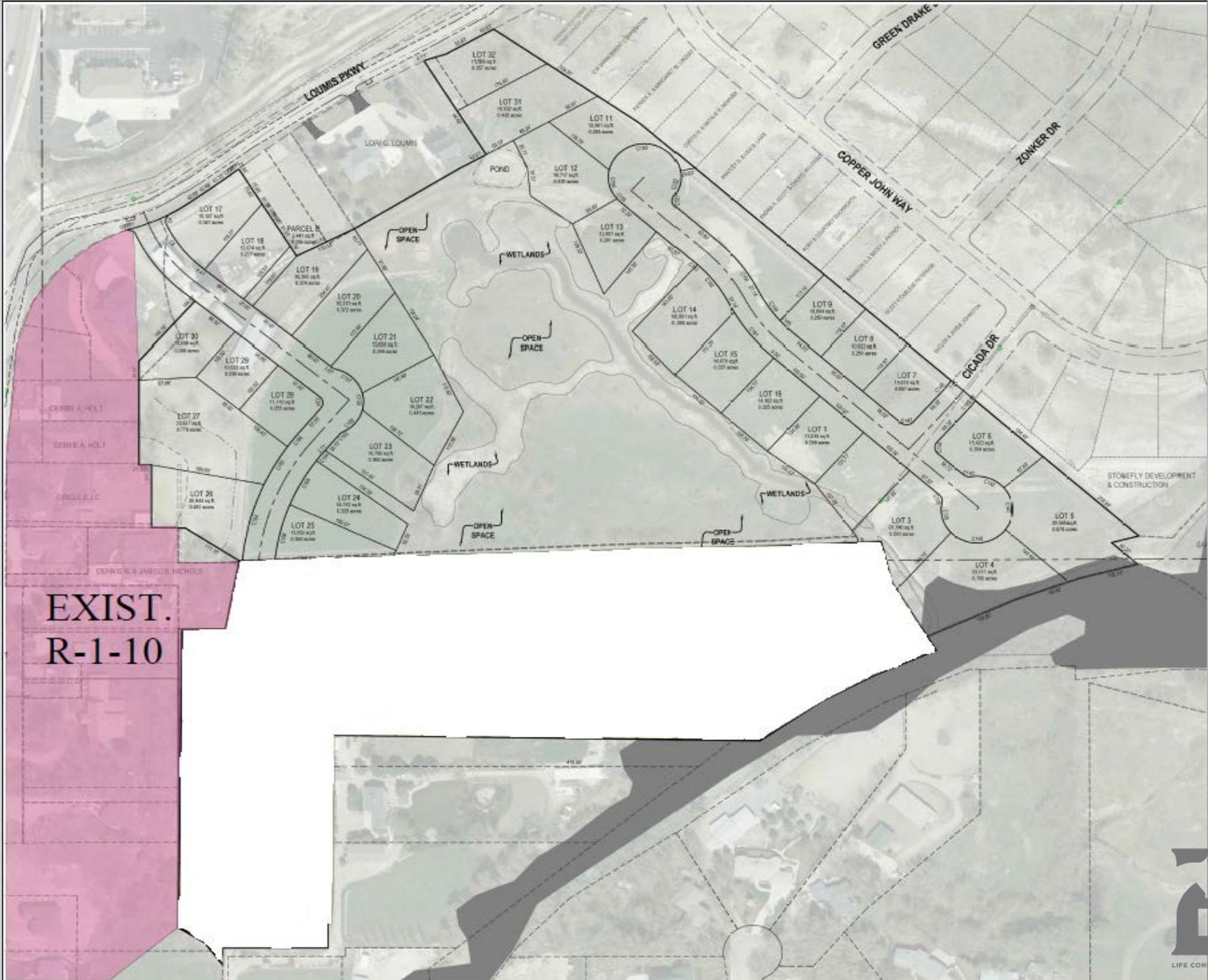
1. That all requirements of the City Code and adopted ordinances or modifications by the Infill Overlay zoning requirements approved by City Council are met and adhered to for the proposed subdivision.
2. That the final plat and all relevant construction drawings comply with the Bluffdale City Engineering Standards and Specifications and all recommendations by the City Engineer and Public Works Department prior to recordation of the final plat.
3. That all requirements identified in the memo dated 9/30/16 by Dan Tracer be complete and approved by the City Engineer prior to any construction activities on the property.
4. That the project adheres to all requirements of the International Fire Code and requirements of the City Fire Chief.
5. That all private and public easements be conveyed in a form acceptable to the City Attorney prior to the recordation of the final plat(s).
6. That information regarding drainage systems be included on the final plat drawings and approved by the City Engineer prior to recordation of the final plat.
7. That prior to any grading of property or construction, a Land Disturbance Permit and SWPPP Permit be approved and construction activities be coordinated with the City Engineer's office.
8. That adequate secondary water shares be provided to the City prior to recordation of the final plat.
9. That an ownership and maintenance plan for the private right of way be provided to the City prior to recordation of the final plat.

PREVIOUS ACTIONS

- October 5, 2016: Planning Commission conducted a public hearing and recommended approval of the applications 5-0.
- May 25, 2016: City Council approved rezone to R-1-10 I-O (Infill Overlay) and Concept Plan.

SUPPORTING DOCUMENTS

- DRC Staff Report for Planning Commission – Dated September 30, 2016
- Maps and Plat



**EXIST.
R-1-10**



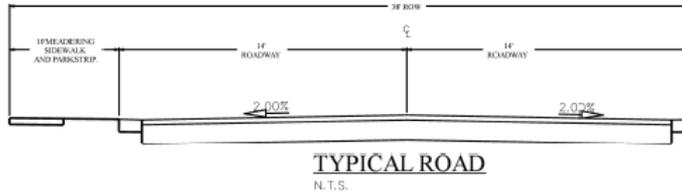
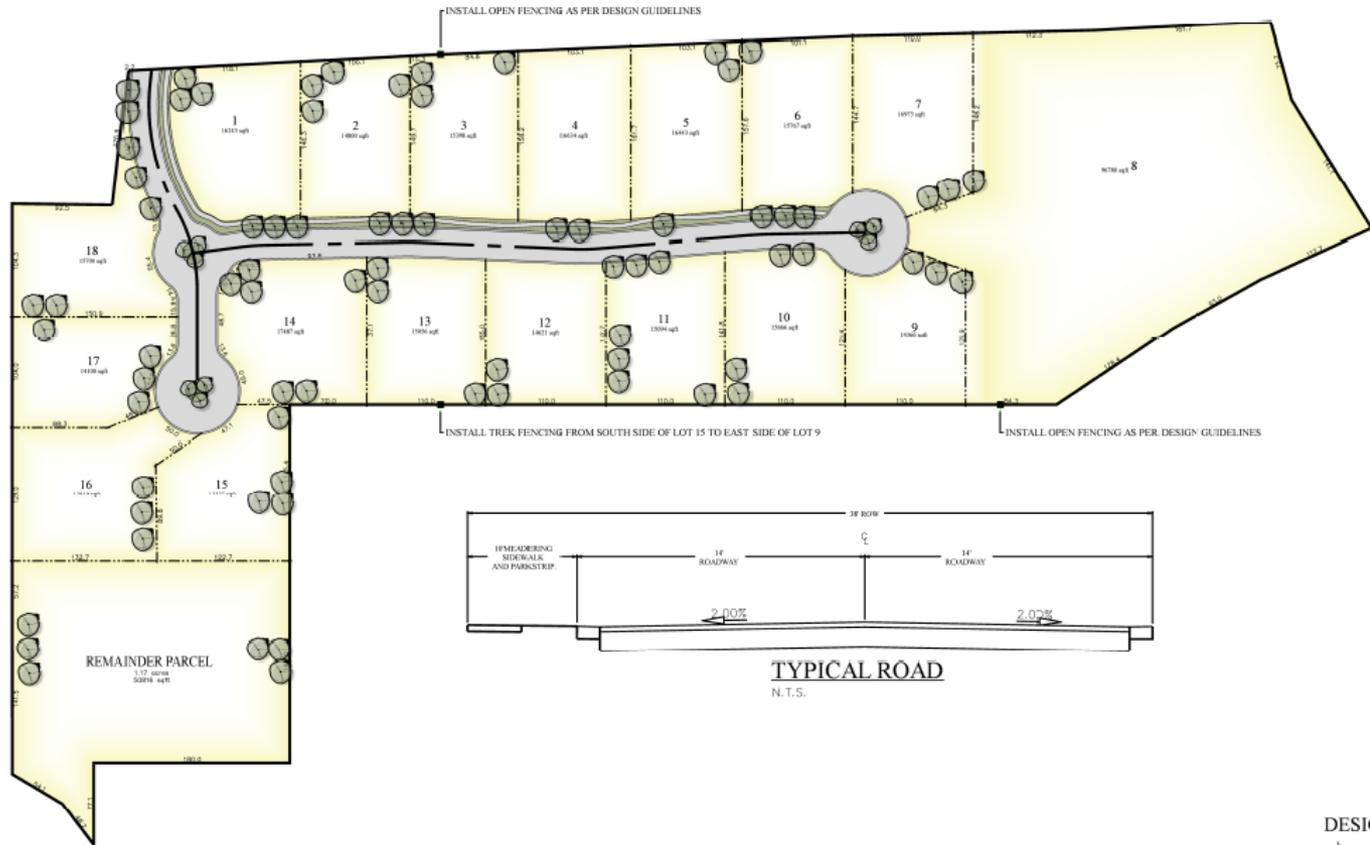
THE PRESERVE AT SPRING VIEW FARMS

CONCEPT NARRATIVE RESIDENTIAL

LOCATED AT: 14600 S REDWOOD RD, BLUFFDALE, UT

ORIGINAL PROPERTY 925 ACRES
SINGLE FAMILY LOTS 18

TOTAL DENSITY 1.88 UNITS/ACRE



GENERAL NOTE:

INFORMATION PROVIDED ON THIS PLAN IS BASED ON THE BEST AVAILABLE DATA AT THE TIME OF PREPARATION AND MAY CHANGE AT ANYTIME FOR ANY REASON. THIS PLAN IS FOR ILLUSTRATIVE PURPOSES ONLY.

DESIGNED BY:

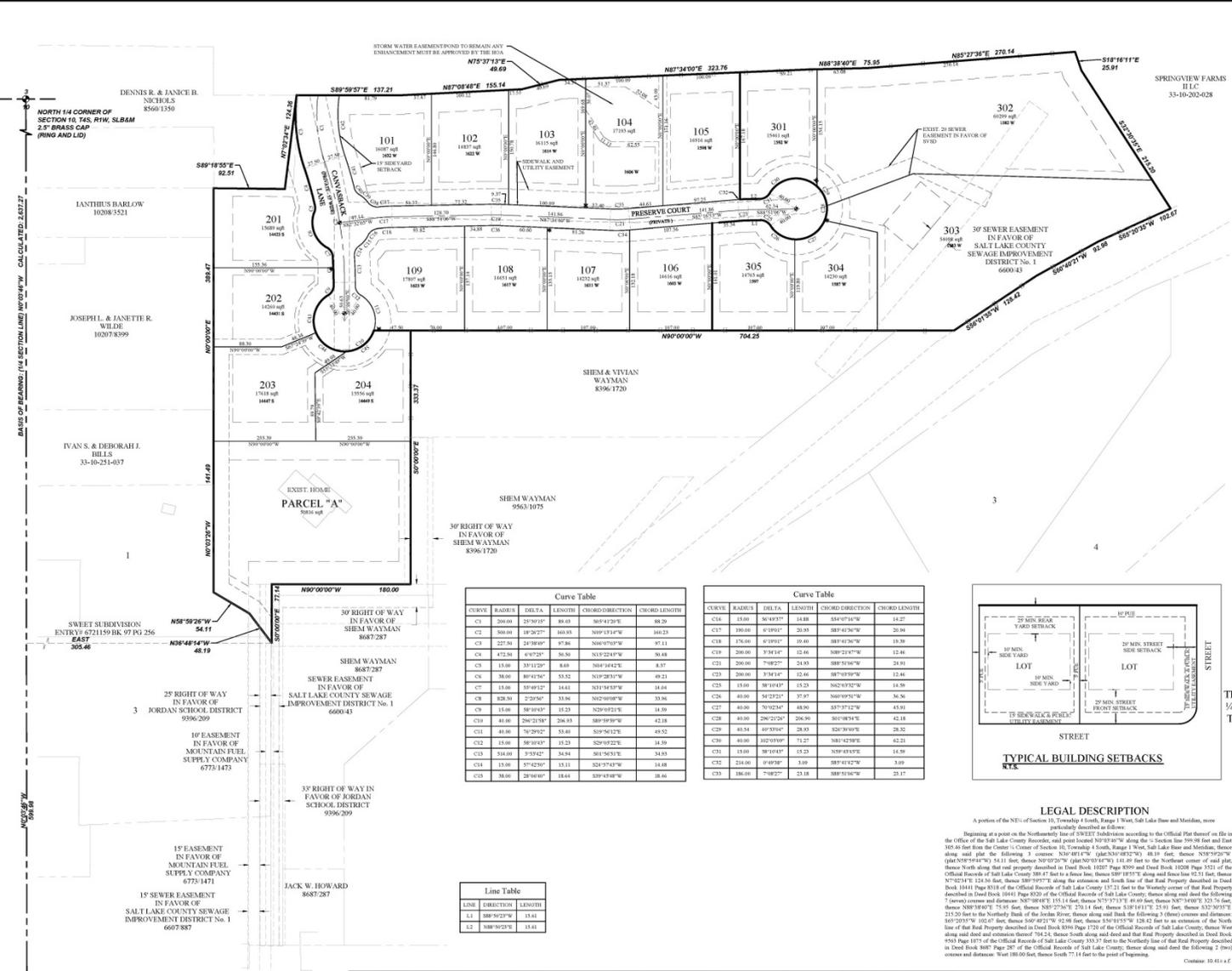
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LIFE CONNECTED



**THE PRESERVE AT SPRINGVIEW FARMS
BLUFFDALE CITY, SALT LAKE COUNTY, UTAH
PRELIMINARY/FINAL PLAT**

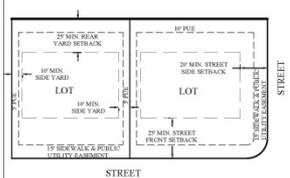


Curve Table

CURVE	RADIUS	DELTA	LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	286.00	29°30'35"	88.03	304°43'28"	88.29
C2	560.00	18°26'27"	169.55	309°51'14"	169.23
C3	227.50	24°38'40"	97.86	306°07'03"	97.11
C4	472.50	11°47'25"	56.39	315°22'43"	50.48
C5	15.00	33°11'29"	8.60	304°16'42"	8.37
C6	88.00	18°41'36"	23.52	310°21'31"	23.21
C7	15.00	33°48'12"	34.41	321°34'33"	31.64
C8	828.50	2°29'56"	33.86	302°09'08"	33.86
C9	15.00	34°01'03"	15.23	320°41'13"	14.99
C10	46.00	29°21'58"	26.33	309°59'39"	42.18
C11	46.00	30°29'52"	24.80	310°34'12"	49.52
C12	15.00	38°30'07"	15.23	329°02'28"	14.99
C13	150.00	3°39'42"	34.94	301°36'35"	34.93
C14	15.00	37°42'30"	15.11	324°37'43"	14.88
C15	36.00	28°36'40"	18.64	320°43'48"	18.64

Curve Table

CURVE	RADIUS	DELTA	LENGTH	CHORD DIRECTION	CHORD LENGTH
C16	15.00	30°49'37"	14.88	324°07'54"	14.27
C17	200.00	6°19'17"	20.35	308°47'36"	20.34
C18	176.00	6°19'17"	19.40	307°41'36"	19.39
C19	200.00	3°34'14"	12.46	309°21'47"	12.46
C20	200.00	7°49'27"	23.83	309°51'36"	23.83
C21	200.00	3°34'14"	12.46	307°07'36"	12.46
C22	15.00	38°19'43"	15.23	342°03'02"	14.99
C23	40.00	34°21'21"	37.97	309°09'51"	36.56
C24	15.00	39°19'13"	18.90	327°37'12"	18.91
C25	40.00	29°21'29"	26.36	301°09'54"	42.18
C26	40.00	32°19'47"	28.89	320°30'36"	28.82
C27	40.00	32°09'59"	27.27	303°42'06"	26.21
C28	15.00	38°19'43"	15.23	329°43'36"	14.99
C29	216.00	6°49'38"	3.09	307°41'42"	3.09
C30	186.00	7°19'27"	23.18	309°51'36"	23.17



OWNER OF RECORD/DEVELOPER:
KEN OLSON

THE PRESERVE AT SPRINGVIEW FARMS
THE BASIS OF BEARING IS N0°03'46"W ALONG THE
¼ SECTION LINE FROM THE SOUTH ¼ CORNER TO
THE NORTH ¼ CORNER OF SECTION 10, T4S, R1W,
SL&M

GENERAL UTILITY NOTE:
ALL IMPROVEMENTS TO BE INSTALLED WITH FIRST PHASE WITH THE
EXCEPTION OF SIDEWALK ON 201, 203 & TRAIL TO BE INSTALLED WITH
PHASE 2

LEGAL DESCRIPTION
A portion of the NE¼ of Section 10, Township 4 North, Range 1 West, Salt Lake Base and Meridian, more particularly described as follows:
Beginning at a point on the Northernly line of STREET (hereinafter according to the Official Plat thereof, now in the Official Records of Salt Lake County Recorder, said point located N0°03'46"W along the ¼ Section line 199.98 feet and East 200.46 feet from the Corner 1/4 Corner of Section 10, Township 4 North, Range 1 West, Salt Lake Base and Meridian, thence along said plat the following 3 courses: N30°01'17"W (646'53'082'79") 48.19 feet, thence S89°59'29"W (646'53'082'79") 41.11 feet, thence N89°02'29"W (646'53'082'79") 141.01 feet to the Northernly corner of said plat, thence North along said plat property described in Deed Book 10207 Page 8109 and Deed Book 10208 Page 1211 to the Official Records of Salt Lake County 200' of Salt Lake County, thence S87°18'21"E along and across line N°03'46"W N°02'14"E 124.56 feet, thence S89°39'57"E along the extension and South line of that said Property described in Deed Book 10441 Page 8118 of the Official Records of Salt Lake County 171.21 feet to the Westernly corner of that said Property described in Deed Book 10441 Page 8120 of the Official Records of Salt Lake County, thence along said plat the following 2 courses and distances: N87°08'13"E 11.14 feet, thence N47°13'14"E 48 feet, thence N87°08'13"E 32.74 feet, thence S89°39'57"E 75.01 feet, thence S82°23'06"E 270.11 feet, thence S101°01'17"E 25.91 feet, thence S32°30'17"E 215.50 feet to the Northernly line of the Section 10, thence along said plat the following 2 (two) courses and distances: S45°20'51"W 102.62 feet, thence S107°07'10"W 128.82 feet, thence S45°19'15"W 128.82 feet to an extension of the South line of that said Property described in Deed Book 8194 Page 1725 of the Official Records of Salt Lake County, thence West along said plat and extension thereof 704.24 feet, thence South along said plat and that said Property described in Deed Book 9201 Page 1175 of the Official Records of Salt Lake County 335.97 feet to the Northernly line of that said Property described in Deed Book 8687 Page 287 of the Official Records of Salt Lake County, thence along said plat the following 2 (two) courses and distances: West 180.00 feet, thence South 77.14 feet to the point of beginning.

Line Table

LINE	DIRECTION	LENGTH
L1	S89°59'29"	13.61
L2	S89°02'29"	15.61

<p>SOUTH VALLEY SEWER DISTRICT APPROVED THIS _____ DAY OF _____ A.D. 20____</p>	<p>PLANNING COMMISSION APPROVED THIS _____ DAY OF _____ A.D. 20____ BY THE BLUFFDALE PLANNING COMMISSION:</p>	<p>BLUFFDALE CITY ENGINEER I HEREBY CERTIFY THAT THIS OFFICE HAS EXAMINED THIS PLAT AND IT IS CORRECT IN ACCORDANCE WITH INFORMATION ON FILE IN THIS OFFICE.</p>	<p>CITY ATTORNEY APPROVED AS TO FORM THIS _____ DAY OF _____ A.D. 20____</p>	<p>BLUFFDALE CITY COUNCIL APPROVED AS TO FORM THIS _____ DAY OF _____ A.D. 20____</p>
GENERAL MANAGER	CHAIRMAN, PLANNING COMMISSION	DATE	CITY ATTORNEY	ATTEST CITY CLERK
		DATE		

REVISION BLOCK

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

PRELIMINARY PLAT/FINAL PLAT

Scale: 1" = 60'

Date: 08-25-16

Sheet: 10 of 10

C01

CENTER 1/4 CORNER OF SECTION 10, T4S, R1W, SL&M (CALCULATED POSITION) SEE DETAIL

BASED ON BEARING 1/4 SECTION LINE N0°03'46"W CALCULATED 1:63,127

NORTH 1/4 CORNER OF SECTION 10, T4S, R1W, SL&M 2" BRASS CAP (RING AND LID)

DENNIS R. & JANICE B. NICHOLS 8560 1250

IANTHUS BARLOW 10088 3521

JOSEPH L. & JANETTE R. WILDE 10070 8399

IVAN S. & DEBORAH J. HILLS 33-10-251-037

SWEET SUBDIVISION ENTRY #2711918K 97 83 256 EAST 305.46

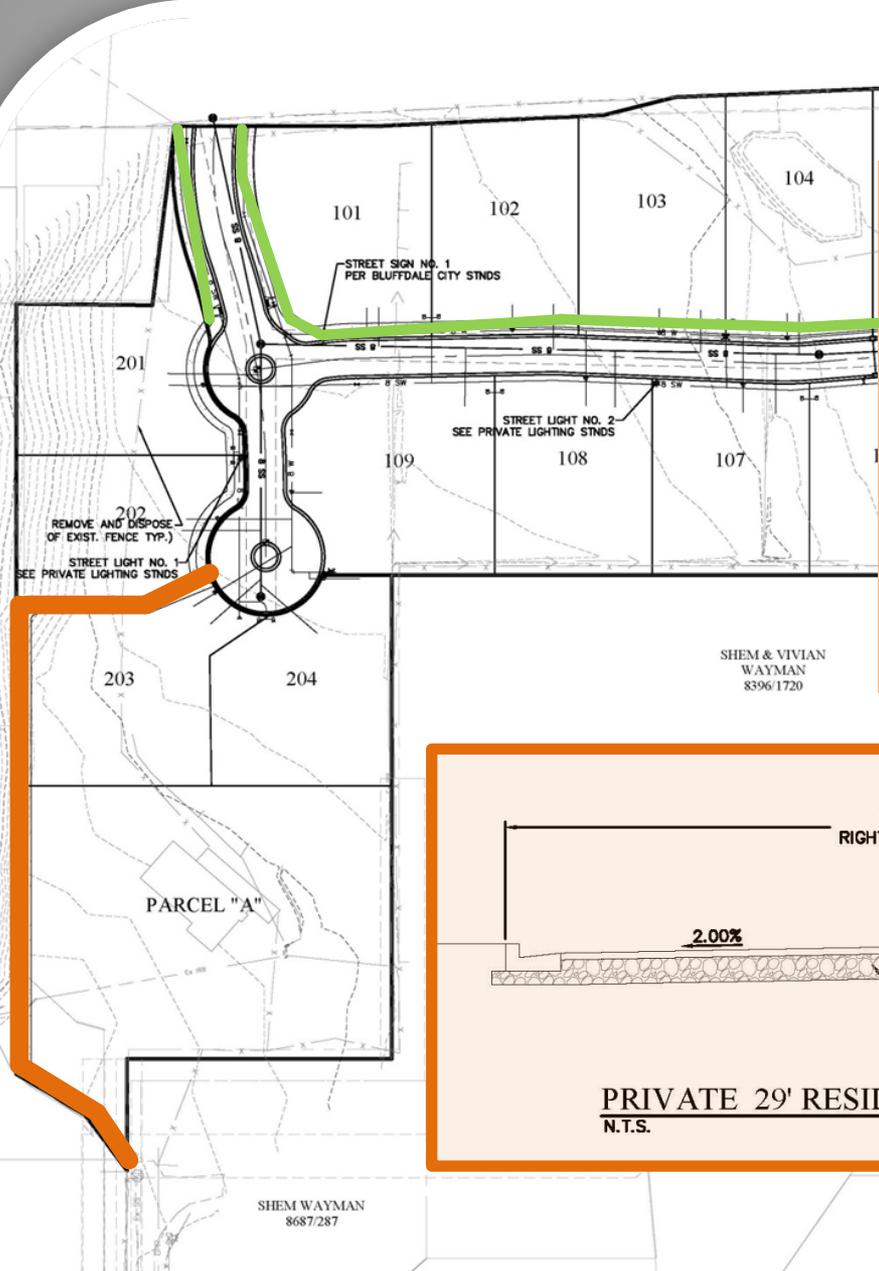
25' RIGHT OF WAY IN FAVOR OF JORDAN SCHOOL DISTRICT 9396-209

10' EASEMENT IN FAVOR OF MOUNTAIN FUEL SUPPLY COMPANY 6773-1475

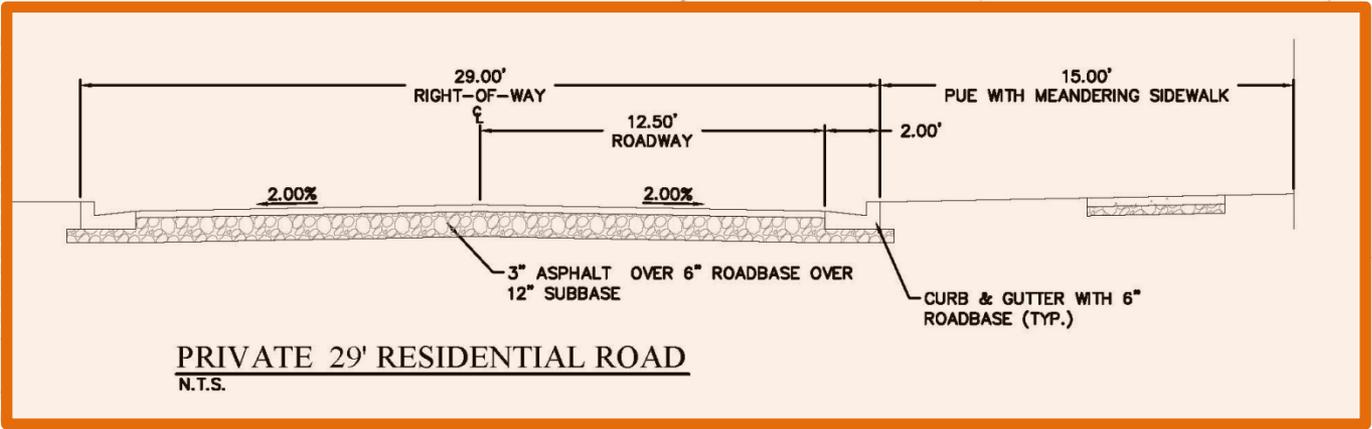
15' EASEMENT IN FAVOR OF MOUNTAIN FUEL SUPPLY COMPANY 6773-1471

15' SEWER EASEMENT IN FAVOR OF SALT LAKE COUNTY SEWAGE IMPROVEMENT DISTRICT No. 1 6607-887

14600 SOUTH



- Approved with the R-1-10 I-O (Infill Overlay):**
- Modified street cross-section for Private Street
 - Setbacks:
 - Front - 25 feet
 - Side - 10 feet
 - Rear - 25 feet
 - Phasing
 - Design Guidelines
 - Future 10' Trail access





Development Review Committee

14175 South Redwood Road
Bluffdale, UT 84065
801.254.2200(o) 801.446.8642(f) TTY 7-1-1

**DRC STAFF REPORT
30 September 2016**

To: City of Bluffdale Planning Commission
Prepared By: Jennifer Robison, Senior Planner, on behalf of the DRC

Re: The Preserves at Springview Farms Preliminary and Final Subdivision Plat
Application No.: 2016-31
Applicant(s): Ken Olson
Project Location: Approximately 1650 West 14500 South
General Plan: Low Density Residential
Zoning: R-1-10 (I-O) Infill Overlay
Acreage: 10.41 acres
Request: Recommendation of Preliminary and Final Subdivision Plat for eighteen (18) residential lots on a private street.

SUMMARY

The applicant desires the Planning Commission and City Council to consider the Preliminary and Final Plat for The Preserves at Springview Farms concurrently as permitted by the City subdivision ordinances.

The applicant recently came before the Planning Commission and City Council to amend the General Plan and Zoning Map for the subject property. The applications were evaluated and approved by the City Council on May 25, 2016 to Low Density Residential for the General Plan in this area and R-1-10 zoning with an Infill Overlay. The Infill Overlay as approved with a Concept Plan allows the applicant to develop the subject property with additional or modified requirements specific to this project.

ANALYSIS

General Plan and Zoning. The proposed subdivision complies with the General Plan as Low Density Residential and the zoning is R-1-10 I-O (Infill Overlay) residential. There will be 18 new lots created for future homes and other residential uses.

Anticipated Uses, Layout, and Phasing.

The lots in the subdivision will have frontage on a private street and cul-de-sacs. The access to a public street is provided by one point of ingress and egress access from Loumis Parkway thru the Wood Duck Hollow Phases 3 and 4 on Muscovy Duck Way and Rouden Duck Lane. The Planning Commission and City Council discussed several options and evaluated the total number of lots and length of one point of access during the zoning amendment process to be consistent with City ordinances. CW Management is willing to reduce the total amount of approved lots by one lot for Mr. Olson to achieve 18 new lots within The Preserves subdivision. The applicant is proposing to develop the subdivision in three phases.

Private Street Improvements. Title 12-5-3.B.2 states “At present, it is the preference of the city for all subdivision streets to be dedicated public streets. However, if private streets are approved, they must be constructed to meet all requirements of public streets in case the city is required to maintain the streets in the future, unless they comply with adopted alternate standards for private rights of way. The land area for private streets or rights of way shall not be included in or counted toward the minimum area required for a lot.” The Planning Commission and City Council evaluated at length the approval of a private street and modified cross-section design with the zoning application. The subdivision application is proposing the following consistent with the Infill Overlay zoning requirements:

1. Canvasback Lane – 55’ right of way width coming into the subdivision to the first roundabout for the ability for larger vehicles to turn around. The second roundabout will have a 40’ radius. Curb and gutter will be installed. A sidewalk will only be on one side of the street with access to a possible future trail connection on the rear of lot 203 to the south.
2. Preserve Court – 28’ right of way with curb and gutter and a sidewalk only on the north side of the street.
3. Street lights will be installed and easements for all public and private utilities are provided.
4. The improvements for the entire street including curb, gutter, asphalt, sidewalk and utilities will be constructed with the first phase of the subdivision.
5. The private streets will be owned and maintained by a Homeowners Association.

Parcel A with Existing Home: The entire property owned by Mr. Olson includes a portion of the property with an existing home. The subdivision includes this property identified as Parcel A. This parcel will be accessed from an existing right of way south to 14600 South.

Design Guidelines: The Infill Overlay zoning requirements provide design guidelines to be evaluated by the developer, Homeowners Association, and/or a design review committee for the subdivision. Perimeter fences will be installed as part of the subdivision, but types and colors will be determined by the developer.

Adequate Public Utilities and Infrastructure. The necessary infrastructure and public utilities will be constructed with the subdivision.

Lot Sizes, Setbacks. Lot sizes are a minimum 10,000 square feet excluding the private street. The frontage and width of the lots meet the minimum requirement of 100’ and 30’ in the cul-de-sac. Building envelopes are shown on each lot with the required setbacks to meet the frontage and width requirements. The typical front setback is 25’ from the street which includes a 15’ sidewalk and utility easement on the north side of Preserve Court and on the west side of Canvasback Lane. Side setbacks are a minimum of 10’ on each side and a 25’ rear yard setback.

Trail access. A 10’ pedestrian trail access is planned entering from Canvasback Lane between lots 202 and 203 which will follow along the side of lot 203 and Parcel A to the existing right of way leading to 14600 South. The trail will be open to the public with an easement during daylight hours only.

Secondary Water Shares and System. City ordinance requires secondary water shares to be provided in the name of the City and subdivision. Water share certificates with the adequate water requirement of 3 acre feet per gross acre of real property developed shall be acquired and provided to the City by the applicant prior to the recordation of the final plat. The secondary water system will be part of the Sage Estates Secondary Water System as approved by the City with other properties along Loumis Parkway. Mr. Olson is required to install his portion of the secondary water system with this subdivision.

DRC REVIEW AND COMMENTS

On behalf of the City Manager, the City's staff involved in development review and administration meets together as a Development Review Committee (DRC). The DRC generally consists of the City Manager, City Attorney, City Engineer, Public Works Operations Manager, the City Planner, and other outside consultants as needed from time to time. The comments of the DRC members have been included in this staff report and the recommended conditions of approval for the project.

City Engineer. The subdivision is subject to the Bluffdale City Engineering Standards and Specifications or recommendations of the City Engineer. Requirements for construction by the City Engineer and Public Works Department are included as conditions of approval. A memo dated 9/30/16 is provided by Dan Tracer for items to be completed with construction drawings and are conditions of approval.

Fire Chief. Fire Chief Roberts approved the plans as submitted to include 4 fire hydrants as shown on the Sewer and Water Plan page C05 dated 8/10/16.

City Planner. The Planning Division is recommending approval with the recommended conditions.

DRC STAFF RECOMMENDATION FOR THE PRESERVES AT SPRINGVIEW FARMS PRELIMINARY AND FINAL PLAT APPLICATIONS:

DRC Staff recommends that the Planning Commission forward a positive recommendation to the City Council for The Preserves at Springview Farms Preliminary and Final Subdivision Plat Applications subject to the following conditions:

1. That all requirements of the City Code and adopted ordinances or modifications by the Infill Overlay zoning requirements approved by City Council are met and adhered to for the proposed subdivision.
2. That the final plat and all relevant construction drawings comply with the Bluffdale City Engineering Standards and Specifications and all recommendations by the City Engineer and Public Works Department prior to recordation of the final plat.
3. That all requirements identified in the memo dated 9/30/16 by Dan Tracer be complete and approved by the City Engineer prior to any construction activities on the property.
4. That the project adheres to all requirements of the International Fire Code and requirements of the City Fire Chief.
5. That all private and public easements be conveyed in a form acceptable to the City Attorney prior to the recordation of the final plat(s).
6. That information regarding drainage systems be included on the final plat drawings and approved by the City Engineer prior to recordation of the final plat.
7. That prior to any grading of property or construction, a Land Disturbance Permit and SWPPP Permit be approved and construction activities be coordinated with the City Engineer's office.
8. That adequate secondary water shares be provided to the City prior to recordation of the final plat.
9. That an ownership and maintenance plan for the private right of way be provided to the City prior to recordation of the final plat.

MODEL MOTIONS FOR THE PRESERVES AT SPRINGVIEW FARMS APPLICATIONS:

Motion for a Positive Recommendation – "I move we forward a positive recommendation to the City Council for The Preserves at Springview Farms Preliminary and Final Subdivision Plat Applications 2016-31 subject to

the conditions and based on the findings presented in the staff report dated September 30, 2016, (or as modified by the conditions below):”

1. List any additional findings and/or conditions...

Motion for a Negative Recommendation – “I move we forward a negative recommendation to the City Council for The Preserves at Springview Farms Preliminary and Final Subdivision Plat Applications 2016-31 based on the following findings:”

1. List all findings for denial...



Memo

Date: September 30, 2016
From: Daniel Tracer, Assistant City Engineer
To: Jennifer Robison, Associate Planner
Planning Commission
CC:
RE: The Preserve at Springview Farms – Review Status

The City of Bluffdale Engineering Department has completed their review of the most recently submitted plans for The Preserve at Springview Farms. All of the comments have been addressed to our satisfaction except for the following:

- The drainage report is insufficient and must be updated in much greater detail before it can be accepted.
- The SWPPP has not been accepted and still requires changes to be in compliance with our stormwater pollution prevention standards.
- Lots need addressing to be submitted for review.
- Provide lot and monument on subdivision plat.
- Add tie-in to the Point of Beginning on subdivision plat.
- The subdivision drainage design is not complete and requires substantial updates before it can be accepted.
- Note must be added to plat stating the geotechnical reports recommendations that no foundation slabs be constructed within 3 feet of the groundwater elevation.

Please contact me if you have any questions regarding this update.

Dan Tracer, E.I.T.

CITY OF BLUFFDALE, UTAH

Ordinance No. 2016-06

AN ORDINANCE AMENDING THE BLUFFDALE CITY GENERAL PLAN LAND USE MAP AND OFFICIAL ZONING MAP BY CHANGING THE LAND USE DESIGNATION OF APPROXIMATELY 10.57 ACRES OF LAND LOCATED WITHIN BLUFFDALE CITY, STATE OF UTAH, FROM CIVIC INSTITUTIONAL TO LOW DENSITY RESIDENTIAL, AND AMENDING THE OFFICIAL ZONING MAP BY CHANGING THE ZONING DESIGNATION OF APPROXIMATELY 10.57 ACRES FROM R-1-43 RESIDENTIAL TO R-1-10 I-O (INFILL OVERLAY) RESIDENTIAL, OTHERWISE KNOWN AS THE PRESERVE AT SPRINGVIEW FARMS GENERAL PLAN AND ZONE CHANGE.

WHEREAS Kenneth Olson (the “Applicant”) has initiated an application to amend the Bluffdale City General Plan Land Use Map and Official Zoning Map by changing the General Plan Land Use designation from Civic Institutional to Low Density Residential, and changing the Official Zoning Map from R-1-43 Residential to R-1-10 I-O (Infill Overlay) Residential, for approximately 10.57 acres of property located at approximately 1654 West 14600 South; and

WHEREAS the Planning Commission has reviewed and made a recommendation to the City Council concerning the proposed changes to the General Plan Land Use Map and Official Zoning Map of Bluffdale City and that these changes facilitate further appropriate mixes of residential land uses in Bluffdale and found that the proposed changes are consistent with the General Plan’s density recommendations; and

WHEREAS the Planning Commission has reviewed and made a recommendation to the City Council concerning the proposed changes to the General Plan Land Use Map and Official Zoning Map of Bluffdale City pursuant to the Bluffdale City Land Use Ordinance and the Utah State Code, and the City Council has found the proposed amendments to be warranted and not detrimental to the public health, welfare and safety of the City of Bluffdale; and

WHEREAS the Planning Commission has reviewed and made a recommendation to the City Council concerning the proposed changes to the General Plan Land Use Map and Official Zoning Map of Bluffdale City and the specific I-O zone conditions will be adopted as part of the official ordinance more particularly illustrated and described in Exhibit B; and

WHEREAS the proposed amendments to the General Plan Land Use Map and Official Zoning Map set forth herein have been reviewed by the Planning Commission and the City Council, and all appropriate public hearings have been held in accordance with Utah law to obtain public input regarding the proposed revisions to the General Plan Land Use Map and Official Zoning Map.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BLUFFDALE, STATE OF UTAH, AS FOLLOWS:

Section 1. General Plan Land Use Map Amendment. The Bluffdale City General Plan Land Use Map is hereby amended to change the future land use designation from Civic Institutional to Low Density Residential for approximately 10.57 acres of property within the City of Bluffdale, located at approximately 1654 West 14600 South, more particularly illustrated and described in Exhibit A1, attached hereto and incorporated herein by this reference.

Section 2. Zoning Map Amendment. The Bluffdale City Official Zoning Map is hereby amended to change the zoning designation from R-1-43 Residential to R-1-10 I-O (Infill Overlay) Residential for approximately 10.57 acres of property within the City of Bluffdale, located at approximately 1654 West 14600 South, more particularly illustrated and described in Exhibit A1, attached hereto and incorporated herein by this reference.

Section 3. Infill Overlay (I-O) Zoning Adoption and Conditions. The subject property described in attached Exhibit A1, is subject to the conditions and restrictions found in the attached Exhibit B.

Section 4. Effective Date. This Ordinance shall take effect upon publication or posting, or thirty (30) days after passage, whichever occurs first.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF BLUFFDALE, STATE OF UTAH, THIS 25th DAY OF May, 2016.

BLUFFDALE CITY

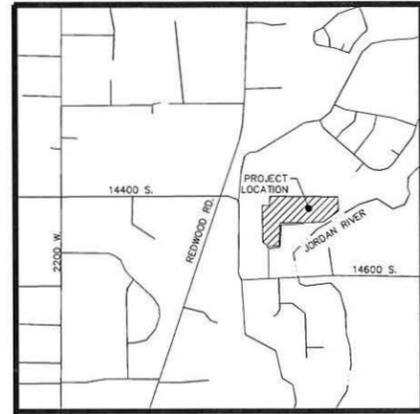
De P. Justice
Mayor

ATTEST:

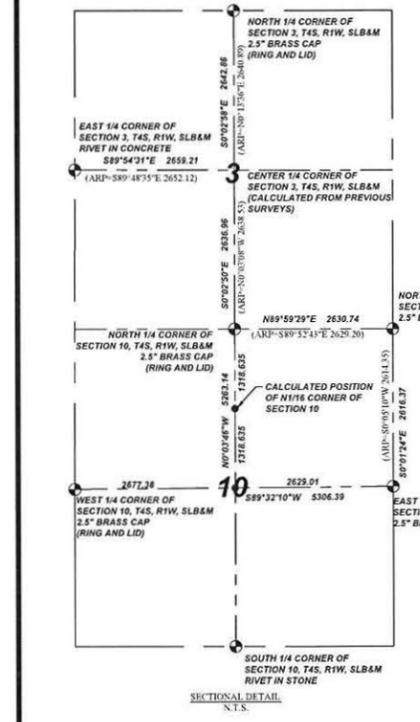
Wade Sorenson
City Recorder



Council members	Voting:	
	AYE	NAY
Alan Jackson	_____	<u> X </u>
Ty Nielsen	<u> X </u>	_____
Boyd Preece	<u> X </u>	_____
Justin Westwood	<u> X </u>	_____
James Wingate	<u> X </u>	_____



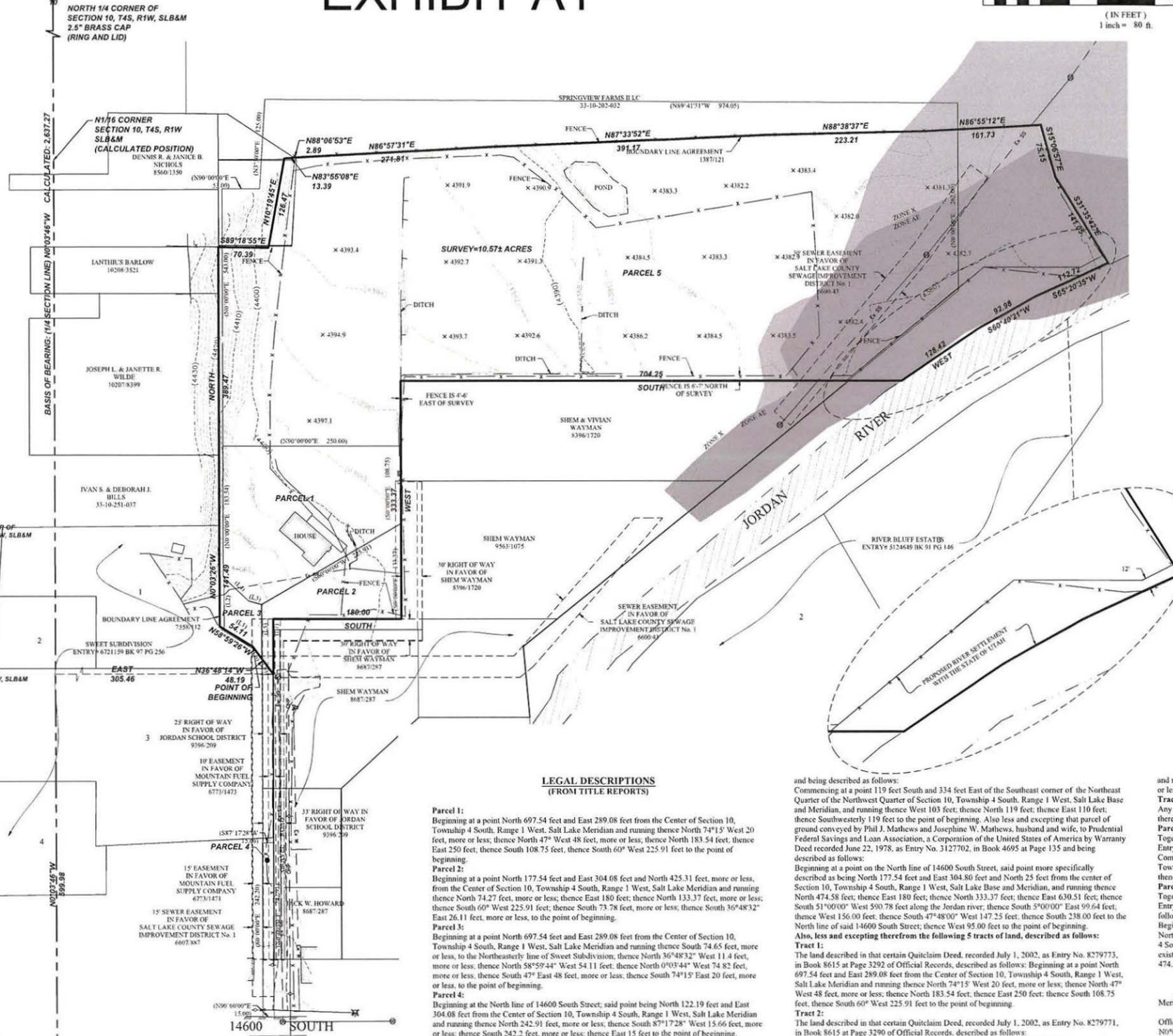
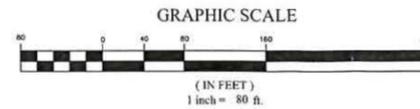
VICINITY MAP
N.T.S.



SURVEYOR'S CERTIFICATE
I, Dennis P. Carlisle, do hereby certify that I am a Professional Land Surveyor, and that I hold Certificate No. 172675 in accordance with Title 58, Chapter 22 of Utah State Code. I further certify by authority of the owners that I have made a Survey of the lands shown on this Plan and that it correctly represents the existing conditions as shown. This Plan does not represent a certification to the title or ownership of the lands shown hereon.

Dennis P. Carlisle Date
Professional Land Surveyor
Certificate No. 172675

EXHIBIT A1



LEGAL DESCRIPTIONS (FROM TITLE REPORTS)

Parcel 1: Beginning at a point 697.54 feet East and 289.08 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence North 47° West 48 feet, more or less; thence North 183.54 feet, thence East 250 feet, thence South 108.75 feet, thence South 60° West 225.91 feet to the point of beginning.

Parcel 2: Beginning at a point North 177.54 feet and East 304.80 feet and North 425.31 feet, more or less, from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74.27 feet, more or less; thence East 180 feet, thence North 133.37 feet, more or less; thence South 60° West 225.91 feet, thence South 73.78 feet, more or less; thence South 36°48'32" East 26.11 feet, more or less, to the point of beginning.

Parcel 3: Beginning at a point North 697.54 feet and East 289.08 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence North 47° West 48 feet, more or less; thence North 183.54 feet, thence East 250 feet, thence South 108.75 feet, thence South 60° West 225.91 feet to the point of beginning.

Parcel 4: Beginning at the North line of 14600 South Street; said point being North 122.19 feet and East 304.80 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence South 242.2 feet, more or less; thence East 15 feet to the point of beginning. Less and Excepting therefrom any portion lying within the boundaries of Sweet Subdivision, according to the official plat thereof on file and of record in the Salt Lake County Recorder's Office.

Parcel 5: Commencing at a point 289.08 feet East and 440.54 feet North from the center of Section 10, Township 4 South, Range 1 West, Salt Lake Base and Meridian, and running thence North 257 feet, more or less, to the South right of way line of the South Jordan Canal, thence North 74°15' West 20 feet, more or less, along said South line, thence North 47°00' West 48 feet, more or less; thence North 543 feet, more or less, to an existing fence; thence East 53 feet along said fence; thence North 03°30' East 125 feet, more or less, along an existing fence to an existing fence which is a property boundary line that has been referred to in a Boundary Agreement recorded in Book 1387 at Page 121 of February 4, 1957; thence Easterly 981 feet, more or less, along an existing fence and said boundary line; thence South 262 feet, more or less, to the North bank of the Jordan River; thence South 31°00' West 790 feet, more or less, along the said North bank of the Jordan River; thence South 05°00' East 100 feet, more or less, thence South 156 feet, thence South 47°48' West 147.25 feet, thence West 110 feet to the point of beginning.

Less and Excepting therefrom that parcel of ground conveyed by Benjamin F. Merrill and Verda S. Merrill, his wife, to Raoul Emery Austin, Jr. and Faye Austin, his wife, by Quit Claim Deed recorded February 26, 1951, as Entry No. 1235766, in Book 838 at Page 251 of Official Records.

Line #	Direction	Length
(L5)	S0°00'00"E	73.78
(L1)	N58°59'44"W	34.11
(L2)	N00°03'44"W	74.82
(L3)	S74°15'00"E	20.00
(L4)	S47°00'00"E	48.00
(L6)	N36°48'32"W	11.40
(L7)	S0°00'00"W	74.27
(L8)	N36°48'32"W	26.11

- NOTES**
- The purpose of this Survey is to provide a Boundary & Topographical Survey & Certification for the parcels shown and described hereon. The boundary shown hereon follows deeds, and fences. The fences are either followed to honor Boundary Line Agreements, or are followed because of conversations between our client and adjacent land owners in which the adjacent land owners claimed that their property went to certain fences. (See note #10)
 - Title Commitments prepared by Founders Title Company, Salt Lake City, Utah, Order No. 4981966, Effective Dates: January 7, 2015 was utilized in the preparation of this Survey. Focus Engineering & Surveying, LLC is entitled to rely on the accuracy of said documents, and is not liable for errors and omissions based on the reliance of said Title Reports. Unless noted otherwise, all record parcels and easements noted on this Survey are referenced from said documents.
 - The Basis of Bearing for this Survey is N0°03'46"W along the 1/4 Section line from the South 1/4 Corner to the North 1/4 Corner of Section 10, T4S, R1W, SLB&M as shown hereon. All deeds and plats of record utilized in the course of this Survey have been rotated to match the aforementioned basis of bearing, or to other Section/monument lines relative to said basis of bearing per measured lines shown hereon.
 - Vertical data (contours and spot elevations) shown hereon is based on the NAVD83 foot equivalent elevation of 4434.58 published by the Salt Lake County Surveyor on the East 1/4 Corner of Section 10, T4S, R1W, SLB&M.
 - #5 rebar & cap (FOCUS ENG) to be set at all boundary corners unless noted otherwise.
 - This drawing, its design, and invention thereof, is the property of Focus Engineering & Surveying, LLC, and is submitted to, and is for the exclusive use of the client referenced on the Survey. Only copies authorized in writing and individually signed and sealed by the Surveyor may be used as the official work of the Surveyor.
 - Except as specifically stated or shown on this drawing, no attempt has been made as a part of this Survey to obtain or show data concerning existence, size, depth, condition, capacity, or location of any utility or municipal/public service facility. For information regarding these utilities or facilities, contact the appropriate agency.
 - Except as specifically stated or shown on this drawing, this Survey does not purport to reflect any of the following which may be applicable to the properties shown hereon: easements, encumbrances, building setback lines, restrictive covenants, subdivision restrictions, zoning, or other land use restrictions. Underground utilities have been shown hereon based on observed evidence. Additional utilities, including, but not limited to: power, phone, cable TV, water, sewer, storm drainage, etc. may exist within the boundaries of this Survey and Blue Stakes should be contacted prior to digging. Engineers, Contractors, and others that rely on this information should be cautioned that the locations of the existing utilities may not be relied upon as being exact or complete. Additional exploration, verification and relocation of existing utilities will be the sole responsibility of any contractor prior to, or during construction of any additional improvements.
 - Due to the confusion of boundary line locations in the area, several agreements have been made between adjoining land owners. These agreements have been held as the boundary of this survey. The north line of this survey follows an ancient fence that has been located, and is described in Boundary Line Agreement dated Feb. 4, 1957 Book 1387 Page 121. The location of the fence does not match the mathematical location of the description. Portions of the west boundary follow a fence and SWEET Subdivision per an affidavit recorded Dec. 17, 1996 in Deed Book 7538 Page 012. The title report referenced above excepts any portion of the deed of the subject property claimed by Dennis R. and Janice B. Nichols. In a discussion between our client and Mr. Nichols, Mr. Nichols told him that he claims to be the fence. The fence was held as the boundary between the Subject Property and land claimed by Mr. Nichols. The fence along the south line of said deed appears to lie between 1 to 2 feet south of said deed.
 - Portions of the properties shown hereon lie within the following three zones according to FEMA (Federal Emergency Management Agency) F.I.R.M. (Flood Insurance Rate Map) #49035C0581G, Map Revised: September 25, 2009.
 - Zone X (areas determined to be outside the 0.2% annual chance floodplain)
 - Zone X (areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot of with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood) - shaded hereon
 - Zone AE (base flood elevations determined)

and running thence North 242.91 feet, more or less; thence South 87°17'28" West 15.66 feet, more or less; thence South 242.2 feet, more or less; thence East 15 feet to the point of beginning.

Tract 5: Any portion lying within the boundaries of Sweet Subdivision, according to the official plat thereof on file and of record in the Salt Lake County Recorder's Office.

Tract 6: (Right of Way)
Together with a right of way disclosed in that certain Warranty Deed recorded June 22, 1978, as Entry No. 3127701, in Book 4695 at Page 133 of Official Records and being described as follows: Commencing at a point 289.08 feet East and 440.54 feet North from the center of Section 10, Township 4 South, Range 1 West, Salt Lake Base and Meridian; and running thence East 33 feet; thence South 238 feet; thence West 33 feet; thence North 238 feet to the point of beginning.

Tract 7: (Right of Way)
Together with a right of way disclosed in that certain Warranty Deed recorded June 22, 1978, as Entry No. 3127702, in Book 4695, at Page 135 of Official Records, and being described as follows: Beginning on the North line of 14600 South Street, said point more specifically described as being North 177.54 feet and East 304.80 feet from the center of Section 10, Township 4 South, Range 1 West, Salt Lake Base and Meridian, and running thence North 474.58 feet, thence East 180 feet, thence North 333.37 feet, thence East 630.51 feet, thence South 51°00'00" West 530.78 feet along the Jordan river, thence South 5°00'00" East 99.64 feet, thence West 156.00 feet, thence South 47°48'00" West 147.25 feet, thence South 238.00 feet to the North line of said 14600 South Street; thence West 95.00 feet to the point of beginning.

Tract 1: The land described in that certain Quitclaim Deed, recorded July 1, 2002, as Entry No. 8279773, in Book 8615 at Page 3292 of Official Records, described as follows: Beginning at a point North 697.54 feet and East 289.08 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence North 47° West 48 feet, more or less; thence North 183.54 feet, thence East 250 feet, thence South 108.75 feet, thence South 60° West 225.91 feet to the point of beginning.

Tract 2: The land described in that certain Quitclaim Deed, recorded July 1, 2002, as Entry No. 8279771, in Book 8615 at Page 3290 of Official Records, described as follows: Beginning at a point North 697.54 feet and East 289.08 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence North 47° West 48 feet, more or less; thence North 183.54 feet, thence East 250 feet, thence South 108.75 feet, thence South 60° West 225.91 feet to the point of beginning.

Tract 3: The land described in that certain Quitclaim Deed, recorded July 1, 2002, as Entry No. 8279772, in Book 8615 at Page 3291 of Official Records, described as follows: Beginning at a point North 697.54 feet and East 289.08 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian and running thence North 74°15' West 20 feet, more or less; thence North 47° West 48 feet, more or less; thence North 183.54 feet, thence East 250 feet, thence South 108.75 feet, thence South 60° West 225.91 feet to the point of beginning.

Tract 4: The land described in that certain Quitclaim Deed, recorded July 1, 2002, as Entry No. 8279774, in Book 8615 at Page 3293 of Official Records, described as follows: Beginning at the North line of 14600 South Street; said point being North 122.19 feet and East 304.80 feet from the Center of Section 10, Township 4 South, Range 1 West, Salt Lake Meridian

FOCUS
ENGINEERING AND SURVEYING, LLC
502 WEST 8360 SOUTH
SANDY, UTAH 84070 PH: (801) 352-0075
www.focusnh.com

BOUNDARY/TOPOGRAPHY SURVEY
LOCATION: NE 1/4 SECTION 10, T4S, R1W, SLB&M
BLUFFDALE, UTAH
PROPERTY OF: THE BOARD OF EDUCATION
JORDAN SCHOOL DISTRICT
PREPARED FOR: KEN OLSON

REVISION BLOCK	DATE	DESCRIPTION
1	5/20/15	ISSUED PER COMMENTS FROM TITLE COMPANY
2	5/27/15	ISSUED PER COMMENTS FROM TITLE COMPANY
3	9/29/15	SHOW ONLY PHYSICAL LOCATION OF SOUTHERLY BANK
4		
5		
6		

Scale: 1"=80'
Date: 5/5/2015
Sheet: 1 OF 1
Drawn: SWL
Job #: 15-057

Exhibit B.

**The Preserve at Springview Farms – INFILL OVERLAY
ZONING REQUIREMENTS**

A. Developer Obligations

1. The design guidelines and covenants proposed by the developer will be recorded at time of recording of the subdivision and be administered by the developer or homeowner's association design review committee, as the case may be.
 - a. Ramblers will have a minimum of 2,400 sq. feet finished on the main floor.
 - b. Two Story dwellings will have a minimum of 3,000 sq. feet finished above grade, 2,200 sq. ft. minimum on the main floor.
 - c. All homes will be custom designed and meet the design guidelines for exteriors, garages, roof, placement, etc. as outlined in the design guidelines and covenants, as administered by the developer or homeowner's association design review committee, as the case may be.

2. The subdivision concept plan attached (Exhibit D) will be the general design of the subdivision (excluding remainder parcel) and shall be revised for 18 lots maximum, contingent upon the property to the north (Wood Duck Hollow Subdivision) does not exceed 13 lots total.
 - a. The community will be private with a Homeowners' Association (HOA) to be formed prior to the recording of the subdivision.
 - b. The private roads including asphalt, sub grade, sidewalks, curb & gutter, island planters, trail, etc. will be maintained by the HOA.
 - c. The street cross section allowed is the typical cross section as outlined on the concept plan.
 - d. Sidewalks and Trail will be installed as per the concept plan.
 - e. Perimeter fences will be installed as per the concept plan.
 - f. Bluffdale City shall have an easement for access to the streets, water lines culinary & secondary.
 - g. A 10 foot wide trail with 6 inches of base and 2 inches of asphalt will stub to the south for future pedestrian connectivity. This trail will be open to the public with an easement (daylight hours only).
 - h. Developer will install street lights based on the street light design sample attached, spacing/location to be determined with final subdivision approval.

B. Lot Standards

1. Minimum lot area: 10,000 sq. ft.
2. Minimum lot width: 100 ft., except for lots located on an approved radius.
3. Minimum setbacks:
 - a. Front setback: 25 ft.
 - b. Side setbacks: 10 feet on each side.
 - c. Rear setback: 25 ft.
4. Public utility easements: To be determined at time of subdivision approval.
5. The remainder parcel to the south of the 18 lots will not be part of the HOA, design guidelines and will be subject to Bluffdale City R-1-10,000 sq. foot lot zoning requirements.

C. Architectural Guidelines

1. All architectural guidelines will be strictly enforced according to The Preserve At Springview Farms Architectural Guidelines & Covenants, by the developer or homeowner's association design review committee, as the case may be.

EXHIBIT D

