Appendix D. Investigation and Analysis Report

Investigation and Analysis Report for the Spring City Watershed Project

Appendix D

Oak Creek Watershed
Sanpete County, Utah

The purpose of the Investigation and Analysis Appendix is to present information that supports the evaluation and conclusions of the Watershed Plan and Environmental Assessment (Plan-EA). Refer to the Administrative Record for the copies of the studies referred to in this Appendix.

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D.1 Introduction

The Spring City Project is located within the Oak Creek Watershed located in and around Spring City, Sanpete County, Utah. Spring City is the sponsor of the project. Horseshoe Irrigation Company, primary provider of secondary water for agricultural and residential use in the area is the co-sponsor. Chester Irrigation Company, also a purveyor of secondary water in the area, is a partner in the Project.

The purpose of the project is to create a dual-purpose flood debris basin and irrigation water storage reservoir, allowing for irrigation storage capacity and allowing a water loading area for aircraft to facilitate emergency wildfire fighting. This facility will be known as the Freeman Allred Reservoir. The project will also include a new regulating reservoir dedicated to residential secondary water users in the City along with the addition of individual water meters to the existing pressure irrigation system. Additional water storage capacity will be provided for Chester Irrigation in their existing ponds through dredging of the sediment and debris deposited through past flood events and annual high spring runoff. Several strategically-selected irrigation ditches will be piped in order to reduce water losses that impact water users each year, but particularly in drought years that the area is currently experiencing. An aged and failing penstock will be replaced so that hydropower production in the City will continue to benefit the community for many more years to come. A new large flood diversion structure will be constructed and several smaller structures will be modified to accommodate new pipelines and flow measuring devices. A concrete flood channel which will transmit flood water and debris as well as irrigation water to the new dual-purpose flood basin/reservoir will also be constructed.

This document summarizes the investigations and analysis completed for the planning and engineering of the 1,000 acre-foot Freeman Allred Reservoir and the smaller 20-acre-foot regulating pond in preparation for the Environmental Assessment. This includes a summary of the hydraulics and hydrology for flood control and agricultural water, breach analysis, geotechnical studies, alternatives, and the economic analysis. The basis for the planning engineering investigations and analysis are the current Spring City, Horseshoe Irrigation Company, NRCS and Utah Division on Dam Safety criteria and standards. The most conservative criteria from each of these standards will be used for the project. Additional information relevant to each of the sections provided in this report is available as part of the administrative record for the project.

The summary information for the Freeman Allred Reservoir embankment and capacity is shown in Table 1. Table 2 provides similar information for the new regulating Pond. All elevations provided in this report are in North American Vertical Datum of 1988 (NAVD88).

Table 1. Freeman Allred Reservoir Embankment and Capacity Summary Data

Feature	Dimension
Maximum Dam Height	52 ft
Dam Crest Elevation	6722
Auxiliary Spillway Crest Elevation	6717
Principle Spillway Crest Elevation	6688
Lowest Natural Ground Elevation at Dam	6670
Max Depth of Water Above Natural Ground (Auxiliary Spillway – Natural Ground Elevation)	47 ft
Reservoir Capacity at Auxiliary Spillway	1034 ac-ft
Reservoir Capacity above Lowest Natural Ground Elevation	1034 ac-ft
Reservoir Capacity Below Natural Ground Elevation	0 ac-ft
Agricultural Irrigation Capacity	703 ac-ft
Flood Control Capacity	231 ac-ft
Debris and Sediment Storage Capacity	100 ac-ft
Dam Crest Length	1,753 ft
Dam Crest Width	20 ft
Upstream Slope of Dam	3H : 1V
Downstream Slope of Dam	2.H : 1V

Table 2. 20-Acre-foot Residential Irrigation Regulating Pond Summary Data

Feature	Dimension
Maximum Dam Height	20 ft
Dam Crest Elevation	6137.5
Auxiliary Spillway Crest Elevation	N/A
Principle Spillway Crest Elevation	6134.5
Lowest Natural Ground Elevation at Dam	6117.5
Max Depth of Water Above Natural Ground (Auxiliary Spillway – Natural Ground Elevation)	15 ft
Reservoir Capacity at Primary Spillway	19.1 ac-ft
Reservoir Capacity above Lowest Natural Ground Elevation	19.1 ac-ft
Reservoir Capacity Below Natural Ground Elevation	0 ac-ft
Dam Crest Length	1060 ft
Dam Crest Width	12 ft
Upstream Slope of Dam	2.5H : 1V
Downstream Slope of Dam	3H:1V

D.2 Design Criteria

The Freeman Allred Reservoir will be designed to meet the requirements of the NRCS and Utah Division of Dam Safety. The design requirements are identified in Utah's Administrative Code R655-11, NRCS Technical Release 60 and the National Engineering Handbook. Other Utah or NRCS codes as applicable should also be followed along with Spring City's Public Works standards for stormwater management and secondary water.

The pressure irrigation system will be designed to meet the requirements of the NRCS Conservation Practice Standard Code 430, Irrigation Pipeline, NRCS National Engineering Handbook (NEH) Part 636, Chapter 52, Structural Design of Flexible Conduits, and Spring City Standards for secondary water systems.

For each of the design standards and guidelines included above, the applicable, most conservative sections will be provided to all members of the design team for their use on the project.

D.2 Flood Control Hydrologic and Hydrology Analysis

The Freeman Allred Reservoir is located approximately 2.6 miles east of the city limits and at the base of the Oak Creek watershed. The reservoir is designed to provide flood protection. The drainage area above the basin was delineated and is 10.1 square miles. There is no existing flood control structure for the Oak Creek watershed. Refer to

Technical Memo No. 001 Hydraulics and Hydrology, in Appendix E of the Watershed Plan-EA, prepared by J-U-B for additional information.

The hydrologic review was completed using the HEC-1 interface in the Watershed Modeling System (WMS) software to estimate the range of modeled peak run flows for the Oak Creek watershed. Hydrographs of the storm events were inputted into a 2-D hydraulic model (SMS) to find the flood extents and impacts to the community. The existing conditions and proposed reservoir routing scenarios were both analyzed in the 2-D model and compared to see the impact of the proposed detention basin. The flood water analysis was completed to meet the requirements of the NRCS as defined in Technical Release 60 (TR-60) and Utah Dam Safety design criteria as defined in Utah Administrative Rule R655-11.

A proposed design of the Freeman Allred Reservoir was created in the model to create detention capacity. The proposed debris basin has a total volume of 1034-acre feet and wall height of 52 feet. The anticipated volume of storage of the storm runoff water is 231 acre-feet, 703 acre-feet is for irrigation water storage, 100 acre-feet is unusable storage for sediment and debris. A settling basin will be installed above the reservoir as part of the debris removal process. The low-level outlet structure of debris basin is a 36-inch HDPE piped outlet and emergency is spillway is 37 feet above the reservoir bottom and is 50 feet long.

D.3 Spillways

The main outlet for the Freeman Allred Reservoir is a low-level piped outlet which is 36-inch diameter. The 36-inch pipe has dual purpose to carry stored irrigation water to the irrigation system and to release flood water of the 100-yr storm over a 10-day period back into Oak Creek. The irrigation water portion flows to the Last Chance Ditch where the flow will go to the regulating ponds that are part of the irrigation system. The flood water flows are released into Oak Creek by a control structure.

The auxiliary spillway for the basin will be a 50 feet long concrete broad crested weir. The weir will be 5 ft from the top of the embankment. The spillway will be located on the south side of the debris basin just east of the embankment. The flow over the auxiliary spillway will spill on the south end of the reservoir. The base of the dam along the south end will be armored with large rocks to protect the dam during an auxiliary spill event. The auxiliary spillway is designed to have a maximum flow rate of 330 cfs.

D.4 Agricultural Water Management

The existing irrigation system in the Spring City Watershed area consists of a combination of open, earthen ditches and buried pipelines. While there are a few long water transmission pipelines that supply agricultural lands, most of the pipelines are used to supply the residential secondary water users within Spring City. The remaining open ditches experience significant water loss through seepage during low flows, a condition that is amplified during drought years. The most egregious of these ditch losses are being addressed by means of the new pipelines proposed in the watershed project.

The Point Ditch is a 1.3 mile open channel that delivers 10 cfs from a diversion located in the southeast portion of the Horseshoe Irrigation Company service area to an active agricultural area in the southwest portion of the service area. The ditch is constructed through sandy and gravelly soils and can experience nearly complete seepage losses during periods of low flow. The estimated water conservation by piping the Point Ditch is 1,773 acre-feet per year.

The North Fields Ditch represent 4 miles of open, earthen channels that supply approximately 5 cfs to a large, active agricultural area in the northwest portion of the service area. These ditches, too, are very susceptible to seepage losses, particularly during periods of low flow. The estimated water conservation by piping the North Fields Ditch is 648 acre-feet per year.

These pipelines were modeled to meet the NRCS Design Standard for Irrigation Pipeline Code 430 for plastic pipe. The velocity in the pipe was not to exceed 5 fps and working pressure to be below 72 percent of pressure rating of the pipe. Agricultural water demands were determined by the number of shares in the system and the pipes were sized to be able to supply the corresponding flow rate. A conservative Hazen Williams pipe roughness coefficient of 140 was used in the model. The model was assumed to be steady state with constant reservoir elevations.

One of the challenges currently in the irrigation system is the combined agricultural and residential storage in a single 20 acre-foot regulating pond. This combined method of storage and delivery from the single pond has proven to be challenging for decades as the users argued over the quantity of water each group is receiving. This project will address that challenge through the construction of a second 20-acre-foot regulating pond and the separation of water delivery systems to the two types of water users.

Water conservation is an important Agricultural Management goal of this project. Thus, secondary water meters will be added to the existing pressure irrigation system that serves residential lawns and gardens in Spring City. Metering of secondary water use for outdoor watering in residential areas has a proved water conservation benefit to every system. In the case of this project, it is estimated that 142 acre-feet per year will be conserved. This figure represents a 26% savings over the current usage. Recent studies by large water districts in Utah have estimated that water savings on large residential lots like those of Spring City will be as high as 40%.

The single, largest challenge currently faced by all water users in this watershed area is the lack of long-term water storage. Recent drought years have been extremely difficult as early high runoff bypasses the users for storage downstream by others and nothing is stored for late season watering. This is especially harmful to agricultural users who are still trying to actively produce crops in late summer and early fall. The construction of the Freeman Allred dual-purpose flood control/irrigation storage reservoir will provide a significant, long lasting benefit for the area.

D.5 Flooding and Breach Risk Analysis

The potential impacts to downstream structures and people due to a breach of the proposed dam was evaluated. The flood inundation analysis consists of modeling a breach of the Freeman Allred Reservoir embankment under sunny day conditions per Technical Release 60 (TR-60) NRCS, 2005 and Utah Dam Safety criteria. The study, inundation maps, model information and report are contained in Technical Memorandum No. 002 Flooding and Risk Analysis, in Appendix E of the Watershed Plan-EA, prepared by J-U-B.

For the Freeman Allred Reservoir, all of the water storage is above natural ground with 1034 acre-feet above natural ground. The embankment height is 52 feet above the lowest natural ground with a maximum water depth of 52 feet above natural ground. A breach of the embankment will flow through residential, commercial, and agricultural properties. The peak breach discharge flowrate is 36,582 cfs. The inundation area covers approximately 2,114 acres and affects 30 homes, 2 commercial buildings and 2 major highways. The population at risk (PAR) is 164 people with a fatality rate of 86 people. The Utah Division of Dam Safety has preliminarily classified the dam as a moderate hazard dam. The Utah Division of Dam Safety cannot finalize their classification of the proposed structure until final construction plans are submitted.

D.6 Sedimentation

The Upper Debris Reservoir receives water from Pleasant Creek. A prior report estimated 2 acre-feet of sediment per year for the basin. That report was titled The Upper Pleasant Debris Basin Dam Assessment Report prepared for NRCS on December 16, 2015 by McMillen LLC. A 10 acre-foot sediment structure with a concrete bottom is proposed upstream of the Upper Debris Basin. The basin will need to be cleaned annually and is designed to hold 3 acre-feet of sediment per year. Included in the design is an access ramp to the bottom of the pond. The access ramp will be used to remove floating material and the small amount of sediment that makes it through the sediment structure.

The Agriculture Reservoir and Surge pond will receive the water from pipelines or after the sediment has been removed by the Upper Debris Reservoir from Pleasant Creek. The Twin Creek Reservoir will receive water from Twin Creek. The structure in the creek will be designed to flush sediment past the structure to prevent it entering the pond. Any sediment that enters the pond will need to be cleaned annually.

D.7 Geotechnical Analysis

A geotechnical investigation for the Freeman Allred Debris Basin/Reservoir Dam was completed in November of 2021. Refer to the Geotechnical Study titled Preliminary Geotechnical Investigation Spring City – Reservoir, Spring City, Utah, Job No. 537-014 prepared by GeoStrata, LLC, November 8, 2021.

The geotechnical investigation was completed in accordance with the Utah Division of Water Rights and Utah Administrative Code Rule R655-11, Requirements for the Design, Construction and Abandonment of Dams, and the NRCS Earth Dams and Reservoirs TR-60. As part of this investigation, subsurface soil conditions were explored by excavating 3

test pits in the potential borrow area located within the proposed location of the reservoir and advancing three geotechnical boreholes at the approximate location of the crest of the proposed reservoir embankment. The purpose of the test pits was to identify the gradational and engineering characteristics of the potential borrow material. The purpose of the boreholes was to evaluate subgrade soils at that location.

The test pits were excavated using a mini, track-mounted backhoe. Disturbed and undisturbed samples were obtained from the test pits. Disturbed soil samples were obtained with the use of bags and buckets. All samples were transported to a laboratory for testing to evaluate engineering properties of the various earth materials observed.

The boreholes were advanced utilizing a 6-inch diameter hollow stem auger (HSA) system, using a track-mounted Geo Probe 7822 drill rig. Disturbed soil samples were collected from the boreholes using a standard split-spoon samplers. The soils were classified according to the *Unified Soil Classification System* (USCS) by field personnel. Subsurface soil conditions as encountered in the explorations were logged at the time of the investigation by a qualified geotechnical engineer and are presented in Appendix B of the geotechnical report.

Boreholes were advanced to depths of 14 to 21½ feet below the existing site grade. Test pits at the site were extended to depths of 7 to 11 feet below the site grade as it existed at the time of the investigation.

The test pits were excavated using a backhoe provided by the City. Disturbed and undisturbed samples were obtained from the test pits. Disturbed soil samples were obtained with the use of bags and buckets. Undisturbed samples were collected from blocks of soil taken from the test pit walls. All samples were transported to the laboratory for testing to evaluate engineering properties of the various earth materials observed. The boreholes were advanced using a tractor-mounted CME 550 drill rig. Disturbed soil samples were collected from the boreholes using a standard split-spoon sampler and a modified California sampler. The soils were classified according to the Unified Soil Classification System (USCS) by field personnel. Classifications for the individual soil units are shown in Appendix B of the geotechnical report.

Samples collected in the field were tested in the laboratory to evaluate pertinent physical and engineering properties. Gradation and Atterberg limit tests were performed to assist in classifying the soil. Direct shear tests were completed to assess the soil strengths of the proposed borrow material, back pressure permeability tests were completed to assess the permeability of the soils, and pinhole dispersion tests were completed to assess the dispersive characteristics of the fine-grained soils. The results of the laboratory tests are presented in the Summary of Laboratory Test Results Table in Appendix C of the geotechnical report.

The geotechnical report contains guidelines for the materials and construction methods for the buildings, trails, and parking lots on the site. Refer to the geotechnical report for these

guidelines. In addition, a summary of conclusions and recommendations was provided in the geotechnical report as follows:

1. Three phases of the field investigation were completed as part of this study:
    a. Phase 1 – Geologic mapping of the dam location.
    b. Phase 2 – Embankment foundations investigation performed using borings.
    c. Phase 3 – Borrow material investigation performed using test pits.
2. The random (background) earthquake controls as the Maximum Credible Earthquake (MCE) with a peak ground acceleration of 0.27g.
3. The analyses indicated that the proposed embankment modification with upstream and downstream slopes with grades on the order of 3H:1V and 2H:1V, respectively meet the minimum state standards for static and pseudo static stability.
4. Laboratory pinhole dispersion tests indicate that the proposed borrow clay core material classifies as an ND1 or ND2 material. ND1 and ND2 materials are considered to have a low potential for dispersion.
5. As part of construction of the proposed new embankment, the subgrade will require proper preparation. Proper preparation would include the removal of the existing topsoil, vegetation, fill soil, loose soil or disturbed soil.

D.8 Seismic Analysis

A seismic study was completed as part of the geotechnical report. For the seismic design, the soils were classified as Site Class D (stiff soil). Table 3 gives the seismic design accelerations for the Freeman Allred reservoir site from the geotechnical report. The embankment needs to be designed to meet these loadings and the NRCS and Utah Division of Dam Safety seismic design requirements.

Table 3: Seismic Design Accelerations

S_S	F_a	Fv	PGA	S_1	PGA_M
0.593	1.325	2.219	0.270	0.191	0.359

Based on the Liquefaction Potential Map for Central Utah (Anderson, et al., 1994), the subject site is mapped as having a “very low” liquefaction hazard potential. A “very low” liquefaction potential indicates probability of exceedance of less than 5% in 100 years for seismic shaking to occur which is strong enough to cause liquefaction of saturated sediments. Based on SPT blowcounts within the boreholes completed for this preliminary investigation and on the Liquefaction Potential Map for Central Utah, along with a lack of shallow groundwater, the liquefaction hazard potential for the site is considered to be very low.

D.9 Water Quality

The water for the Horseshoe Irrigation Company and Chester Irrigation Company irrigation systems and associated ponds come primarily from three sources: Oak Creek, Canal Creek and trans-mountain water from Cottonwood Creek through the Spring City tunnel. The sources for all of these creeks is runoff from snowmelt in the mountains east of Spring City. Some of the water from Oak Creek is run through a hydroelectric power generating facility east of the city. This will continue to be the scenario as the watershed project is completed. The Freeman Allred Debris Basin/Reservoir will become a new location for the release and delivery of flood water in accordance with NRCS requirement for flood control. Flood water delivered to the debris basin will pass through a sediment removal and settling basin before entering the basin. Irrigation water stored at Freeman Allred will typically be held for release late in the irrigation season to supplement creek flows. None of this irrigation water is subject to negative water quality issues from any source before it reaches the agricultural fields or residential lawns and gardens.

D.10 Alternatives

Alternatives that were investigated as part of the study including a No Action alternative. Due to its overall significance to the project, the proposed location for the dual-purpose debris basin/storage reservoir received the most consideration for alternative site. Sites were investigated in three locations associated with Oak Creek flows. The two sites that would have placed to debris basin/reservoir directly in stream channel proved to be too narrow between natural hillside boundaries to be feasible. Excessive excavation and slope stability were identified as huge challenges. One of the sites would have been primarily on U.S. Forest Service property and there was concern that this site would attract too much negative attention, Finally, the Freeman Allred Meadow site was chosen for several reasons, particularly because the property is already owned by the Horseshoe Irrigation Company and is a large enough meadow in the foothills above Spring City to accommodate the debris basin/reservoir of the size that will provide the greatest benefit. This alternative is preferred, even though it is “off-channel” and will require a constructed means for delivery of flood and irrigation water to the site.

Regarding the alternatives investigated for pipelines, the alternatives focused on the open ditches that historically saw the highest amount of water loss. There were limited alternatives for pipe routing because the pipelines are to be constructed within existing ditch easements to avoid a substantial amount of easement purchases.

Refer to the Plan-EA for a more detailed discussion on the project alternatives.

D.11 Preferred Alternative Cost Estimate

The cost estimate for the preferred alternative is $29,350,529. The cost estimate is broken out in Table 4 Flood Control and Detention Facilities, Table 5 Agricultural Water Management and Table 6 Recreational Facilities. The 1,000 acre-foot reservoir is a dual facility acting as the debris basin for flood control and as a water storage reservoir for agricultural water storage. For flood control, 28.1% of the 1,000 acre-feet is available. The remainder is available for irrigation storage. Reservoir costs included in Tables 4 and 5 are

proportioned accordingly.

Table 4: Flood Control and Detention Facilities

Item	Description	Unit	Unit Price	Quantity	Total Amount
	Flood Control and Detention				
Project F1 - 1,000 AF Debris Basin/ Storage Reservoir					
	(28.1% of Total Reservoir Project)				
F1-1	Mobilization	LS	$91,268.00	1	**$91,268**
F1-2	Clear and Grub	ACRE	$356.31	100	**$35,631**
F1-3	Exc to Clay Core	CY	$2.18	70,600	**$153,908**
F1-4	Exc to Dam Embankment	CY	$1.26	250,000	**$315,000**
F1-5	Exc to Haul to Waste (4 miles)	CY	$1.49	680,000	**$1,013,200**
F1-6	Import Sand Filter	CY	$28.81	11,700	**$337,077**
F1-7	Import RipRap Inside Face	CY	$25.25	8,100	**$204,525**
F1-8	Toe Drain Piping	LF	$8.43	3,000	**$25,290**
F1-9	Toe Drain Gravel	CY	$4.22	2,300	**$9,706**
F1-10	Energy Dissipation/Concrete Sediment Deposit/Cleaning Structure	LS	$35,125.00	1	**$35,125**
F1-11	Concrete Emergency Spillway	LS	$140,500.00	1	**$140,500**
F1-12	Concrete Access Ramp	LS	$7,025.00	1	**$7,025**
	Project F1 Construction Total				**$2,368,255**
Project F2 - Concrete Flood Channel to Reservoir Site					
F2-1	Mobilization	LS	$123,000.00	1	**$123,000**
F2-2	Access Road Improvement and Maintenance f	LF	$20.00	5,800	**$116,000**
F2-3	Unclassified Excavation	LS	$250,000.00	1	**$250,000**
F2-4	Foundation Material	TON	$40.00	9,800	**$392,000**
F2-5	Concrete Trapezoidal Channel Bottom Width	LF	$550.00	5,900	**$3,245,000**
F2-6	Non-woven Geotechnical Fabric	SY	$2.00	17,700	**$35,400**
F2-7	Misc Concrete Ramps and Outlet Structure to	LS	$50,000.00	1	**$50,000**
	Project F2 Construction Total				**$4,211,400**
Project F3 - Mill Race Flood Ditch Piping					
F3-1	Mobilization	LS	$33,000.00	1	**$33,000**
F3-2	24" HDPE DR 26	LF	$71.28	11,594	**$826,420**
F3-3	24" Culvert Road Reconstruction	LF	$50.00	682	**$34,100**
F3-4	Foundation Material	TON	$18.00	7,554	**$135,972**
F3-5	Imported Backfill	TON	$18.00	812	**$14,616**
F3-6	Air Valve Assembly	EA	$2,500.00	6	**$15,000**
F3-7	Storm Drainage Ditch	LF	$5.00	11,594	**$57,970**
	Project F3 Construction Total				**$1,117,078**
	Flood Control Construction Subtotal				**$7,696,733**
	Flood Control Construction Contingency			15%	**$1,154,510**
	Flood Control Construction Total				**$8,851,243**
	Engineering (8% Design, 8% Construction)			16%	**$1,231,477**
	Project Administration (NRCS)			2%	**$153,935**
	Project Administration (Sponsor)	Lump Sum		1	**$4,000**
	Permits	Lump Sum		1	**$15,000**
	Total Flood Control and Detention				**$10,255,655**

Table 5: Agricultural Water Management

Item	Description	Unit	Unit Price	Quantity	Total Amount
	Agricultural Water Management				
Project A1 - North Field Ditch Piping - 3rd 4th 5th Ditches					
A1-1	Mobilization	LS	$48,000.00	1	**$48,000**
A1-2	12" HDPE DR 32.5	LF	$29.67	8,608	**$255,399**
A1-3	16" HDPE DR 32.5	LF	$42.26	7,231	**$305,582**
A1-4	6" HDPE DR 32.5	LF	$15.20	3,836	**$58,307**
A1-5	4" HDPE DR 32.5	LF	$5.75	1,400	**$8,050**
A1-6	Turnouts	EA	$7,000.00	18	**$126,000**
A1-7	Modify Diversion Structure	LS	$15,000.00	1	**$15,000**
A1-8	Outlet Structure	LS	$6,000.00	1	**$6,000**
A1-9	Imported Backfill	TON	$18.00	7,790	**$140,220**
A1-10	Foundation Material	TON	$18.00	975	**$17,550**
A1-11	Air Valve Assembly	EA	$2,500.00	8	**$20,000**
	Project A1 Construction Total				**$1,000,109**
Project A2 - Point Ditch Piping					
A2-1	Mobilization	LS	$25,000.00	1	**$25,000**
A2-1	22" HDPE DR 32.5	LF	$55.13	6,888	**$379,735**
A2-3	Inlet Structure	LS	$15,000.00	1	**$15,000**
A2-4	Outlet Structure	LS	$6,000.00	1	**$6,000**
A2-5	Imported Backfill	TON	$18.00	4,124	**$74,232**
A2-6	Foundation Material	TON	$18.00	47	**$846**
A2-7	Air Valve Assembly	EA	$2,500.00	3	**$7,500**
A2-8	Highway Crossing	LS	$12,000.00	1	**$12,000**
A2-9	22" Flow Meter	LS	$9,000.00	1	**$9,000**
	Project A2 Construction Total				**$529,313**
Project A3 - Penstock Replcament					
A3-1	Mobilization	LS	$45,000.00	1	**$45,000**
A3-2	20" HDPE DR 32.5	LF	$47.96	3,767	**$180,665**
A3-3	24" HDPE DR 13.5	LF	$108.64	1,928	**$209,458**
A3-4	24" HDPE DR 11	LF	$125.19	1,659	**$207,690**
A3-5	24" HDPE DR 9	LF	$144.10	1,097	**$158,078**
A3-6	Imported Backfill	TON	$18.00	5,114	**$92,052**
A3-7	Foundation Material	TON	$18.00	686	**$12,348**
A3-8	20" Flow Meter	EA	$7,500.00	1	**$7,500**
A3-9	Air Valve Assembly	EA	$2,500.00	4	**$10,000**
A3-10	Modifications to Upper Structure	LS	$10,000.00	1	**$10,000**
A3-11	Hydroelectric Plant Modifications	LS	$15,000.00	1	**$15,000**
	Project A3 Construction Total				**$947,791**
Project A4 - Water Transmission Pipeline from Reservoir Site					
A4-1	Mobilization	LS	$50,000.00	1	**$50,000**
A4-2	26" HDPE DR 19	LF	$108.11	2,798	**$302,492**
A4-3	36" HDPE DR 26	LF	$137.95	1,676	**$231,204**
A4-4	36" HDPE DR 21	LF	$160.25	4,083	**$654,301**
A4-5	Imported Backfill	TON	$18.00	6,195	**$111,510**
A4-6	Foundation Material	TON	$18.00	546	**$9,828**
A4-7	26" Flow Meter	EA	$9,000.00	1	**$9,000**
A4-8	Outlet Structure	EA	$10,000.00	1	**$10,000**
A4-9	Air Valve Assembly	EA	$2,500.00	4	**$10,000**
	Project A4 Construction Total				**$1,388,335**

Table 5: Agricultural Water Management (cont.)

Project A5 - Oak Creek Diversion Structure Replacement					
A5-1	Mobilization	LS	$4,000.00	1	**$4,000**
A5-2	Structure	LS	$100,000.00	1	**$100,000**
A5-3	Control Slide Gate	EA	$10,000.00	1	**$10,000**
A5-4	Rip Rap	TON	$35.00	140	**$4,900**
A5-5	Clear and Grub	LS	$15,000.00	1	**$15,000**
	Project A5 Construction Total				**$133,900**
Project A6 - 20 acre-foot Regulating Pond					
A6-1	Mobilization	1 Lump Sum		$47,500.00	**$47,500**
A6-2	Clear and Grub	3 Acre		$1,268.00	**$3,804**
A6-3	Excavate and Place as Clay Core	11000 Cubic Yards		$7.76	**$85,360**
A6-4	Excavate and Place as Dam Embankment	14700 Cubic Yards		$4.47	**$65,709**
A6-5	Imported Sand Filter	2200 Cubic Yards		$102.54	**$225,588**
A6-6	Imported Rip Rap Inside Embankment Face	8100 Cubic Yards		$89.84	**$727,704**
A6-7	Toe Drain Piping	1400 Linear Feet		$30.00	**$42,000**
A6-8	Toe Drain Gravel	1300 Cubic Yards		$15.00	**$19,500**
A6-9	Concrete Spillway	1 Lump Sum		$10,000.00	**$10,000**
A6-11	Concrete Access Ramp	1 Lump Sum		$5,000.00	**$5,000**
A6-12	Irrigation Outlet Works	1 Lump Sum		$5,000.00	**$5,000**
	Project A6 Construction Total				**$1,237,165**
Project A7 - 1,000 AF Debris Basin/Storage Reservoir					
	(71.9% of Total Reservoir Project)				
A7-1	Mobilization	LS	$233,528.00	1	**$233,528**
A7-2	Clear and Grub	ACRE	$911.69	100	**$91,169**
A7-3	Exc to Clay Core	CY	$5.58	70,600	**$393,948**
A7-4	Exc to Dam Embankment	CY	$3.21	250,000	**$802,500**
A7-5	Exc to Haul to Waste (4 miles)	CY	$3.82	680,000	**$2,597,600**
A7-6	Import Sand Filter	CY	$73.73	11,700	**$862,641**
A7-8	RipRap Inside Face	CY	$64.59	8,100	**$523,179**
A7-9	Toe Drain Piping	LF	$21.57	3,000	**$64,710**
A7-10	Toe Drain Gravel	CY	$10.79	2,300	**$24,817**
A7-11	Energy Dissipation/Concrete Sediment Deposit/Cleaning Structure	LS	$89,975.00	1	**$89,975**
A7-12	Concrete Emergency Spillway	LS	$359,500.00	1	**$359,500**
A7-13	Concrete Access Ramp	LS	$17,975.00	1	**$17,975**
A7-14	Irrigation Outlet Works (100%)	LS	$15,000.00	1	**$15,000**
	Project A7 Construction Total				**$6,076,542**
Project A8 - Secondary Water Meters					
A8-1	Mobilization	LS	$4,110.00	1	**$4,110**
A8-2	Water Meter Installation	EA	$1,695.00	502	**$850,890**
	Project A8 Construction Total				**$855,000**

Table 5: Agricultural Water Management (cont.)

Project A9 - Chester Irr. Oak Creek Bypass Piping					
A9-1	Mobilization	LS	$18,000.00	1	**$18,000**
A9-2	12" HDPE DR 32.5	LF	$30.00	5,326	**$159,780**
A9-3	Modify Existing Pond	LS	$10,000.00	1	**$10,000**
A9-4	Outlet Structure	LS	$6,000.00	1	**$6,000**
A9-5	Imported Backfill	TON	$18.00	1,990	**$35,820**
A9-6	Foundation Material	TON	$18.00	250	**$4,500**
A9-7	Air Valve Assembly	EA	$2,500.00	3	**$7,500**
	Project A9 Construction Total				**$241,600**
Project A10 - Chester Ponds Capacity Restoration					
A10-1	Mobilization	LS	$40,000.00	1	**$40,000**
A10-2	Pond 1 Restoration/Dredging	CY	$9.75	32,000	**$312,000**
A10-3	Pond 2 Restoration/Dredging	CY	$9.75	65,000	**$633,750**
A10-4	Pond 3 Restoration/Dredging	CY	$9.75	36,000	**$351,000**
A10-5	Pond 4 Restoration/Dredging	CY	$9.75	27,000	**$263,250**
	Project 10 Construction Total				**$1,600,000**
	Ag Management Construction Subtotal				**$14,009,755**
	Ag Management Construction Contingency			15%	**$2,101,463**
	Ag Management Construction Total				**$16,111,218**
	Engineering (8% Design, 8% Construction)			16%	**$2,241,561**
	Project Administration (NRCS)			2%	**$280,195**
	Project Administration (Sponsor)	LS		1	**$4,000**
	Permits	LS		1	**$15,000**
	Total Agricultural Water Management				**$18,651,974**

Table 6: Recreational Facilities

	Recreation Improvements				
Project R1 - Freeman Allred Day Use Area					
R1-1	Mobilization	LS	$5,000.00	1	**$5,000**
R1-2	Trail	LF	$20.00	6,500	**$125,000**
R1-3	Day Use Camp Ground	LS	$200,000.00	1	**$200,000**
	Project R1 Construction Total				**$330,000**
	Recreation Construction Subtotal				**$330,000**
	Recreation Construction Contingency			15%	**$49,500**
	Recreation Construction Total				**$379,500**
	Engineering (8% Design, 8% Construction)			16%	**$52,800**
	Project Admiration (NRCS)	LS		2%	**$6,600**
	Project Admiration (Sponsor)	LS		1	**$4,000**
	Total Recreation Facilities				**$442,900**

PROJECT TOTAL	**$29,350,529.26**

D.12 Economic Evaluation

The Spring City Watershed Plan and Environmental Assessment (Plan-EA) Benefit Cost Analysis Report is included in Appendix E. Report findings are summarized here.

The National Economic Efficiency Benefit-Cost Analysis (NEE BCA) conducted uses federal water resource project and National Resources Conservation Service (NRCS) guidelines for the evaluation of benefits and costs of the no action and action alternatives, relying primarily on the Principles, Requirements and Guidelines (PR&G)(NRCS, 2014a), the NRCS Natural Resources Economics Handbook (NRCS 1998), and the National Watershed Program Manual (NRCS 2014b).

D.13 Economic Benefits

This NEE BCA report estimates the benefits and costs of proposed flood mitigation and water management measures proposed as part of the Spring City Watershed Flood Prevention and Irrigation Improvement Project (Project) in central Utah's Upper Oak Creek, Canal Creek, Cedar Creek, and Cottonwood Creek subwatersheds (watershed), situated in Sanpete County. Oak Creek itself is a tributary of the San Pitch River, which flows south to join the Sevier River in the City of Gunnison, UT. The project area and its surroundings are predominately agricultural, and contains Spring City, which is defined by large-lot residential development and has a population of approximately 1,000 people.

The area's municipal and agricultural water supply faces several infrastructure challenges that negatively impact flood risk and water management. Presently, there are no flood control structures upstream of Spring City, which puts the City's residents and building stock at risk of flood damage. The City experienced significant flooding events in 1965, 1983, and 1995.[1] The existing irrigation distribution system also contains several open and unlined canals and laterals that are prone to severe seepage, particularly during periods of drought. The local energy utility utilizes flows from Oak Creek to generate electricity through an aged and failing penstock. And lastly, pressure in the agricultural and municipal water systems is maintained through a 20-acre regulating pond that presents challenges for water managers in their attempt to maintain system pressure in each system.

This report considers the benefits and costs of flood mitigation and water management measures proposed to limit flood damages and improve water management in the watershed by addressing the challenges cited above. Specifically, this report considers the benefits and costs of the Action Alternative, which consists of constructing one large flood control and water supply reservoir, a smaller regulating pond, pressurized piping systems, and associated works of improvement at different locations throughout the watershed. The benefits and costs of the action alternative are compared against a baseline of no action, which is also referred to as the Future Without Federal Investment (FWOFI).

[1] Spring City Municipal Government. 2021. Spring City Risk Summary. Available at: https://www.springcityutah.org/wp-content/uploads/2021/03/SPRING-CITY-RISK-SUMMARY-2.pdf

D.13.1 Proposed Works of Improvement

Table 7 below provides a list of proposed Works of Improvements included in the Benefit-Cost Analysis. These proposed Works of Improvement correspond to those included in Tables 4, 5, and 6 in Section D.11, Preferred Alternative Cost Estimate, and throughout the NEE BCA report.

Table 7. Works of Improvement Proposed as Part of the Spring City Watershed Project EA.

Purpose/Work of Improvement	Description
Flood Control and Detention	
F1/A7 – Freeman Allred Reservoir and Debris Basin	Flood control and water agricultural water supply structure
F2 – Concrete Flood Channel to Reservoir	Transmit flood water, debris, and irrigation water to Freeman Allred Reservoir
F3 – Mill Race Flood Ditch Piping	Pressure pipe moving water supplies to irrigation canals downstream
Agricultural Water Management	
A1 – North Field Ditch Piping	Pipe sections of the North Field Ditch to reduce water loss/increase water supply
A2 – Point Ditch Piping	Pipe sections of the Point Ditch to reduce water loss/increase water supply
A3 – Penstock Replacement	Replace penstock to protect hydropower production
A4 – Water Transmission Pipeline	Pipe sections of an open transmission canal from the Freeman Allred Reservoir site to reduce water loss/increase water supply
A5 – Oak Creek Diversion Structure Replacement	New flood diversion structure to channel flood flows on Oak Creek
A6 – Regulating Pond	Construct 20-acre-foot regulating pond to separate agricultural and municipal water delivery systems
A8 – Secondary Water Meters	Install secondary water meters on pressure residential outdoor irrigation system in Spring City
A9 – Oak Creek Bypass Piping	Bypass pipeline to move flows from Oak Creek
A10 – Chester Ponds Capacity Restoration	Dredge and remove sediment from existing ponds to increase water storage
Recreation	
R1 – Freeman Allred Day Use Area	Construct day use facilities at the Freeman Allred Reservoir

Source: J-U-B ENGINEERS, Inc.

D.13.2 Economic and Structural Tables

The results of the NEE analysis for the Action Alternative are compared against the FWOFI or No Action Alternative and serve as the best estimate of the additional economic value that would be created under the Action Alternative. Results are presented using the Economic and Structural Tables (NWPM Part 506, NRCS 2014b) as shown below.

Table 8 (National Watershed Program Manual [NWPM] 506.11, Economic Table 1; NRCS 2014), Table 9 (NWPM 506.12, Economic Table 2; NRCS 2014), and Table 10 (NWPM 506.18, Economic Table 4) below summarize installation costs, distribution of costs, and total annual average costs for the Action Alternative.

Table 8. Economic Table 1—Estimated Installation Cost of the Action Alternative, Spring City Watershed Project, Utah (2022 $).[1,2]

Works of Improvement	Unit	Number			Estimated Project Cost		Project Total
		Federal Land	Non-Federal Land	Total	Public Law 83-566 Funds (Non-Federal land)	Other Funds (Non-Federal land)	
F1[3] (28.1% of total)	Acres	0	20	20	$25,090,974	$4,259,554	$29,350,529
F2	LF	1,140	4,760	5,900			
F3	LF	0	11,594	11,594			
A1	LF	0	21,075	21,075			
A2	LF	0	11,567	6,888			
A3	LF	3,887	4,562	8,449			
A4	LF	0	8,557	8,557			
A5	Acres	0.1	0	0.1			
A6	Acres	0	4.8	4.8			
A7[3] (71.9% of total)	Acres	0	51	51			
A8	EA	0	502	502			
A9	LF	0	5,326	5,326			
A10	CY	0	160,000	160,000			
R1	Acres	0	1.9	1.9			
Total Length	**LF**	**5,027**	**67,441**	**72,468**	$25,090,974	$4,259,554	$29,350,529
Total Acres	**Acres**	**0.1**	**77.8**	**77.9**			

Notes: Totals may not sum due to rounding. Prepared: August 2022.

1. Price base: 2022 dollars. 2. Project cost prepared by J-U-B ENGINEERS, Inc. 3. Costs are for Freeman Allred Reservoir based on the percentage of the project designed to serve flood control and agricultural water management purposes

Table 9. Economic Table 2 —Estimated Cost Distribution of the Action Alternative, Spring City Watershed Project, Utah (2022 $).[1,2]

Works of Improvement	Installation Costs—PL 83-566 Funds					Installation Cost—Other Funds					Total
	Construction	Engineering	Permitting	Administration	Total PL 83-566	Construction	Engineering	Permitting	Administration	Total Other	
Spring City Watershed Project Action Alternative	$21,124,407	$3,525,838	$-	$440,730	$25,090,974	$4,217,554	$-	$30,000	$12,000	$4,259,554	$29,350,529
Total	**$21,124,407**	**$3,525,838**	**$-**	**$440,730**	**$25,090,974**	**$4,217,554**	**$-**	**$30,000**	**$12,000**	**$4,259,554**	**$29,350,529**

Notes: Totals may not sum due to rounding. Prepared: August 2022.

1. Price base: 2022 dollars. 2. Project cost prepared by J-U-B ENGINEERS, Inc.

In addition to the installation costs, the Action Alternative will entail costs associated with operations and maintenance of the works of improvement. These costs are included as “Other Direct Costs” in Table 10. The total annualized cost of installing, operating, and maintaining the various works of improvement included in the Action Alternative is approximately $893,900 over the 102-year analysis period.

2. Table 10. Economic Table 4—Estimated Average Annual NEE Costs, Spring City Watershed Project, Utah (2022$).[1]

Action Alternative Component	Project Outlays (Amortization of Installation Cost)	Other Direct Costs[2]	Total Cost
F1	$78,531	$17,229	$95,800
F2	$135,536	$30,638	$170,200
F3	$37,125	$8,127	$45,300
A1	$33,144	$7,276	$40,400
A2	$17,564	$3,851	$21,400
A3	$34,545	$7,070	$41,600
A4	$45,992	$10,100	$56,100
A5	$4,478	$974	$5,500
A6	$40,989	$9,001	$50,000
A7	$201,139	$44,208	$245,300
A8	$28,342	$6,220	$34,600
A9	$8,043	$1,758	$9,800
A10	$52,996	$11,640	$64,600
R1	$11,020	$2,401	$13,400
Total	**$733,444**	**$160,493**	**$893,900**

Notes: Totals may not sum due to rounding. Prepared: August 2022.

1. Price base: 2022 dollars, amortized over 100 years at a discount rate of 2.25 percent.

2. Other direct costs include annual operations and maintenance associated with each work of improvement based on 0.75 percent of construction costs.

Using the resulting benefits and costs from the previous two tables, Table 11 (NWPM 506.21, Economic Table 6, NRCS 2014b) presents a comparison of the NEE average annual benefits and average annual costs for the Action Alternative. In total, the Action Alternative will generate average annual benefits of $1,143,100 compared to average annual costs of $893,900, for a benefit-cost ratio of 1.3.

The increments of benefit and cost for each work of improvement of the Action Alternative are also shown in Table 11. Works of improvement were analyzed together to reflect their interrelated nature. While the costs of each work of improvement were analyzed separately, in practice many of the works are interrelated and cannot function independently of one another. As a result, works of improvement related to the proposed Freeman Allred reservoir, which include F1, F2, F3, A4, A5, A6, and A7, were analyzed as a single work of improvement. Since the primary purpose of the reservoir is flood mitigation, its cost was compared against the benefits received from avoided property-related damages and avoided farm income damages. Work of improvement A3 (i.e. penstock replacement) was analyzed in isolation since it operates independently of other works. Its costs were compared against the avoided damages that would result from lost power generation income and emergency replacement expenses. Work of improvement A8 (i.e. secondary water meters) was also analyzed in isolation since it operates independently of other works. It's costs were compared against the benefits of avoiding municipal water supply expenditures. Works of improvement related to piping open irrigation laterals, which include A1, A2, A9, and A10, were analyzed as a single work of improvement since their intended purpose is to increase irrigation efficiency. The cost of the combined works were compared against the benefit of the increased farm income that would be produced with the conserved irrigation water. Lastly, work of improvement R1 (i.e. recreation facilities) was also analyzed in isolation since it operates independently of other works. It's costs were compared against the benefits of increasing recreation values.

In all cases, the benefits of each increment outweigh their respective costs. In total, the benefit-cost ratio (BCR) of the Action Alternative was estimated to be 1.3. The BCRs for each work of improvement ranged from a low of 1.0 for the Upper Oak Creek Diversion structure replacement work (A3) to a high of 2.6 for the secondary water meter work (A8) and the Freeman Allred Day Use Area (R1).

Table 11. Economic Table 6—Comparison of Average Annual Costs, Avoided Damages, and Benefits of the Action Alternative, Spring City Watershed Project, Utah (2022$).[1]

Works of Improvement	Agriculture-related						Non-agriculture Related	Average Annual Benefits	Average Annual Cost	Benefit Cost Ratio
	Reduced Property-related Damages	Reduced Farm Income Damages	Reduced Power Income Damages	Increased Farm Income	Reduced Road Damages	Avoided Municipal Water Supply Expenses	Recreation Values	Total		
A3			$42,600					$42,600	$41,600	1.0
F1, F2, F3, A4, A5, A7, A6	$658,400	$2,500			$171,500			$832,400	$668,100	1.2
A1, A2, A9, A10				$143,100				$143,100	$136,300	1.1
R1							$34,700	$34,700	$13,400	2.6
A8						$90,300		$90,300	$34,600	2.6
Total	$658,400	$2,500	$42,600	$143,100	$171,500	$90,300	$34,700	**$1,143,100**	**$896,900**	**1.3**

Notes: Totals may not sum due to rounding. Prepared: August 2022.

1. Price base: 2022 dollars amortized over 100 years at a discount rate of 2.25 percent.

ATTACHMENT 1

CONCEPT DESIGN DRAWINGS

SPRING CITY WATERSHED PLAN

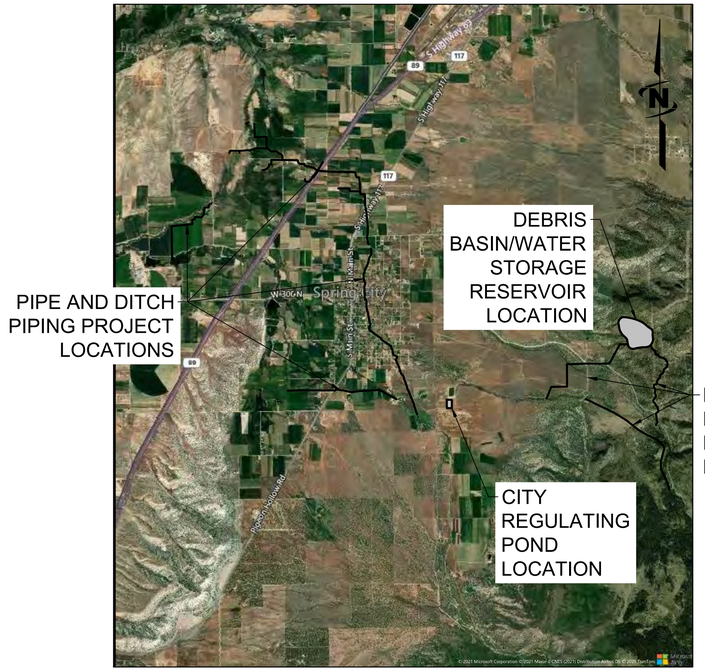
SPRING CITY

April 2022

PRELIMINARY PLANS NOT FOR CONSTRUCTION

30% DESIGN SET

AREA MAP



VICINITY MAP

PROJECT NO. 55-20-029

J-U-B ENGINEERS, INC.

THE LANGDON GROUP | GATEWAY MAPPING INC.

J-U-B FAMILY OF COMPANIES

NOTICE AND DISCLAIMER

LAST UPDATED: 4/28/2022

SHEET NUMBER: G-001

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J-U-B ENGINEERS, INC.
J-U-B ENGINEERS, INC.
466 North 900 West
Kaysville, Utah 84037
Phone: 801.547.0393
Fax: 801.547.0397
www.jub.com

PRELIMINARY PLANS

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	BY	APP.	DATE

REVISION

SPRING CITY WATERSHED PLAN
SPRING CITY

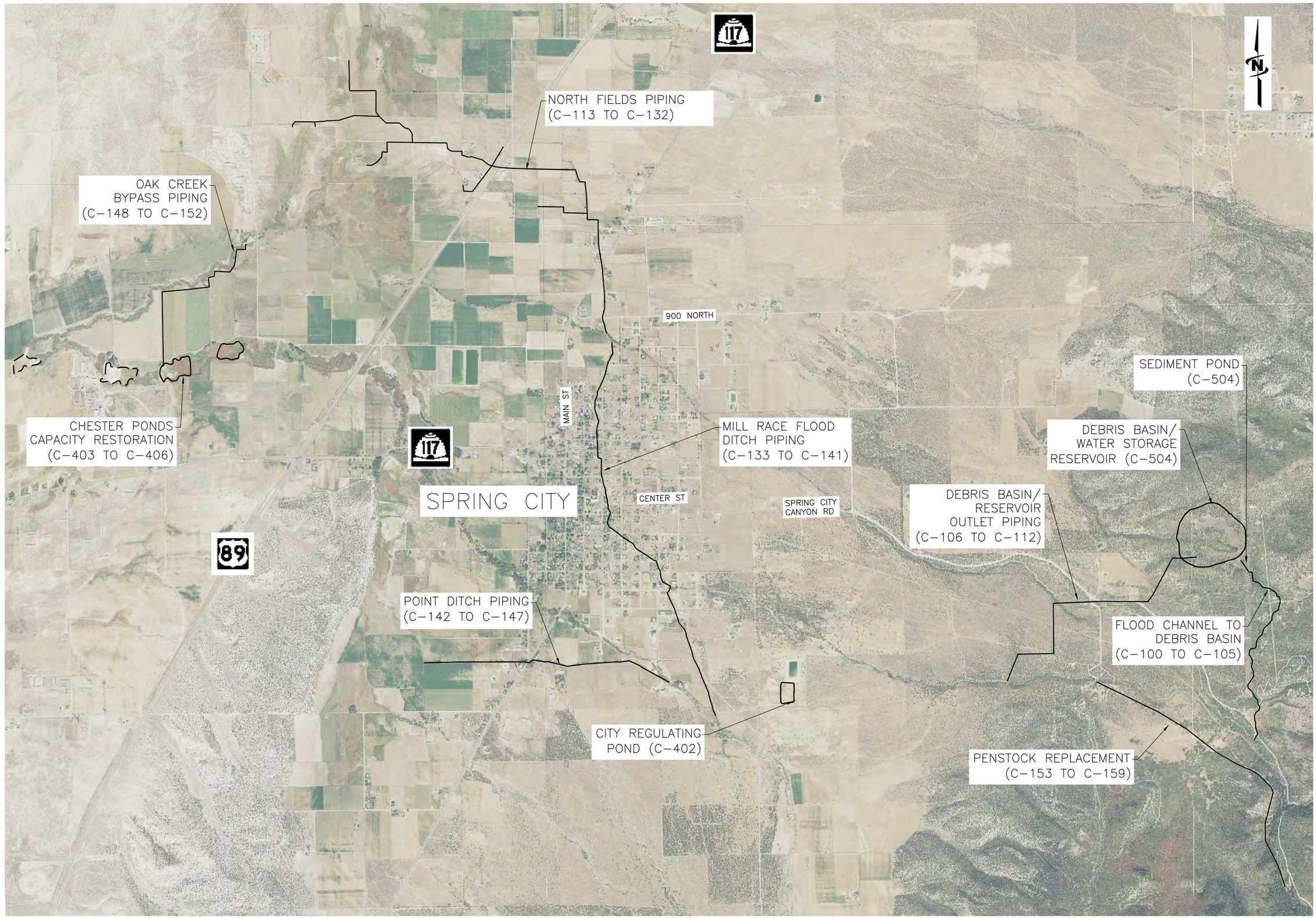
SHEET INDEX

FILE : 55-20-029_G-001X
JUB PROJ. # : 55-20-029
DRAWN BY: AMN
DESIGN BY: BKW
CHECKED BY: BKW

LAST UPDATED: 4/28/2022

SHEET NUMBER:
G-002

Plot Date:2/2/2023 9:12 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_G-001X.DWG



J-U-B ENGINEERS, INC.
J-U-B ENGINEERS, INC.
466 North 900 West
Kaysville, UT 84037
Phone: 801.547.0393
www.jub.com

PRELIMINARY PLANS

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

VICINITY MAP

FILE : 55-20-029_G-003
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
G-003

Plot Date:2/2/2023 9:14 AM Plotted By: Taylor Stauffer
Date Created:1/31/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_G-003.DWG

GENERAL NOTES

1. SPRING CITY AND THE ENGINEER HAVE JURISDICTION OVER THIS PROJECT. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND BUSINESS LICENSES PRIOR TO CONSTRUCTION.

2. CONTRACTOR IS RESPONSIBLE FOR DUST ABATEMENT AND ANY LIABILITY ISSUES RELATED TO DUST AT ANY LOCATION WHICH MAY BE CAUSED BY THIS PROJECT.

3. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL AND PROTECTION OF PEDESTRIANS IN AND AROUND THIS WORK. REFERENCE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD LATEST EDITION FOR WORK ZONE TRAFFIC CONTROL).

4. ANY WORK DONE WITHIN A PUBLIC RIGHT–OF–WAY SHALL BE COORDINATED WITH THE APPROPRIATE TRANSPORTATION AGENCY AND SHALL MEET THE REQUIREMENTS OF THAT AGENCY AND, IN PARTICULAR, REQUIREMENTS OF ANY RIGHT–OF–WAY SPECIAL USE PERMIT, OR OTHER PERMIT. ALL WORK SHALL MEET CURRENT OSHA REQUIREMENTS.

5. WHERE WORK IS PERFORMED ON EASEMENTS, THE CONTRACTOR SHALL TAKE EVERY PRECAUTION TO ELIMINATE ANY ADVERSE EFFECTS ON THE ADJACENT PROPERTY AND/OR TO RESTORE IT TO ITS ORIGINAL CONDITION.

6. ALL DISTANCES AND DATA SHALL BE CHECKED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. IN CASE OF CONFLICT THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY SO THAT CLARIFICATION MAY BE MADE PRIOR TO THE START OF THE WORK.

7. THE CONTRACTOR SHALL ARRANGE FOR, SECURE AND PAY FOR DIRECTLY, ANY AND ALL TEMPORARY UTILITY SUPPLIES (E.G. WATER POWER, AND TELEPHONE) IT MAY REQUIRE FOR PROSECUTION OF ITS WORK. THE COST OF SUCH UTILITIES SHALL BE INCLUDED IN THE APPROPRIATE BID ITEM WITH WHICH IT IS ASSOCIATED.

8. SHOULD CONSTRUCTION BE HALTED BECAUSE OF INCLEMENT WEATHER CONDITIONS, THE CONTRACTOR WILL COMPLETELY CLEAN UP ALL AREAS AND MAINTAIN THE SURFACE IN GOOD CONDITION DURING THE SHUT–DOWN PERIOD.

9. THE CONTRACTOR'S PERSONNEL, EQUIPMENT, AND OPERATIONS SHALL COMPLY FULLY WITH ALL APPLICABLE STANDARDS, REGULATIONS, AND REQUIREMENTS OF EXISTING FEDERAL, UTAH STATE, AND LOCAL GOVERNMENTAL AGENCIES.

10. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL LOCAL, STATE, AND FEDERAL PERMITS REQUIRED FOR STORM WATER POLLUTION PREVENTION AS A RESULT OF CONSTRUCTION ACTIVITIES. WHEN CALLED FOR IN THE CONTRACT DOCUMENTS, CONTRACTOR SHALL PREPARE A STORM WATER POLLUTION PREVENTION PLAN FOR APPROVAL BY THE ENGINEER AND FOR SUBMITTAL TO LOCAL AUTHORITIES FOR REVIEW AND APPROVAL. IF THE CONSTRUCTION WILL DISTURB MORE THAN ONE ACRE, CONTRACTOR SHALL FILE A "NOTICE OF INTENT" FOR PERMIT COVERAGE UNDER THE STATE'S UPDES STORM WATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES (UTR300000) AND PAY ALL ASSOCIATED FEES. THE NOI MAY BE OBTAINED ELECTRONICALLY AT THE FOLLOWING WEBSITE: HTTP://WWW.DEQ.UTAH.GOV/PERMITS/WATER/UPDES/STORMWATERCON.HTM#BMP AND CLICKING ON THE LINK FOR NOTICE OF INTENT UNDER THE GENERAL CONSTRUCTION HEADING. ONCE THE NOI IS COMPLETED A PERMIT CAN BE OBTAINED BY FOLLOWING THE "ACCESS STORM WATER PERMIT DATABASE" LINK AT THE SAME URL ADDRESS. THE CGP DOES NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH OTHER REGULATIONS OR CONTRACT REQUIREMENTS REGARDING STORM WATER POLLUTION PREVENTION INCLUDING BUT NOT LIMITED TO: PROTECTION OF SURFACE WATERS, PREVENTION OF SOIL RUNOFF INTO DRAINS, DUST CONTROL, PREVENTION OF TRACKING SOILS TO ADJACENT STREETS, FUEL CONTAINMENT, SPILL CONTROL, ETC.

11. OBTAIN PERMITS FROM APPLICABLE IRRIGATION COMPANIES AND CITIES.

12. ALL WORK SHALL BE CONTAINED IN OR LIMITED TO THE CITY'S PROPERTY, EASEMENTS, OR APPROVED STAGING AREAS.

13. SLOPE ON ALL FOOTING DRAINS TO BE MINIMUM OF 0.5%.

14. THE GEOTECHNICAL EVALUATION FOR THIS PROJECT IS FOUND IN THE PROJECT SPECIFICATIONS. RECOMMENDATIONS FROM THE REPORT SHALL BE FOLLOWED. IN THE EVENT OF A CONFLICT WITH THE PROJECT SPECIFICATIONS, THE ENGINEER AND THE GEOTECHNICAL ENGINEER WILL APPROVE THE PROPER COURSE OF ACTION. REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE SOILS INFORMATION.

15. CONTRACTOR TO PROVIDE, CONSTRUCT, MAINTAIN AND REMOVE A TEMPORARY FENCE AROUND THE CONSTRUCTION SITE USED TO PROTECT NEIGHBORING PROPERTIES FROM DAMAGE. CONTRACTOR IS ALSO RESPONSIBLE TO PROTECTION TO SAFE GUARD WORK SITE. PAY ITEM TO BE INCLUDED IN MOBILIZATION.

16. THE ENGINEER WILL PROVIDE VERTICAL AND HORIZONTAL CONTROLS ONE TIME ON THE PROJECT SITE. ANY ADDITIONAL CONSTRUCTION STAKING REQUIRED TO COMPLETE THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

17. CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES AND BE RESPONSIBLE FOR DAMAGES TO EXISTING UTILITIES AND EXISTING IMPROVEMENTS AS A RESULT OF THE CONTRACTOR'S CONSTRUCTION ACTIVITIES.

EXISTING UTILITIES

1. APPROXIMATE LOCATIONS OF UTILITIES ARE SHOWN ON THE PLANS. THEY ARE TO BE USED FOR GENERAL INFORMATION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE APPROPRIATE UTILITY COMPANIES WHEN CONSTRUCTION MIGHT INTERFERE WITH NORMAL OPERATION OF ANY UTILITIES. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE THE APPROPRIATE UTILITY COMPANY FIELD–LOCATE ANY UTILITY INSTALLATIONS WHICH MIGHT BE AFFECTED BY CONSTRUCTION PRIOR TO BEGINNING WORK IN THAT AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SERVICE OF EXISTING UTILITIES AND FOR RESTORING ANY UTILITIES DAMAGED DUE TO CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. DEPTHS AND ELEVATIONS OF UTILITIES ARE UNKNOWN UNLESS OTHERWISE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITY DEPTHS, ELEVATIONS, ANY DISCREPANCIES AND/OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.

INSPECTION AND TESTING

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATERIALS TESTING INCLUDING BUT NOT LIMITED TO CONCRETE, FLUSHING, DISINFECTION, LEAK, PRESSURE, BACTERIOLOGICAL, AND COMPACTION. ALL TESTS SHALL MEET MINIMUM ENGINEER REQUIREMENTS. SEE THE CONTRACT DOCUMENTS AND DRAWINGS FOR FREQUENCY OF TESTING. RESULTS ARE TO BE DELIVERED TO SPECIAL INSPECTOR, OWNER AND ENGINEER.

2. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ENGINEER AND SPECIAL INSPECTOR FOR INSPECTIONS OF WORK AT APPROPRIATE INTERVALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PAY FOR ADDITIONAL INSPECTIONS THAT ARE THE RESULT OF HIS WORKMANSHIP.

CONTACT PHONE NUMBERS

CITY – MIKE BLACK	435–469–0259	TREASURER
ENGINEER – TRACY ALLEN	801–726–5818	PROJECT MANAGER

811 Know what's **below.** **Call** before you dig.

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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PRELIMINARY PLANS

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	BY	APP.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PROJECT NOTES

FILE : 55-20-029_G-001X
JUB PROJ. # : 55-20-029
DRAWN BY: AMN
DESIGN BY: BKW
CHECKED BY: BKW

LAST UPDATED: 4/28/2022

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G-004

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Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_G-001X.DWG

LINE LEGEND

LINE DESCRIPTION	PROPOSED LINE	EXISTING LINE
POWER / COMMUNICATIONS		
OVERHEAD POWER	OHP	OHP
UNDERGROUND POWER	UP	UP
OVERHEAD TELEPHONE	OHT	OHT
UNDERGROUND TELEPHONE	UT	UT
FIBER OPTIC	F/O	F/O
CABLE TELEVISION	CTV	CTV
UNDERGROUND POWER, TEL, CABLE TV		P,T,CTV
UNDERGROUND POWER, TEL, CABLE TV, GAS		P,T,CTV,G
STORM DRAIN		
STORM DRAIN (GENERAL)	SD	SD
STORM DRAIN	X"SD	X"SD
ROOF DRAIN	RD	RD
SANITARY SEWER		
SANITARY SEWER (GENERAL)	SS	SS
SANITARY SEWER	X"SS	X"SS
SANITARY SEWER SERVICE	SS SS	SS SS
SEWER FORCE MAIN	FM	FM
WATER		
WATER (GENERAL)	W	W
WATER (SPECIFIED SIZE)	X"W	X"W
WATER SERVICE	WS WS	WS WS
IRRIGATION		
IRRIGATION	IRR	IRR
GRAVITY IRRIGATION	GIRR	GIRR
PRESSURE IRRIGATION	PIRR	PIRR
POTABLE WATER	PW	PW
NON-POTABLE WATER	NPW	NPW
GAS		
NATURAL GAS	G	G
NATURAL GAS SERVICE	G G	G G
HIGH PRESSURE GAS	HPG	HPG
LIQUID GAS	LG	LG
UTILITY		
CHLORINE LINE	CHL	CHL
INDUSTRIAL WASTE WATER	IWW	IWW
DRAIN LINE		DL

LINE DESCRIPTION	PROPOSED LINE	EXISTING LINE
BOUNDARY		
PROPERTY LINE	P/L	P/L
PROPERTY LINE		
RIGHT OF WAY	R/W	R/W
TEMPORARY EASEMENT	T/E	T/E
PERMANENT EASEMENT	P/E	P/E
TOWNSHIP AND RANGE		
SECTION LINE		
QUARTER SECTION LINE		
1/16 SECTION LINE		
STATE LINE		
COUNTY LINE		
SITE		
FENCE	X	X
MAJOR CONTOUR	2521	
MINOR CONTOUR		
GRADE BREAK		GB
TOP OF BANK		TOB
TOE OF SLOPE		TOE
CUT LIMITS		
FILL LIMITS		
DITCH		
STORM SWALE		
EDGE OF WATER		
HIGH WATER		
WETLAND		WET
WETLAND BOG		BOG
WETLAND MARSH		MRSH
WETLAND SWAMP		SWMP
ROADWAY		
ROAD SHOULDER		
ROAD CENTERLINE		
ROAD ASPHALT		EP
ROAD GRAVEL		EG
TOP BACK OF CURB		
LIP OF GUTTER		
LANDSCAPING LIMITS	LS	LS

SHEET NUMBERING

SAMPLE: C-101

- C – DISCIPLINE DESIGNATOR
- 1 – SHEET TYPE DESIGNATOR
- 01 – SHEET SEQUENCE NUMBER

DISCIPLINE DESIGNATORS

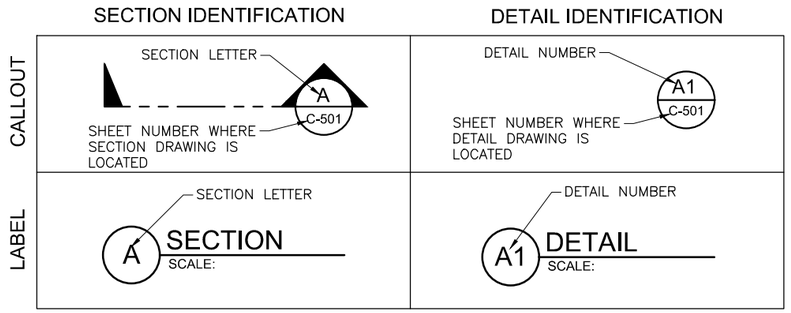
DISCIPLINE	DESIGNATOR	DESCRIPTION
GENERAL	G	ALL GENERAL
	GI	GENERAL INFORMATION
	GC	GENERAL CONTRACTUAL
	GR	GENERAL RESOURCE
SURVEY/MAPPING	V	ALL SURVEY
GEOTECHNICAL	B	ALL GEOTECHNICAL
CIVIL	C	ALL CIVIL
LANDSCAPE	L	ALL LANDSCAPE
STRUCTURAL	S	ALL STRUCTURAL
ARCHITECTURAL	A	ALL ARCHITECTURE
EQUIPMENT	Q	ALL EQUIPMENT
MECHANICAL	M	ALL MECHANICAL
ELECTRICAL	E	ALL ELECTRICAL
PLUMBING	P	ALL PLUMBING
PROCESS	D	ALL PROCESS
RESOURCE	R	ALL RESOURCE

SHEET TYPE DESIGNATORS

DESIGNATOR	SHEET TYPE
0	GENERAL (SYMBOLS, LEGENDS, NOTES, ETC.)
1	PLANS (HORIZONTAL VIEWS)
2	ELEVATIONS, PROFILES, COMBINED PLAN & PROFILES
3	SECTIONS (SECTIONAL VIEWS)
4	LARGE-SCALE VIEWS (PLANS, ELEVATIONS, ECT.)
5	DETAILS OR COMBINED DETAILS AND SECTIONS
6	SCHEDULES AND DIAGRAMS
7	USER DEFINED
8	USER DEFINED
9	3D REPRESENTATIONS (ISOMETRICS, PERSPECTIVES, PHOTOS)

SECTION AND DETAIL IDENTIFIERS

NOTE:
A DASH MAY BE PLACED IN THE LOWER PORTION OF THE IDENTIFIER IF THE DETAIL DRAWING OR SECTION VIEW IS LOCATED ON THE SAME SHEET.



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PRELIMINARY PLANS

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NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

LINE LEGEND AND SHEET NUMBERING

FILE : 55-20-029_G-001X
JUB PROJ. # : 55-20-029
DRAWN BY: AMN
DESIGN BY: BKW
CHECKED BY: BKW

LAST UPDATED: 4/28/2022

SHEET NUMBER:
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Plot Date:2/2/2023 9:15 AM Plotted By: Taylor Stauffer
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SYMBOL DESCRIPTION	EXISTING SYMBOL	PROPOSED SYMBOL
SURVEY		
CAP (ALUMINUM)		
CAP (BRASS)		
CHISELED X		
CTRL PT GENERIC		
CTRL PT ½" REBAR	1/2" PIN CONTROL PT	
CTRL PT ⅝" REBAR	5/8" PIN CONTROL PT	
CTRL PT 60D NAIL	60D	
CTRL PT HUB & TACK	HT	
CTRL PT PK NAIL	PK	
CTRL PT TEMP BENCH MARK	TBM	
NAIL		
NAIL AND TAG	N/T	
NAIL (PK)	PK	
BOLT		
DRILL STEEL		
REBAR (½")		
REBAR (⅝")		
STAINLESS STEEL ROD		
IRON PIPE		
RAILROAD SPIKE		
R/W MONUMENT		
STONE		
SECTION CORNER. MON.	22 15 21 16	
SECTION QUARTER MON.	15 22	
SITE		
BOLLARD		
BOULDER		
DRINKING FOUNTAIN	DF	DF
FLAGPOLE	F	F
GATE		
MAIL BOX	M	M
PARKING METER	PM	PM
POST		
SIGN		
SPOT ELEVATION		
TREE (SHRUB)		
TREE (STUMP)		
TREE (CONIFEROUS)		
TREE (DECIDUOUS)		
TEST HOLE	TH	
WELL	W	
WELL (MONITORING)	M	M

SYMBOL DESCRIPTION	EXISTING SYMBOL	PROPOSED SYMBOL
UTILITIES		
MANHOLE (GENERIC)		
PRESSURE CLEAN OUT AT GRADE	PCO	PCO
THRUST BLOCK		
VAULT	V	V
COMMUNICATION		
TELE. MANHOLE	T	
TELE. PEDASTAL	T	T
TELE. POLE		
TV PEDASTAL	TV	TV
GUY WIRE		
DOMESTIC WATER		
FIRE HYDRANT		
SPIGOT		
YARD HYDRANT		
WATER MANHOLE	W	
WATER METER		
WATER VALVE	W	W
ELECTRIC		
ELEC. MANHOLE	E	
ELEC. METER	E	E
ELEC. TRANS.	E	E
JUNCTION BOX	J	J
POWER POLE		
POWER STUB	E	E
STREET LIGHT		
TRAFFIC SIGNAL POLE		
IRRIGATION		
IRRIGATION VALVE	IRR	IRR
IRRIGATION VALVE BOX	I	I
SPRINKLER		
NATURAL GAS		
GAS METER	G	G
GAS VALVE	G	G
SANITARY SEWER		
CLEANOUT	C	
SEWER STUB	S	S
SS MANHOLE		
STORM DRAIN		
CATCH BASIN		
DRY WELL	DW	DW
FLARE END		
GREASE TRAP		
SD MANHOLE	D	

SYMBOL DESCRIPTION	EXISTING SYMBOL	PROPOSED SYMBOL
FITTINGS		
BEND (11.25°)		
BEND (22.5°)		
BEND (45°)		
BEND (90°)		
CAP		
COUPLING		
CROSS		
REDUCER (CONCENTRIC)		
REDUCER (ECCENTRIC)		
TEE		
TRUE UNION		
WYE		
VALVES		
AIR VALVE	A	A
BLOW OFF	B	B
COMBO VALVE	C	C
BALL VALVE (N.C.)		
BALL VALVE (N.O.)		
BUTTERFLY VALVE		
CHECK VALVE		
CHECK VALVE (FLANGE)		
CHECK VALVE (MJ)		
GATE VALVE		
PLUG VALVE (N.C.)		
PLUG VALVE (N.O.)		
ROAD MARKINGS		
TURN ARROW		
ARROW STRAIGHT		
ARROW STRAIGHT/TURN		
BICYCLE ROUTE		
CAR		
HANDICAP SYMBOL		
ROADWAY		
INTERSTATE ROUTE	25	
MAST ARM		
PEDESTRIAN SIGNAL		
STATE ROUTE	14	
TRAFFIC LIGHT		

SYMBOL DESCRIPTION	EXISTING SYMBOL	PROPOSED SYMBOL
ROADWAY (CONT.)		
TYPE 2 BARRICADE		
US ROUTE	287	
TRAFFIC ATTENUATOR		
JERSEY BARRIER		

ABBREVIATIONS

ASSY	ASSEMBLY
>	ANGLE
@	AT (MEASUREMENTS)
BLDG	BUILDING
BM	BENCH MARK
BSC	BITUMINOUS SURFACE COURSE
BSW	BACK OF SIDEWALK
BW	BOTH WAYS
C	CHANNEL (STRUCTURAL)
C/L	CENTER LINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUOUS
CPLG	COUPLING
CU FT	CUBIC FEET
CU YD	CUBIC YARD
DEG OR °	DEGREE
DET	DETAIL
DIA OR ø	DIAMETER
DIP	DUCTILE IRON PIPE
DIST	DISTRIBUTION
DWG	DRAWING
EA	EACH
ELB	ELBOW
ELEV	ELEVATION
EW	EACH WAY
EXIST	EXISTING
FG	FINISH GRADE
FH	FIRE HYDRANT
FLG	FLANGE
FT OR '	FEET
GV	GATE VALVE
HORIZ	HORIZONTAL
ID	INSIDE DIAMETER
IN OR "	INCH
LB OR #	POUND
LF	LINEAL FEET
LN	LINEAL
MAX	MAXIMUM
MIN	MINIMUM
NO OR #	NUMBER
PE	POLYETHYLENE
PL	PLATE
PL	PROPERTY LINE
PVC	POLYVINYL–CHLORIDE
R	RADIUS
RP	RADIUS POINT
R&R	REMOVE & REPLACE
REM	REMOVE
REQ'D	REQUIRED
REV	REVISION
R/W	RIGHT–OF–WAY

S	SLOPE
SPEC	SPECIFICATION
STA	STATION
STD	STANDARD
STL	STEEL
ST STL	STAINLESS STEEL
TBC	TOP BACK OF CURB
TYP	TYPICAL
TFC	TOP FACE OF CONCRETE
W/	WITH
W/O	WITHOUT
W/REQ'D	WHERE REQUIIRED

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SPRING CITY WATERSHED PLAN
SPRING CITY

SYMBOL AND ABBREVIATIONS LEGEND

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FILE : 55-20-029_G-001X
JUB PROJ. # : 55-20-029
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Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_G-001X.DWG

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PRELIMINARY PLANS

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SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL SHEET INDEX

FILE : 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
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Plot Date:2/2/2023 9:16 AM Plotted By: Taylor Stauffer
Date Created:1/30/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-OAK-CREEK.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL PLAN VIEW

FILE: 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 1/31/2023

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C-101

Plot Date:2/2/2023 9:16 AM Plotted By: Taylor Stauffer
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PRELIMINARY PLANS

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SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL PLAN VIEW

FILE : 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
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PRELIMINARY PLANS

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SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL PLAN VIEW

FILE : 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
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C-103

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SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL PLAN VIEW

FILE : 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
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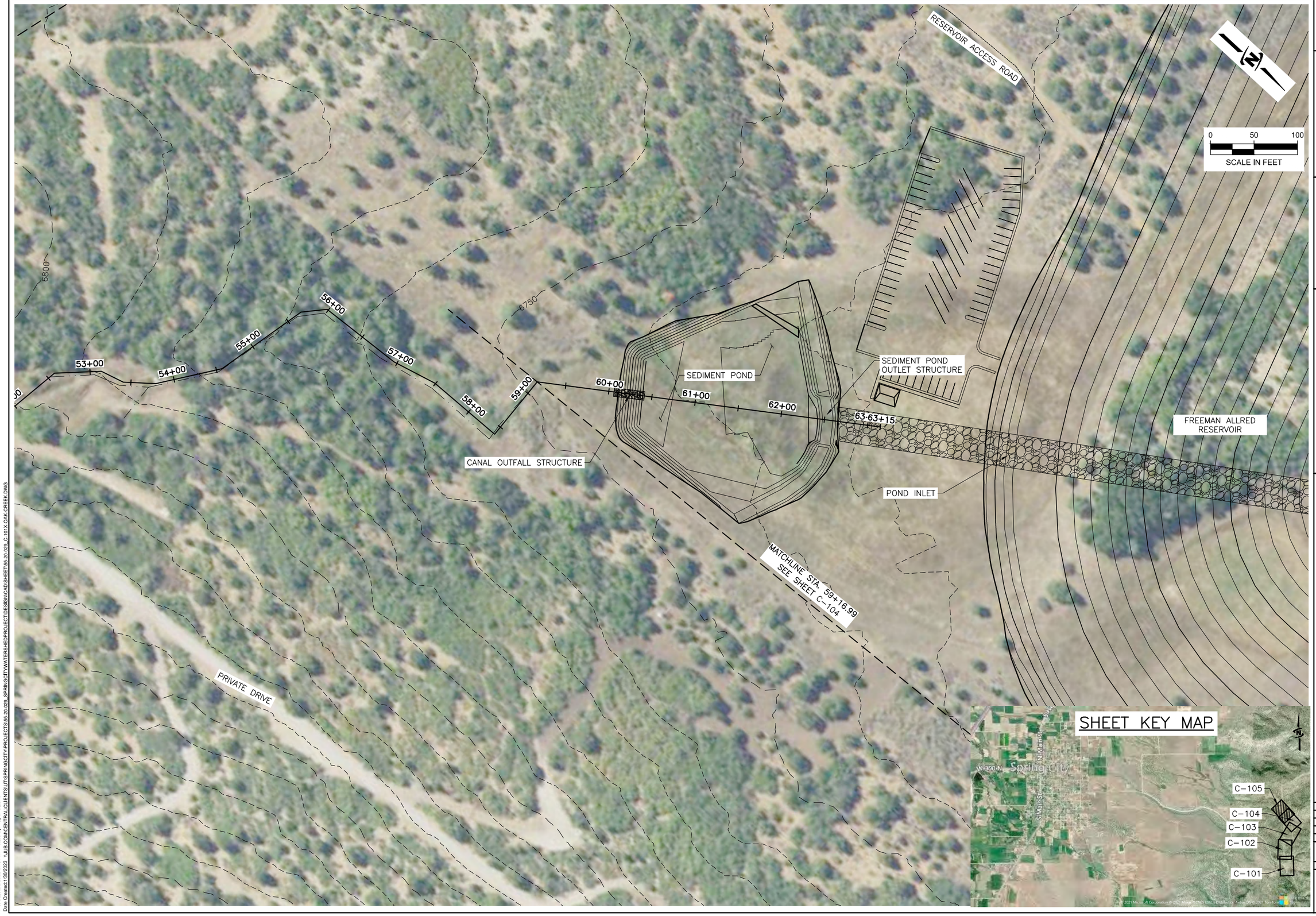
Plot Date: 2/2/2023 9:16 AM Plotted By: Taylor Stauffer
Date Created: 1/30/2023 \\UB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-OAK-CREEK.DWG



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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

FLOOD CHANNEL PLAN VIEW

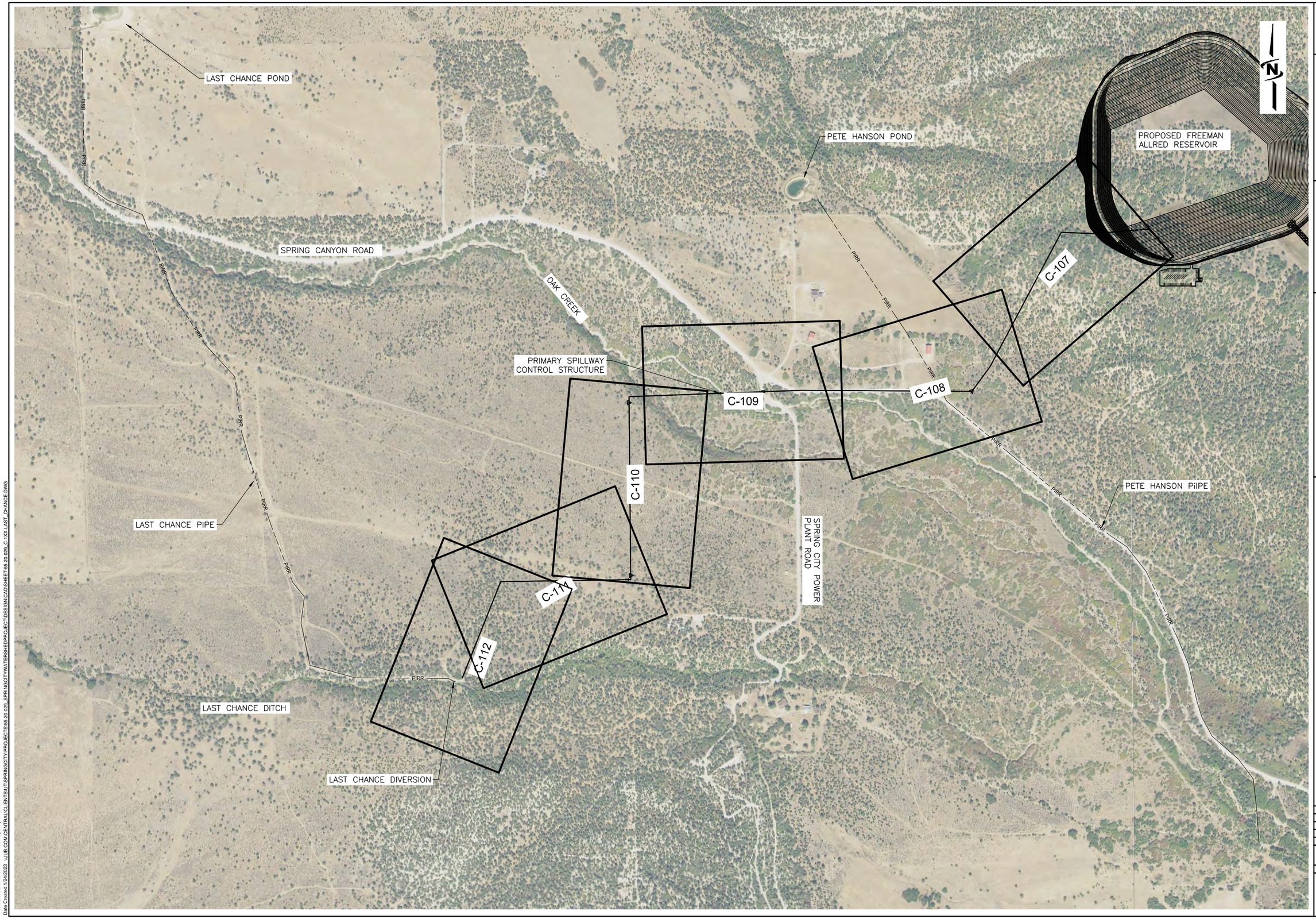
FILE : 55-20-029_C-101X-OAK-CREEK
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: TBS
CHECKED BY: TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 1/31/2023

SHEET NUMBER:
C-105

Plot Date:2/2/2023 9:16 AM Plotted By: Taylor Stauffer
Date Created:1/30/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-OAK-CREEK.DWG



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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET SHEET INDEX

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-106

Plot Date:2/2/2023 9:17 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-1XX-LAST_CHANCE.DWG

EMERGENCY SPILLWAY

PRIMARY SPILLWAY
36" PIPE OUTLET

PROPOSED FREEMAN
ALLRED RESERVOIR

1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+

36" DR 21 HDPE PIPE

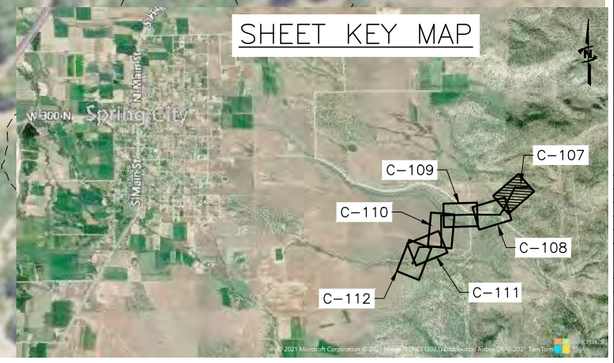
MATCHLINE STA. 16+74.44
SEE SHEET C-108

6720
6650

N

0 50 100
SCALE IN FEET

SHEET KEY MAP



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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET PLAN VIEW

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-107

Plot Date:2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1XX-LAST_CHANCE.DWG

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NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET PLAN VIEW

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-108

Plot Date:2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1XX-LAST_CHANCE.DWG

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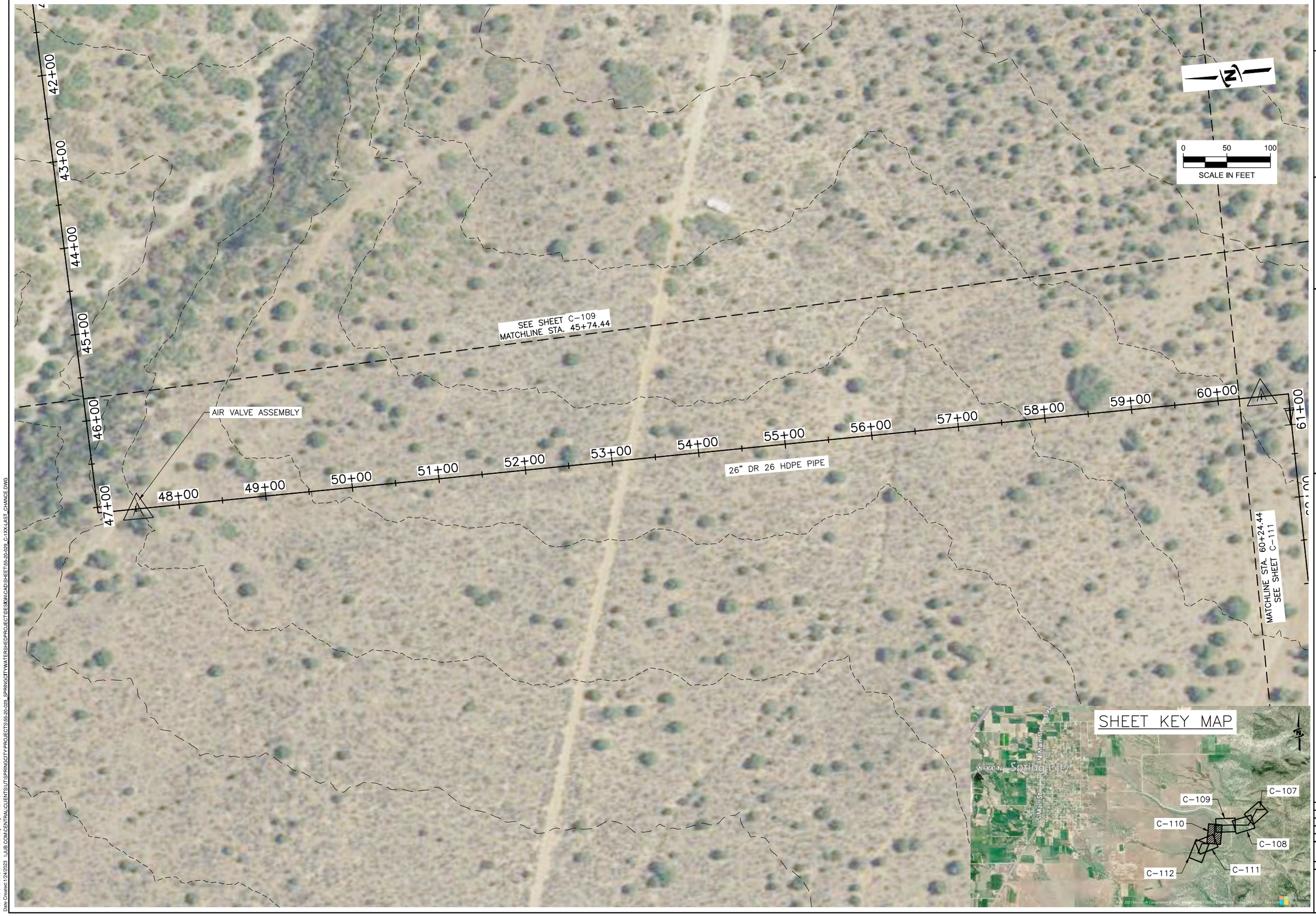
SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET PLAN VIEW

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-109

Plot Date:2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-1XX-LAST_CHANCE.DWG



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SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET PLAN VIEW

FILE :	55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # :	55-20-029
DRAWN BY:	----
DESIGN BY:	TBS
CHECKED BY:	TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-110

Plot Date:2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1XX-LAST_CHANCE.DWG

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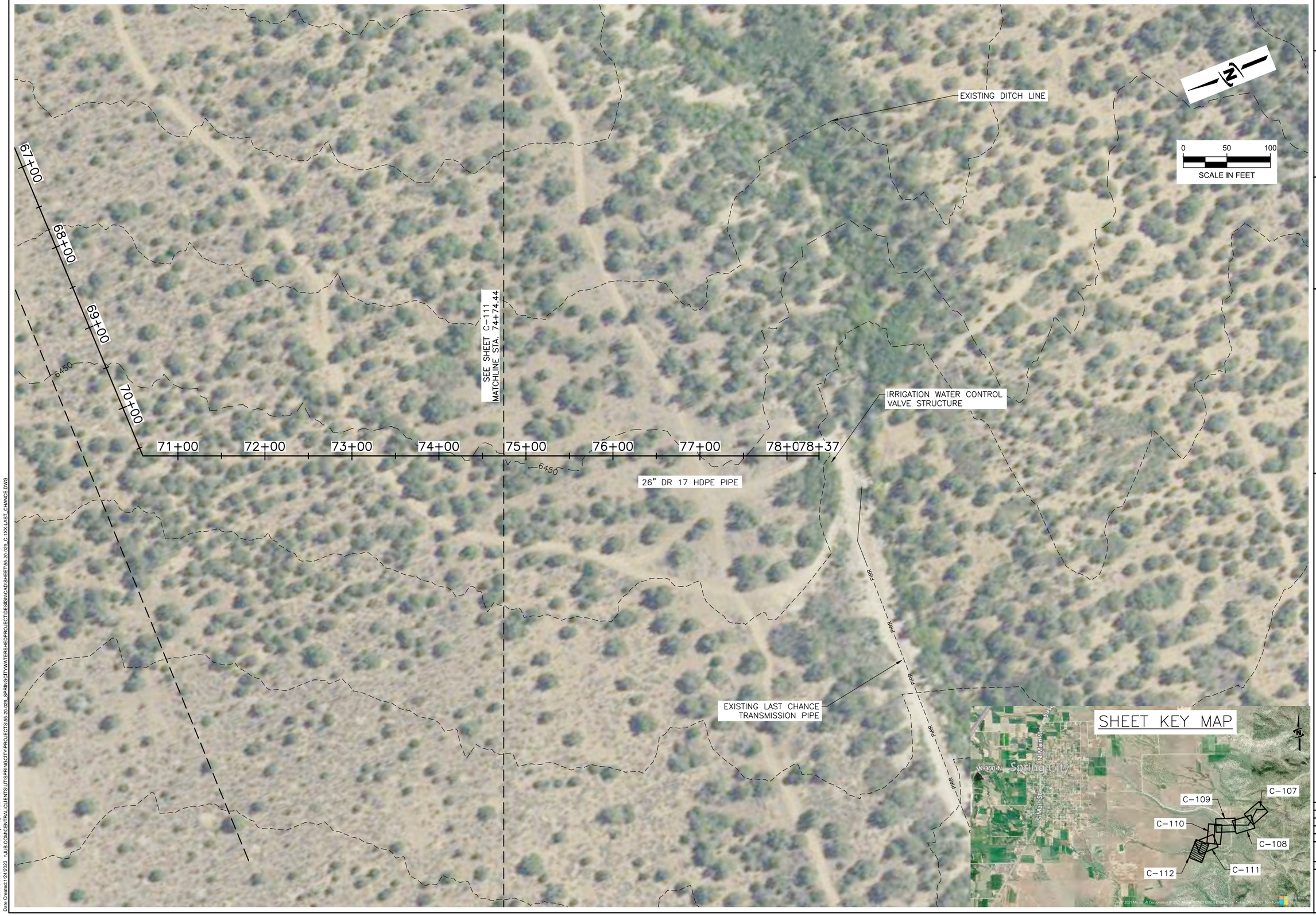
SPRING CITY WATERSHED PLAN
SPRING CITY

RESERVOIR OUTLET PLAN VIEW

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-111

Plot Date: 2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created: 1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1XX-LAST_CHANCE.DWG



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SPRING CITY WATERSHED PLAN
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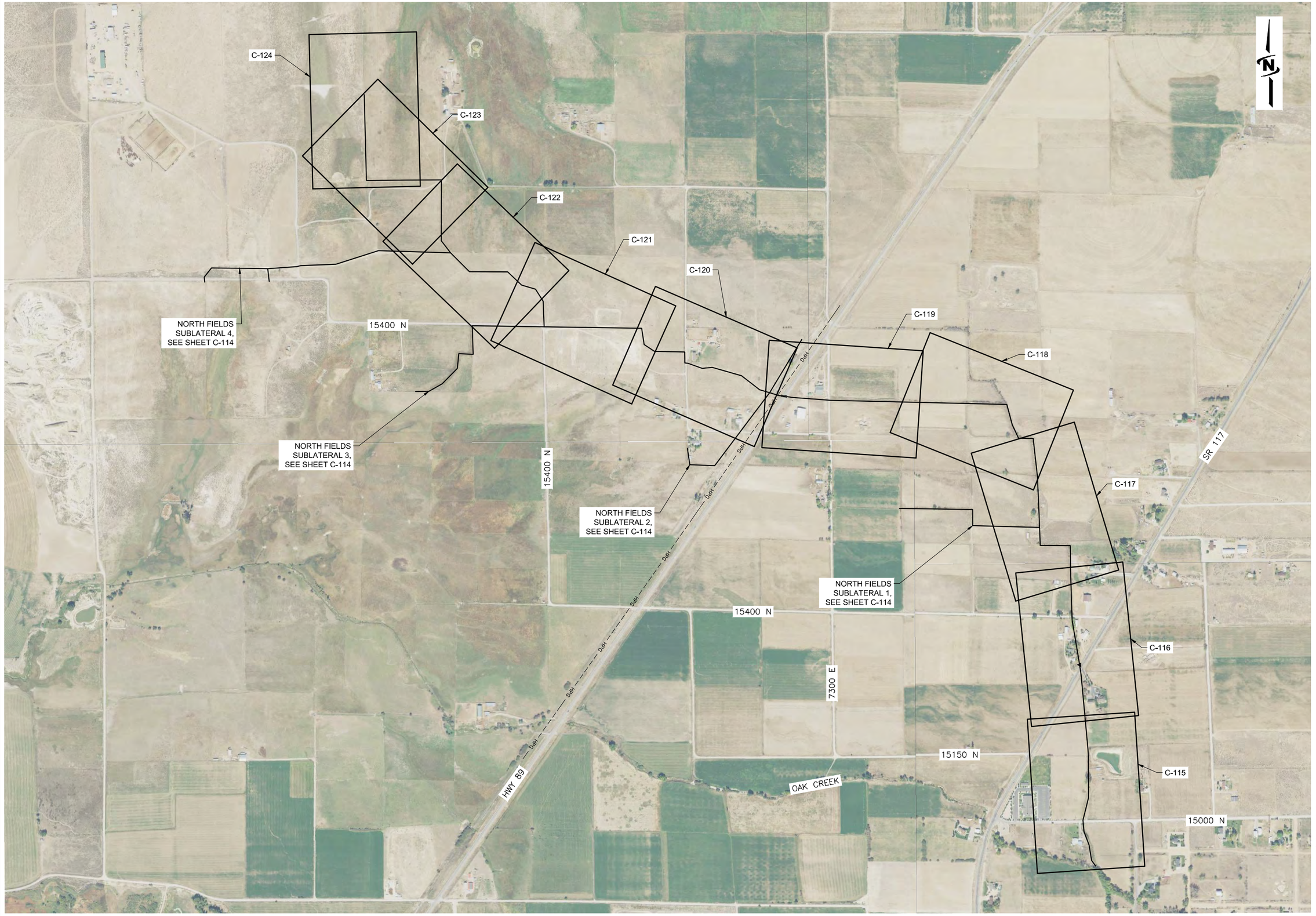
RESERVOIR OUTLET PLAN VIEW

FILE : 55-20-029_C-1XX-LAST_CHANCE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-112

Plot Date:2/2/2023 9:18 AM Plotted By: Taylor Stauffer
Date Created:1/24/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1XX-LAST_CHANCE.DWG



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	REVISION			

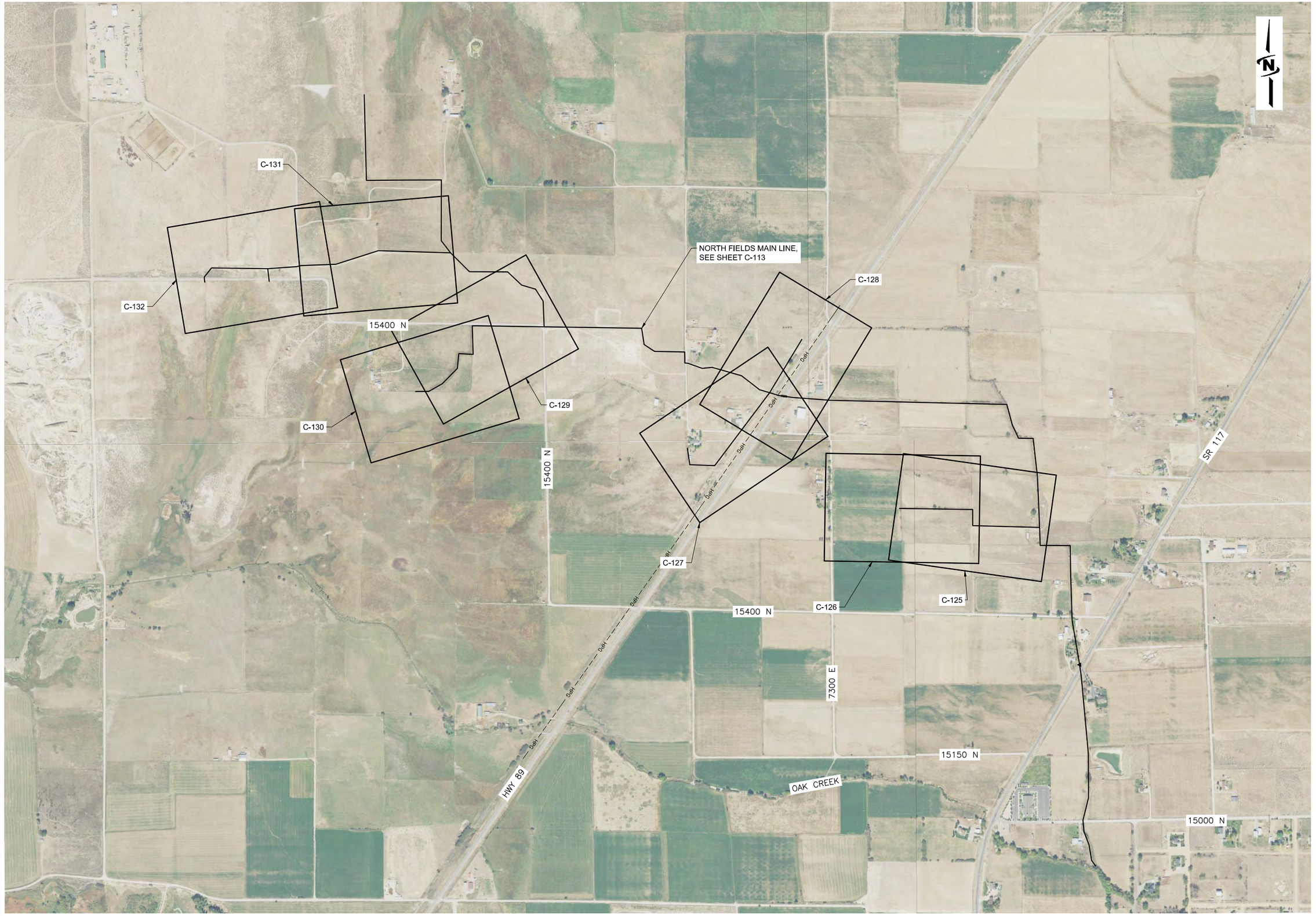
SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE SHEET INDEX

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-113

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG



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NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS SUB-LATERALS SHEET INDEX

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-114

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

Plot Date:2/2/2022 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-115

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NO.	DESCRIPTION	BY	APR.	DATE

REVISION

SPRING CITY WATERSHED PLAN
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NORTH FIELDS MAIN LINE PLAN VIEW

FILE: 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. #: 55-20-029
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-116

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHED\PROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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NO.	DESCRIPTION	BY	APPR.	DATE
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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: --

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-117

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: --
CHECKED BY: --
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-118

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-119

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-120

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE: 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-121

Plot Date: 2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created: 5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

SUB-LATERAL 4, SEE SHEETS C-131 AND C-132

15400 N

SUB-LATERAL 3, SEE SHEETS C-129 AND C-130

SEE SHEET C-121 MATCHLINE STA. 102+47.67

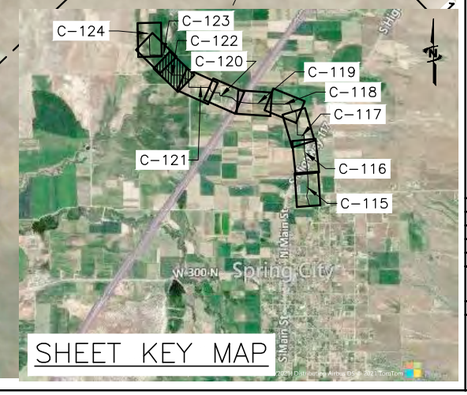
100 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00

12" DR 32.5 HDPE PIPE

5690

MATCHLINE STA. 116+97.67 SEE SHEET C-123

0 50 100
SCALE IN FEET



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SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-122

Plot Date:2/2/2023 9:19 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

SUB-LATERAL 4, SEE SHEETS C-131 AND C-132

SEE SHEET C-122 MATCHLINE STA. 116+97.67

MATCHLINE STA. 131+47.67 SEE SHEET C-124

12" DR 32.5 HDPE PIPE

114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00 133+00 134

5680

N

0 50 100
SCALE IN FEET

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NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-123

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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NORTH FIELDS MAIN LINE PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-124

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NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS SUB-LATERAL 1 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-125

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\UB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECTDESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

NORTH FIELDS SUB-LATERAL 1 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-126

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

Plot Date: 2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created: 5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
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NORTH FIELDS SUB-LATERAL 2 PLAN VIEW

FILE: 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-127

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SPRING CITY WATERSHED PLAN
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NORTH FIELDS SUB-LATERAL 2 PLAN VIEW

FILE :	55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # :	55-20-029
DRAWN BY:	---
DESIGN BY:	TBS
CHECKED BY:	TLA
ONE INCH	AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED:	5/2/2022

SHEET NUMBER:
C-128

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
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NORTH FIELDS SUB-LATERAL 3 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-129

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
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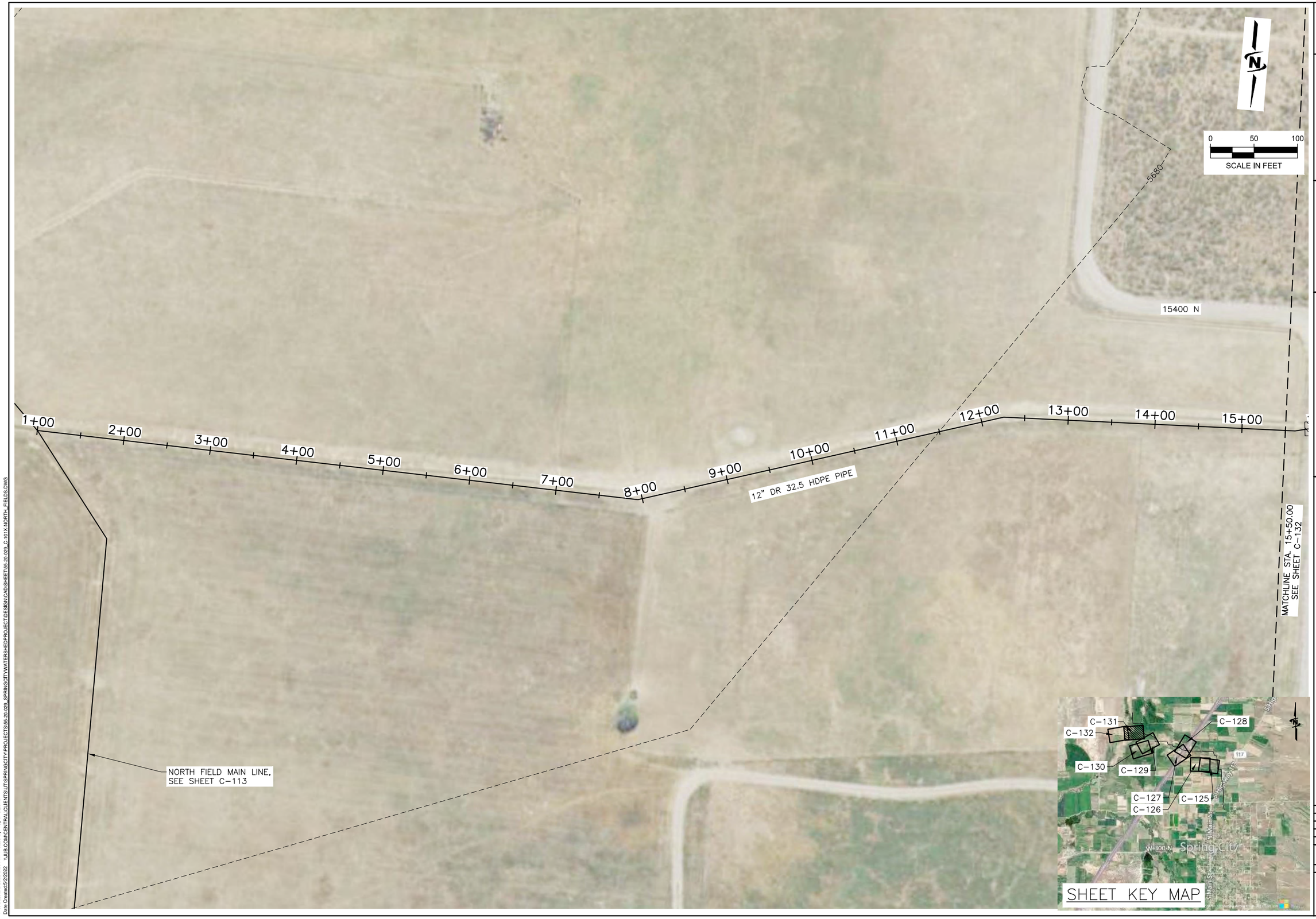
NORTH FIELDS SUB-LATERAL 3 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-130

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG



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SPRING CITY WATERSHED PLAN
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NORTH FIELDS SUB-LATERAL 4 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-131

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG

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SPRING CITY WATERSHED PLAN
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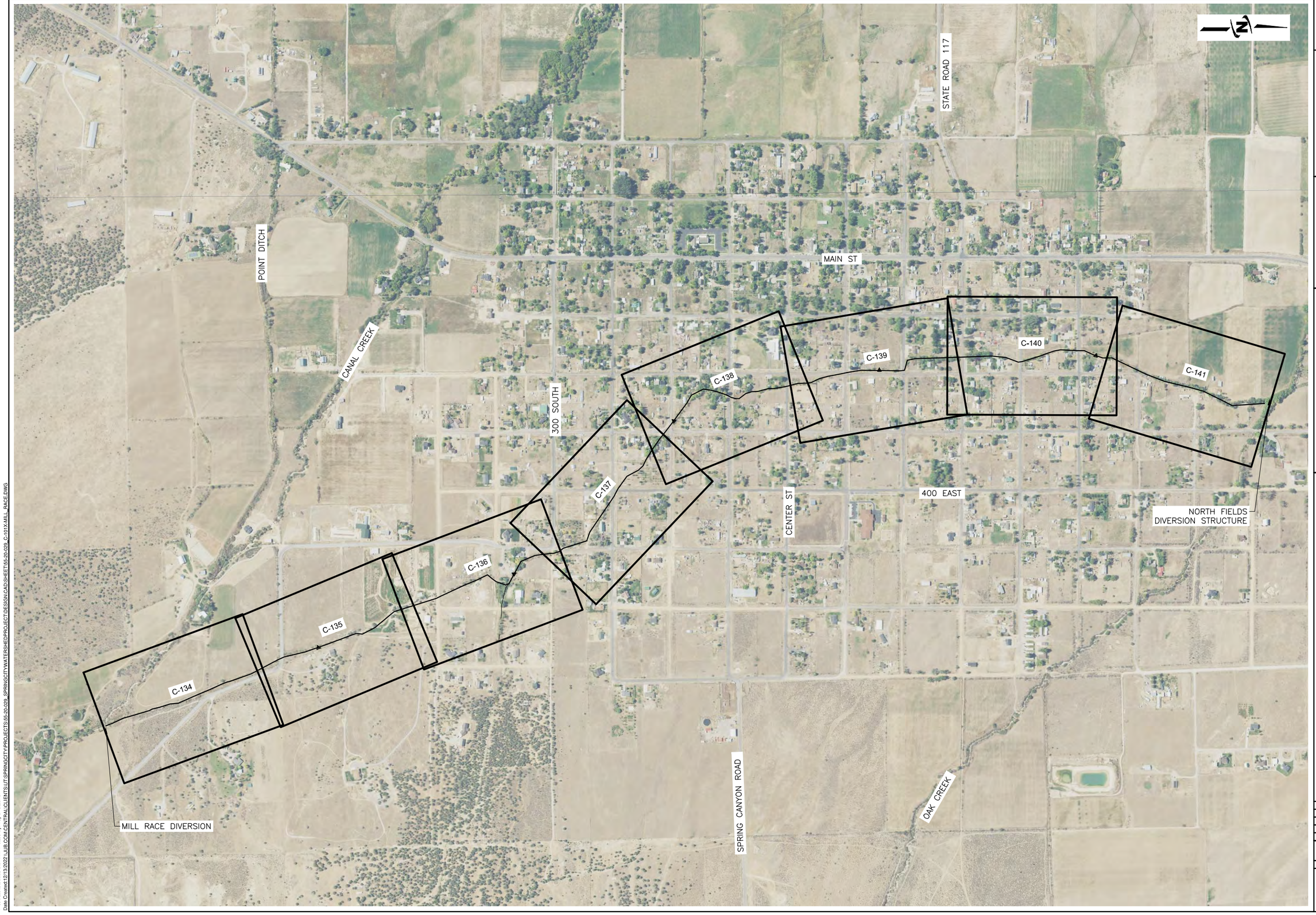
NORTH FIELDS SUB-LATERAL 4 PLAN VIEW

FILE : 55-20-029_C-101X-NORTH_FIELDS
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: ---
CHECKED BY: --
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-132

Plot Date:2/2/2023 9:20 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-NORTH_FIELDS.DWG



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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING SHEET INDEX

FILE : 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: ---
CHECKED BY: --
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-133

Plot Date:2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE :	55-20-029_C-101X-MILL_RACE
JUB PROJ. # :	55-20-029
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DESIGN BY:	---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-134

Plot Date:2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-135

Plot Date:2/2/2023 8:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-MILL_RACE.DWG

SHEET KEY MAP

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-136

Plot Date:2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRALCLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGSDITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE: 55-20-029_C-101X-MILL_RACE
JUB PROJ. #: 55-20-029
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DESIGN BY: ---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-137

Plot Date: 2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created: 12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE: 55-20-029_C-101X-MILL_RACE
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-138

Plot Date:2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE: 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
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ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-139

Plot Date:2/2/2023 9:21 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
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ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-140

Plot Date: 2/2/2023 9:22 AM Plotted By: Taylor Stauffer
Date Created: 12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-MILL_RACE.DWG

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SPRING CITY WATERSHED PLAN
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MILL RACE FLOOD DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-MILL_RACE
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: ---
CHECKED BY: --
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-141

Plot Date:2/2/2023 9:22 AM Plotted By: Taylor Stauffer
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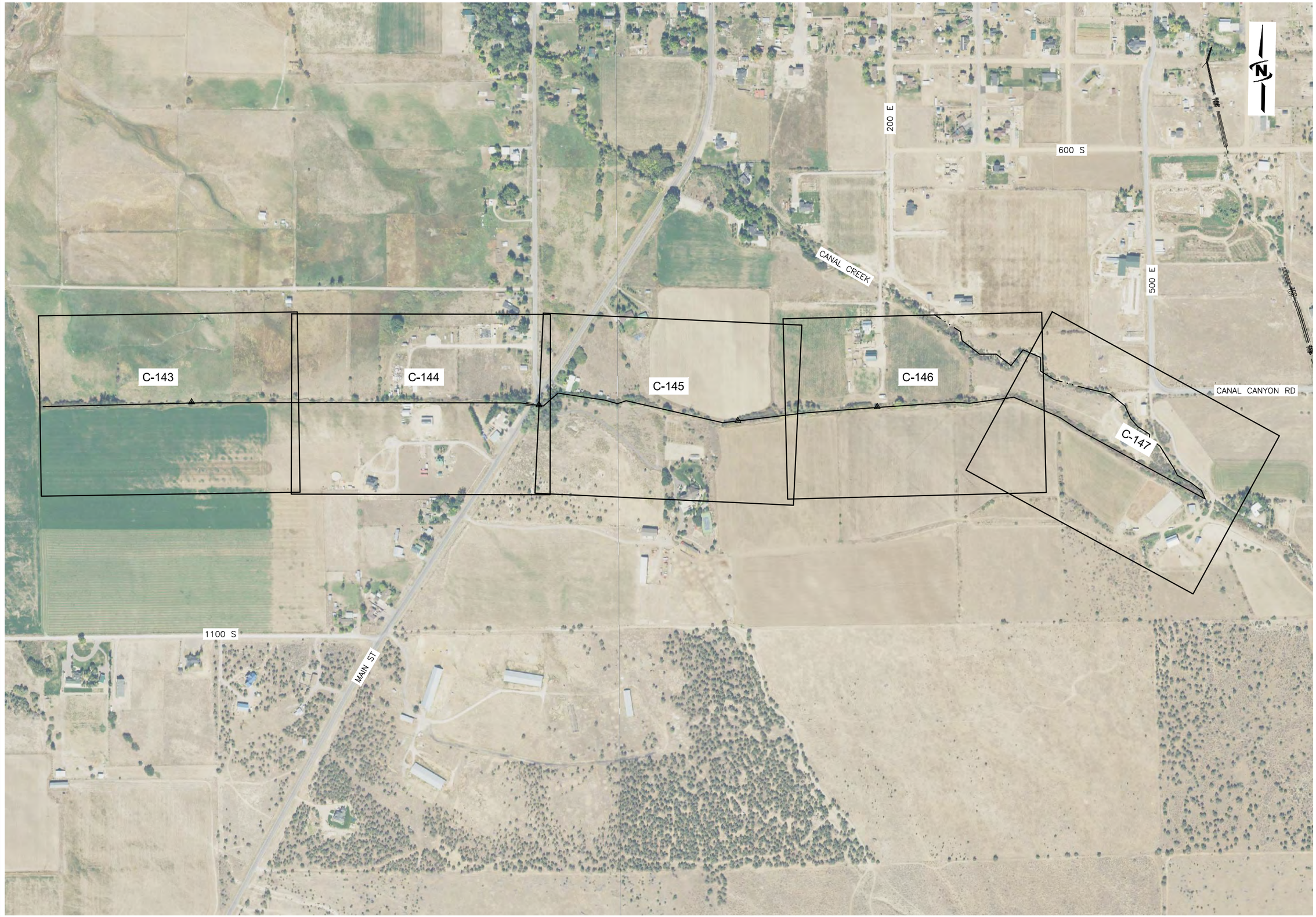

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SPRING CITY WATERSHED PLAN
SPRING CITY

POINT DITCH PIPING SHEET INDEX

FILE : 55-20-029_C-101X-POINT_DITCH
JUB PROJ. # : 55-20-029
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DESIGN BY: ---
CHECKED BY: ---
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AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-142

Plot Date:2/2/2023 9:22 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-POINT_DITCH.DWG

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SPRING CITY WATERSHED PLAN
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POINT DITCH PIPING PLAN VIEW

FILE: 55-20-029_C-101X-POINT_DITCH
JUB PROJ. #: 55-20-029
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ONE INCH
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LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-143

Plot Date: 2/2/2023 9:22 AM Plotted By: Taylor Stauffer
Date Created: 5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-POINT_DITCH.DWG

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SPRING CITY WATERSHED PLAN
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POINT DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-POINT_DITCH
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
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LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-144

Plot Date:2/2/2023 9:22 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-POINT_DITCH.DWG

Plot Date:2/2/2023 9:22 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-POINT_DITCH.DWG

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SPRING CITY WATERSHED PLAN
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POINT DITCH PIPING PLAN VIEW

FILE: 55-20-029_C-101X-POINT_DITCH
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-145

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SPRING CITY WATERSHED PLAN
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POINT DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-POINT_DITCH
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
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LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-146

Plot Date:2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created:5/2/2022 \\UB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-101X-POINT_DITCH.DWG

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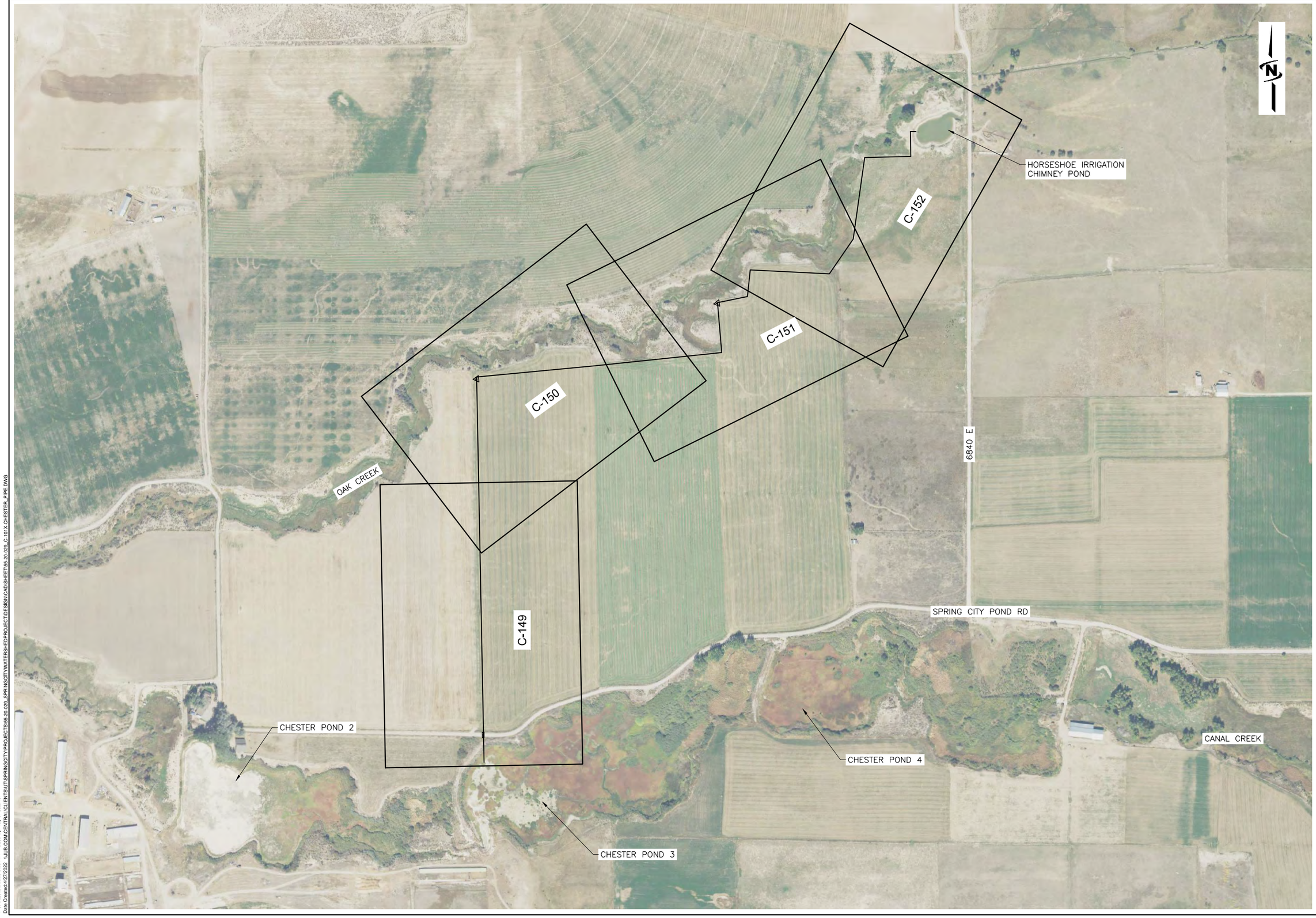
NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

POINT DITCH PIPING PLAN VIEW

FILE : 55-20-029_C-101X-POINT_DITCH
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-147



Plot Date: 2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-CHESTER_PIPE.DWG

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NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

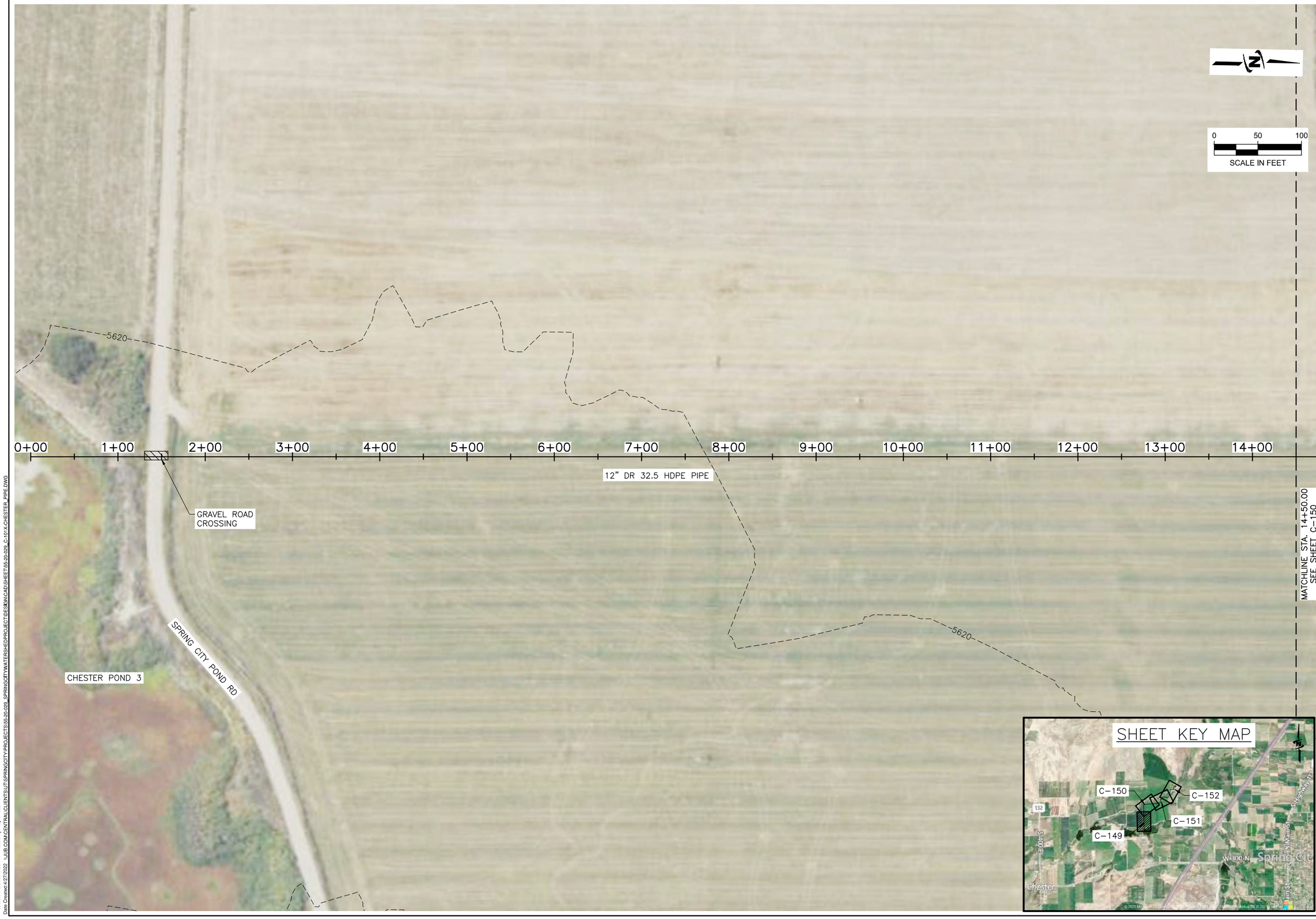
OAK CREEK BYPASS PIPING SHEET INDEX

FILE: 55-20-029_C-101X-CHESTER_PIPE
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-148



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NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

OAK CREEK BYPASS PIPING PLAN VIEW

FILE : 55-20-029_C-101X-CHESTER_PIPE
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-149

Plot Date:2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-CHESTER_PIPE.DWG

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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

OAK CREEK BYPASS PIPING PLAN VIEW

FILE: 55-20-029_C-101X-CHESTER_PIPE
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-150

Plot Date: 2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-CHESTER_PIPE.DWG

Plot Date: 2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITY\WATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-CHESTER_PIPE.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

OAK CREEK BYPASS PIPING PLAN VIEW

FILE: 55-20-029_C-101X-CHESTER_PIPE
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-151

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NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

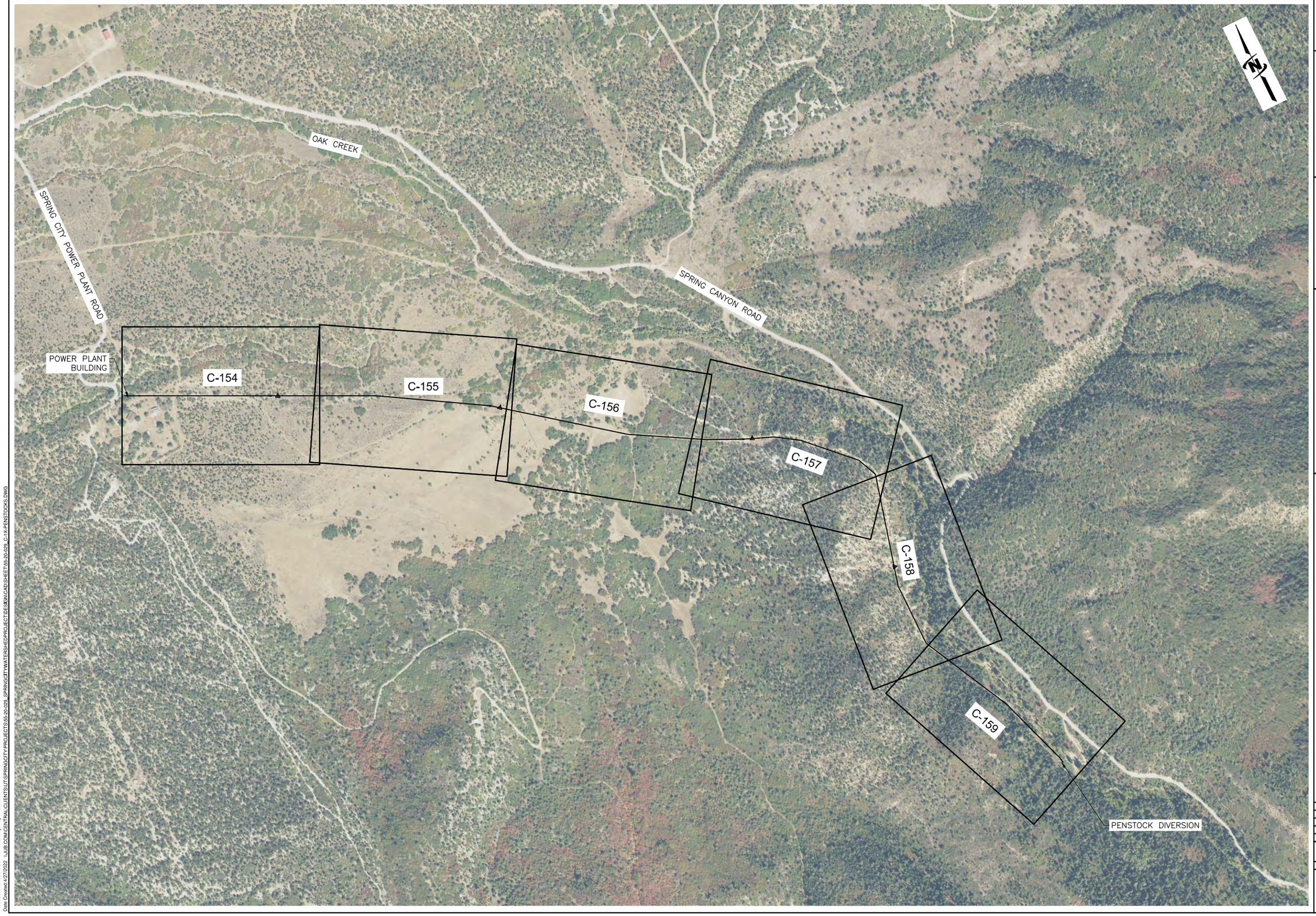
SPRING CITY WATERSHED PLAN
SPRING CITY

OAK CREEK BYPASS PIPING PLAN VIEW

FILE: 55-20-029_C-101X-CHESTER_PIPE
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-152

Plot Date: 2/2/2023 9:23 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-101X-CHESTER_PIPE.DWG



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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PENSTOCK SHEET INDEX

FILE : 55-20-029_C-1X-PENSTOCKS
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-153

Plot Date:2/2/2023 9:24 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGSWTYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1X-PENSTOCKS.DWG

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PRELIMINARY PLANS

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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PENSTOCK PLAN VIEW

FILE : 55-20-029_C-1X-PENSTOCKS
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-154

Plot Date:2/2/2023 9:24 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-1X-PENSTOCKS.DWG

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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PENSTOCK PLAN VIEW

FILE :	55-20-029_C-1X-PENSTOCKS
JUB PROJ. # :	55-20-029
DRAWN BY:	---
DESIGN BY:	TBS
CHECKED BY:	TLA
ONE INCH	AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED:	5/2/2022

SHEET NUMBER:
C-155

Plot Date:2/2/2023 9:24 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHED\PROJECTDESIGN\CAD\SHEET\55-20-029_C-1X-PENSTOCKS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
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PENSTOCK PLAN VIEW

FILE : 55-20-029_C-1X-PENSTOCKS
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-156

Plot Date:2/2/2023 9:25 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1X-PENSTOCKS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
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PENSTOCK PLAN VIEW

FILE : 55-20-029_C-1X-PENSTOCKS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: TBS
CHECKED BY: TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-157

Plot Date:2/2/2023 9:25 AM Plotted By: Taylor Stauffer
Date Created:4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-1X-PENSTOCKS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PENSTOCK PLAN VIEW

FILE :	55-20-029_C-1X-PENSTOCKS
JUB PROJ. # :	55-20-029
DRAWN BY:	---
DESIGN BY:	TBS
CHECKED BY:	TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:
C-158

Plot Date: 2/2/2023 9:25 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\UB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-1X-PENSTOCKS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

PENSTOCK PLAN VIEW

FILE :	55-20-029_C-1X-PENSTOCKS
JUB PROJ. # :	55-20-029
DRAWN BY:	----
DESIGN BY:	TBS
CHECKED BY:	TLA

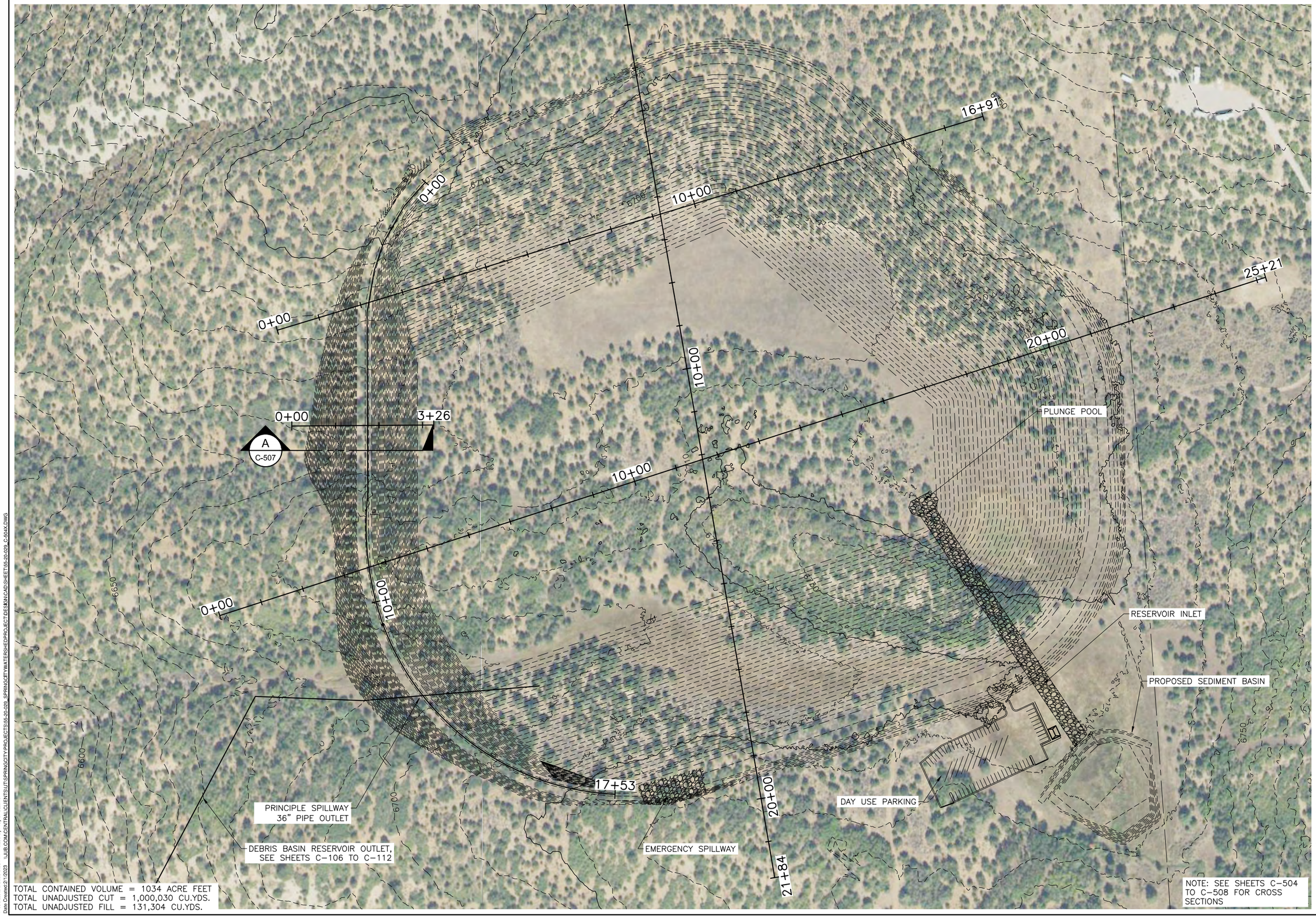
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 5/2/2022

SHEET NUMBER:

C-159

Plot Date: 2/2/2023 9:25 AM Plotted By: Taylor Stauffer
Date Created: 4/27/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-1X-PENSTOCKS.DWG



TOTAL CONTAINED VOLUME = 1034 ACRE FEET
TOTAL UNADJUSTED CUT = 1,000,030 CU.YDS.
TOTAL UNADJUSTED FILL = 131,304 CU.YDS.

NOTE: SEE SHEETS C-504 TO C-508 FOR CROSS SECTIONS

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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

DEBRIS BASIN WATER STORAGE RESERVOIR PLAN VIEW

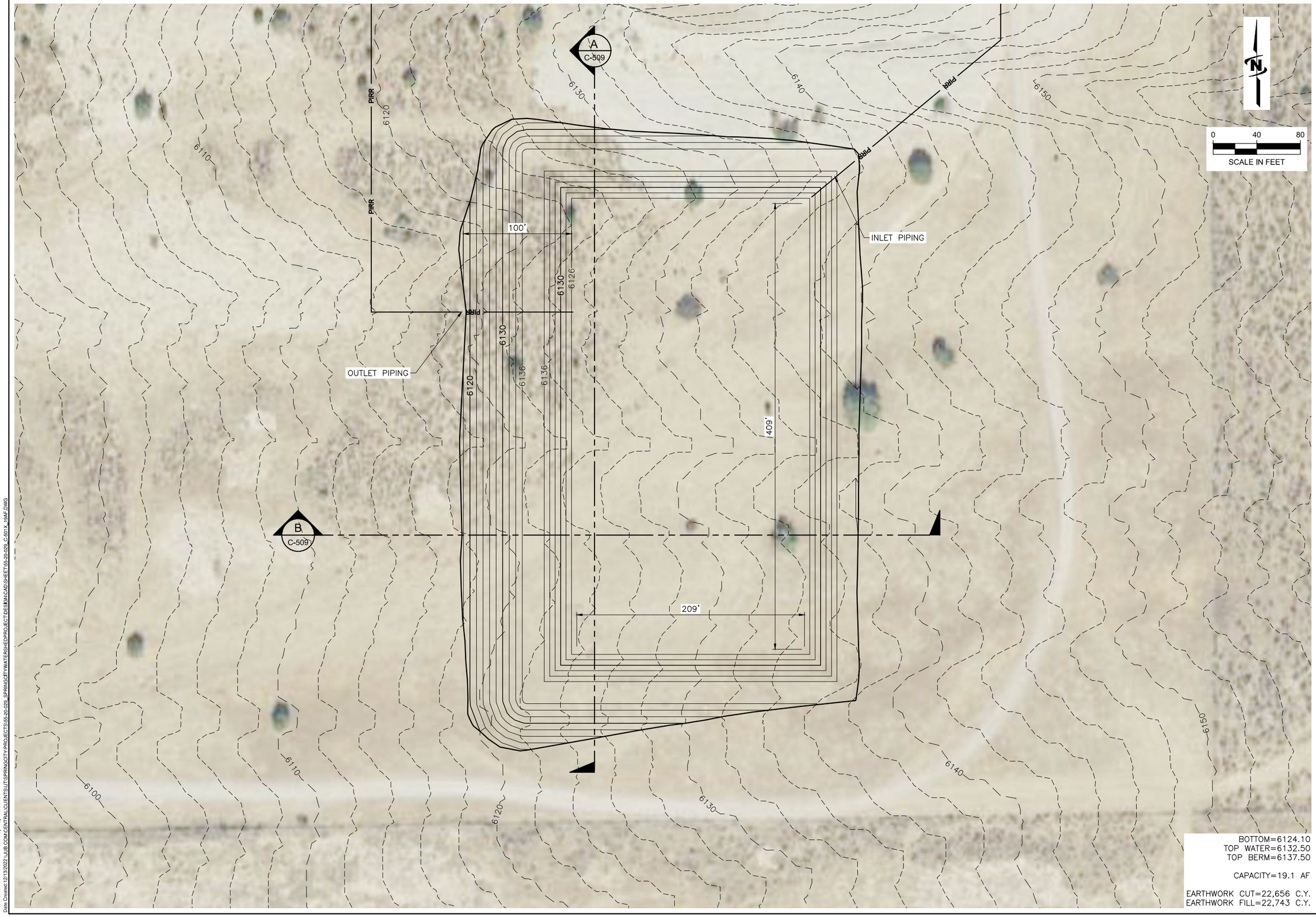
FILE : 55-20-029_C-504X
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-401

Plot Date:2/2/2023 9:28 AM Plotted By: Taylor Stauffer
Date Created:2/1/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-504X.DWG



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NO.	DESCRIPTION	BY	APPD.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

CITY REGULATING POND PLAN VIEW

FILE : 55-20-029_C-501X_19AF
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-402

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:12/13/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITY\WATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-501X_19AF.DWG

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NO.	DESCRIPTION	BY	APP'L	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

CHESTER POND PLAN VIEW

FILE : 55-20-029_C-501X-CHESTER_PONDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-403

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:4/18/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-501X-CHESTER_PONDS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
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CHESTER POND PLAN VIEW

FILE: 55-20-029_C-501X-CHESTER_PONDS
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-404

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:4/18/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECTDESIGN\CAD\SHEET\55-20-029_C-501X-CHESTER_PONDS.DWG

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SPRING CITY WATERSHED PLAN
SPRING CITY

CHESTER POND PLAN VIEW

FILE : 55-20-029_C-501X-CHESTER_PONDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-405

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:4/18/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-501X-CHESTER_PONDS.DWG

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	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

CHESTER POND PLAN VIEW

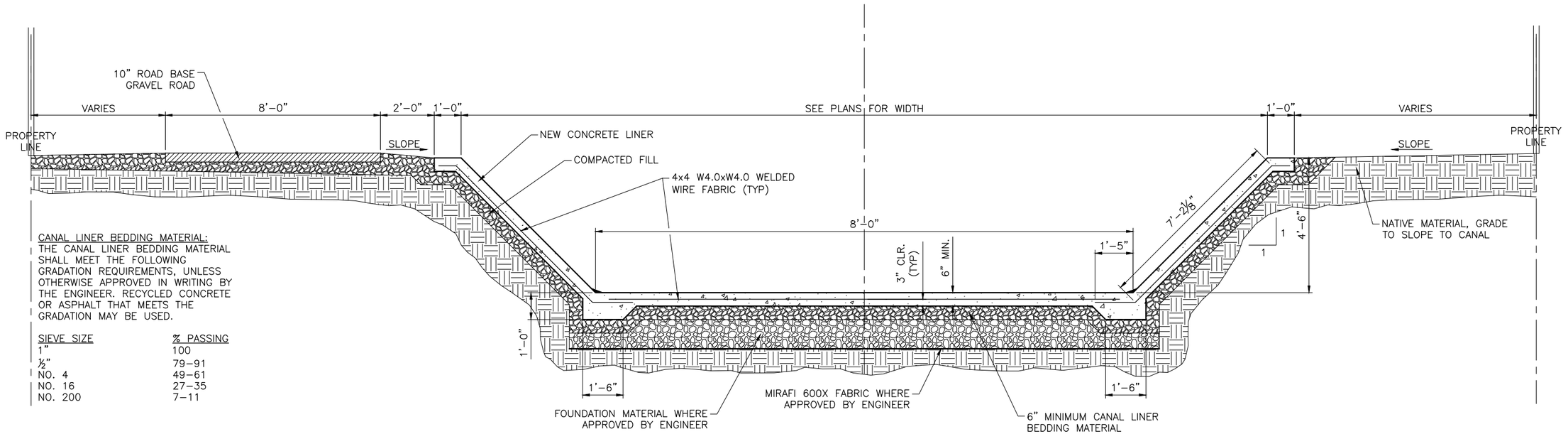
FILE : 55-20-029_C-501X-CHESTER_PONDS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---

ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-406

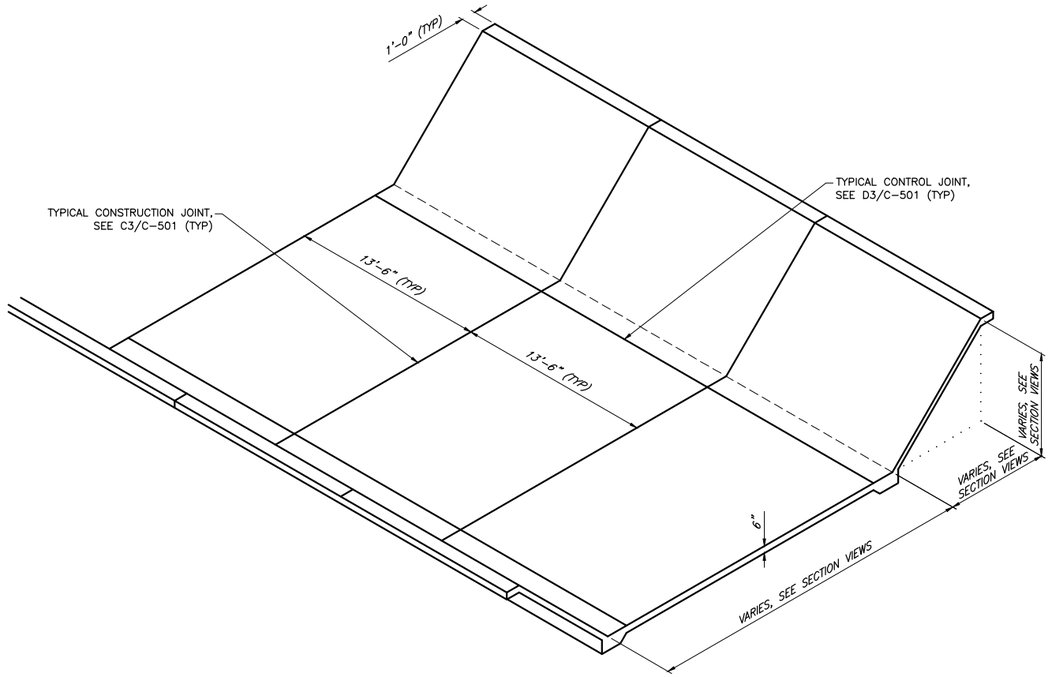
Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:4/18/2022 J:\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-501X-CHESTER_PONDS.DWG



CANAL LINER BEDDING MATERIAL:
THE CANAL LINER BEDDING MATERIAL SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS, UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER. RECYCLED CONCRETE OR ASPHALT THAT MEETS THE GRADATION MAY BE USED.

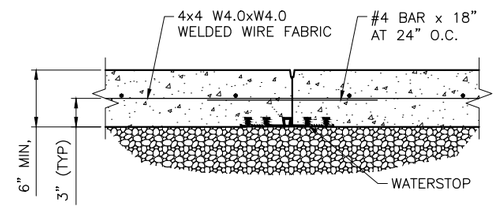
SIEVE SIZE	% PASSING
1"	100
½"	79–91
NO. 4	49–61
NO. 16	27–35
NO. 200	7–11

B1 TYPICAL NEW CANAL LINER SECTION
SCALE: 1/2"=1'-0"

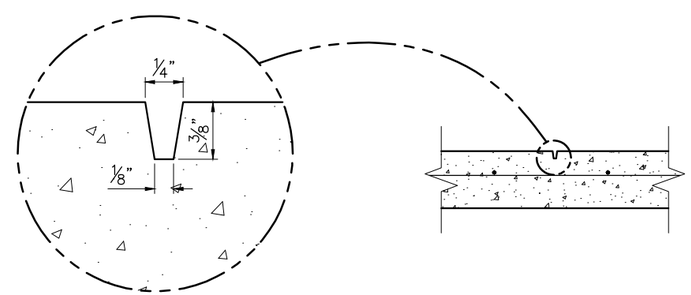


D1 TYPICAL NEW CANAL LINER PLAN VIEW
SCALE: 3/16" = 1'-0"

NOTE:
FUSE WATERSTOP AT INTERSECTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS



C3 CONSTRUCTION JOINT DETAIL
SCALE: N.T.S



D3 TYPICAL CONTROL JOINT DETAIL
SCALE: N.T.S.

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SPRING CITY WATERSHED PLAN
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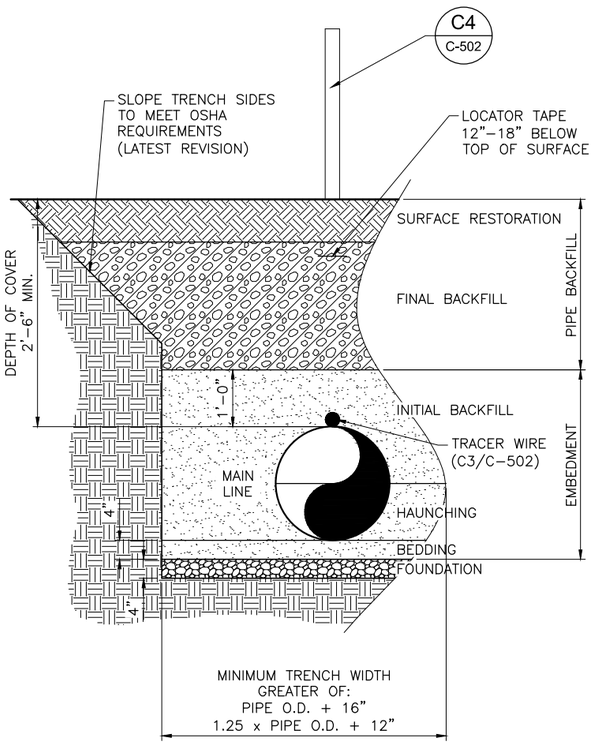
TYPICAL CANAL LINER DETAILS

FILE: 55-20-029_C-501X-PIPEDETAILS
JUB PROJ. #: 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 4/27/2022

SHEET NUMBER:
C-501



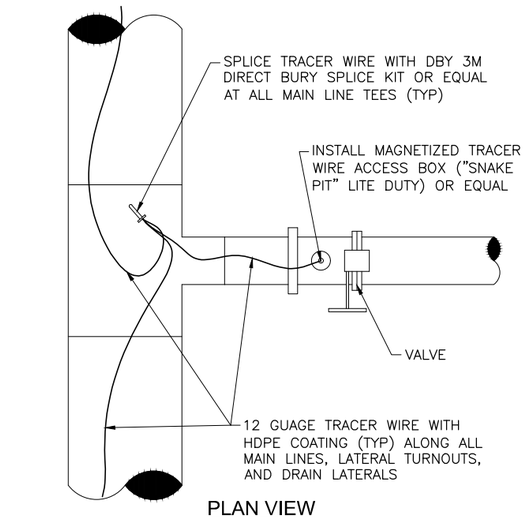
TRENCH BACKFILL NOTES:

1. SURFACE RESTORATION:
   - A. REFER TO SURFACE RESTORATION IN TYPICAL SECTIONS D1, D2, AND D3 ON SHEET C–502.
2. FINAL BACKFILL:
   - A. 85% TYPICAL
   - B. 95% COMPACTION IN ROAD RIGHT–OF–WAY AND DRIVE WAYS.
   - C. USE ASTM D 1557 MODIFIED PROCTOR FOR COUNTY ROADWAYS.
   - D. USE ASTM D 695 STANDARD PROCTOR FOR ALL OTHER AREAS.
   - E. SUBSOIL TYPE S1, ONSITE BACKFILL TYPE A2, IMPORTED GRANULAR FILL TYPE A1.
   - F. INSTALL MAGNETIC LOCATOR TAPE 12"–18" BELOW FINISHED SURFACE. CENTER TAPE IN TRENCH.
3. EMBEDMENT:
   - A. ONSITE EMBEDMENT TYPE A4, IMPORTED EMBEDMENT TYPE A3. LIMIT PARTICLE SIZE TO 1".
   - B. INITIAL BACKFILL:
     - B.1. 90% COMPACTION
     - B.2. FILL VOIDS BETWEEN PIPE AND TRENCH SIDES.
     - B.3. USE HAND HELD OR WALK BEHIND COMPACTION EQUIPMENT TO PROTECT PIPE.
     - B.4. LIFT THICKNESS: MAX. 8" UNCOMPACTED.
   - C. HAUNCHING:
     - C.1. 90% COMPACTION
     - C.2. SHOVEL–SLICE AND MANUAL TAMP EMBEDMENT MATERIAL TO ASSURE ALL VOIDS BETWEEN THE PIPE AND THE TRENCH BOTTOM AND SIDES ARE FILLED.
     - C.3. COMPACT MATERIAL TO PROVIDE COMPLETE CONTACT WITH PIPE BOTTOM.
   - D. BEDDING:
     - D.1. LEVEL EMBEDMENT MATERIAL TO PROVIDE CONTINUOUS FIRM SUPPORT ALONG FULL LENGTH OF PIPE. HIGH SPOTS SHOULD BE SHAVED OFF AND LOW SPOTS FILLED WITH WELL TAMPED SOIL. EXCAVATE A BELL HOLE, IF NECESSARY, TO ASSURE NO UNDUE WEIGHT IS PLACED ON BELL AND THAT THE PIPE BARREL IS SUPPORTED.
4. FOUNDATION:
   - A. IMPORTED FOUNDATION TYPE A5.
   - B. USE FOUNDATION MATERIAL AS REQUIRED TO PROVIDE STRUCTURAL SUPPORT FOR PIPE.

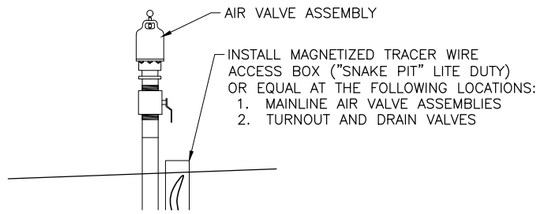
C1 TRENCH EXCAVATION AND BACKFILL
SCALE:3/4" = 1'-0"

NOTES:

1. TRACER WIRE SHALL BE INSTALLED AT THE CROWN OF THE PIPE.
2. THE WIRE SHALL BE SECURED TO THE CROWN OF THE PIPE IN SUCH A MANNER THAT IT DOES NOT DAMAGE THE PIPE AND IT RETAINS THE WIRE IN PLACE THROUGH BACKFILLING. WIRE SECURED BY ROCKS IS NOT ACCEPTABLE.
3. WIRE THAT FALLS TO THE SIDE OF THE PIPE SHALL BE RE–SECURED TO THE CROWN OF THE PIPE PRIOR TO BACKFILLING.



PLAN VIEW

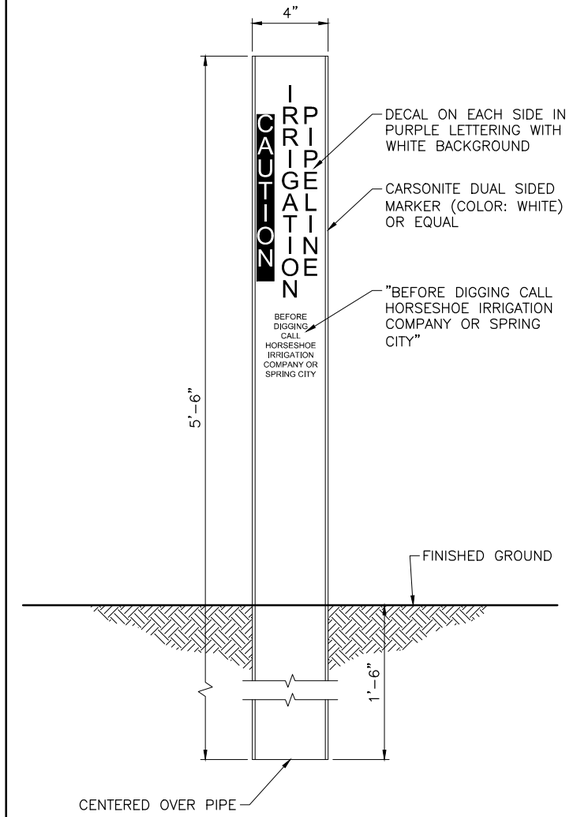


ELEVATION VIEW

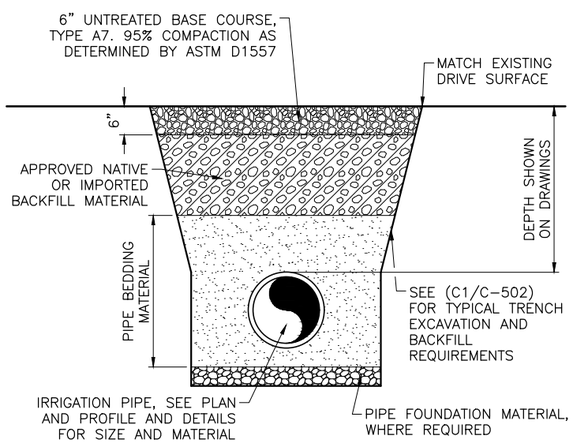
C3 TRACER WIRE INSTALLATION
SCALE:NOT TO SCALE

NOTE:

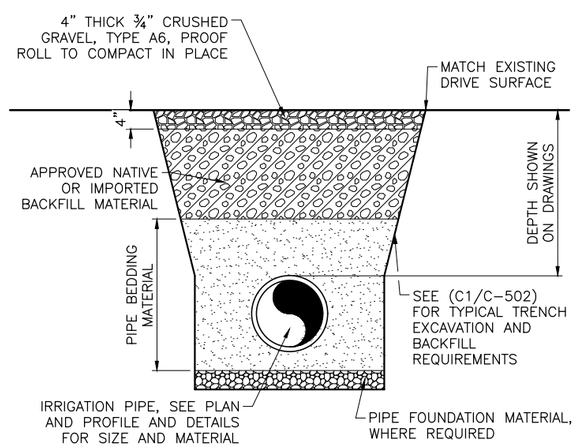
1. LOCATE PIPE MARKERS ALONG PIPELINE WITH MAX. SPACING OF 500 FEET, INCLUDING ALL FENCE CROSSINGS, ROAD CROSSINGS, AND AIR VENTS.



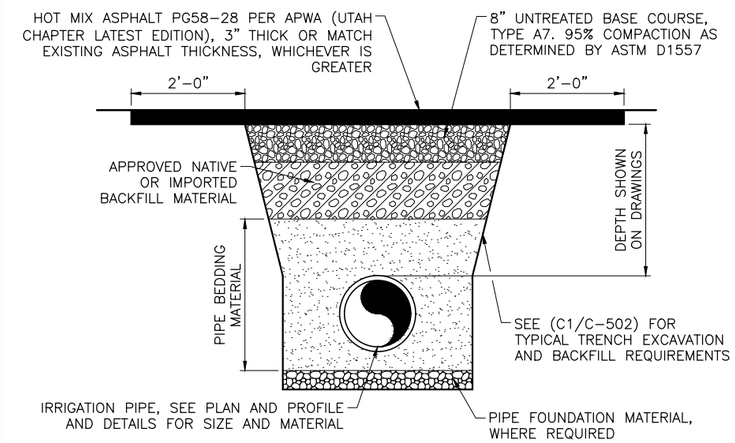
C4 PIPE MARKER INSTALLATION
SCALE:NOT TO SCALE



D1 DIRT DRIVE TRENCH SECTION
SCALE:3/4" = 1'-0"



D2 GRAVEL DRIVE TRENCH SECTION
SCALE:3/4" = 1'-0"



D3 ASPHALT SURFACE TRENCH SECTION
SCALE:3/4" = 1'-0"

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PRELIMINARY PLANS

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NO.	DESCRIPTION	BY	APPL.	DATE
	REVISION			

SPRING CITY WATERSHED PLAN
SPRING CITY

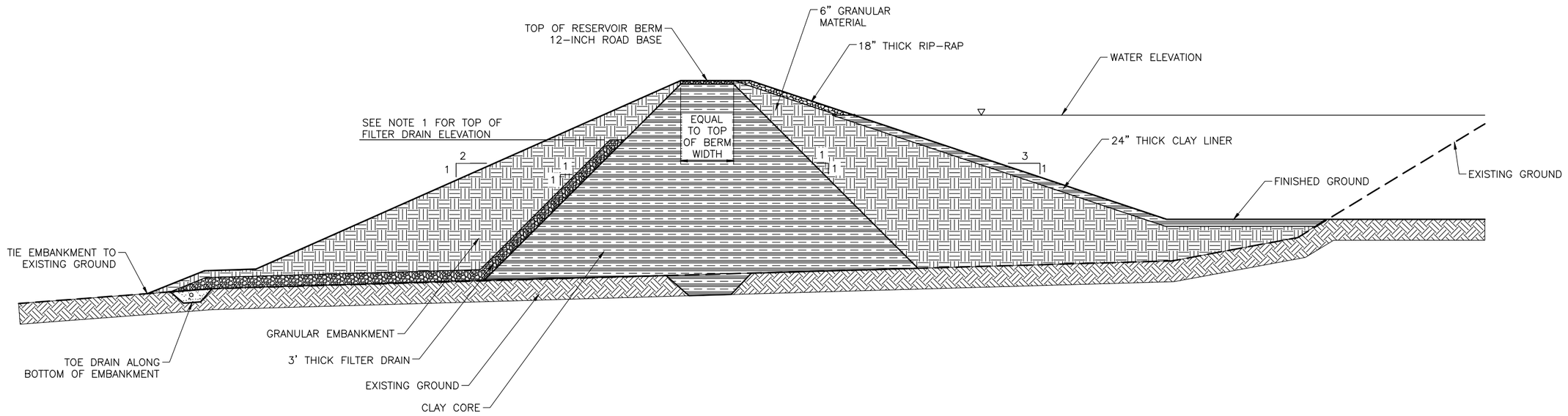
TYPICAL PIPE TRENCH DETAILS

FILE : 55-20-029_C-501X-PIPEDETAILS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 4/27/2022

SHEET NUMBER:
C-502

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:12/30/2021 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-501X-PIPEDETAILS.DWG

NOTES:
1. TOP OF FILTER DRAIN ELEVATION



B1 TYPICAL RESERVOIR BERM SECTION
SCALE:NOT TO SCALE

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SPRING CITY WATERSHED PLAN
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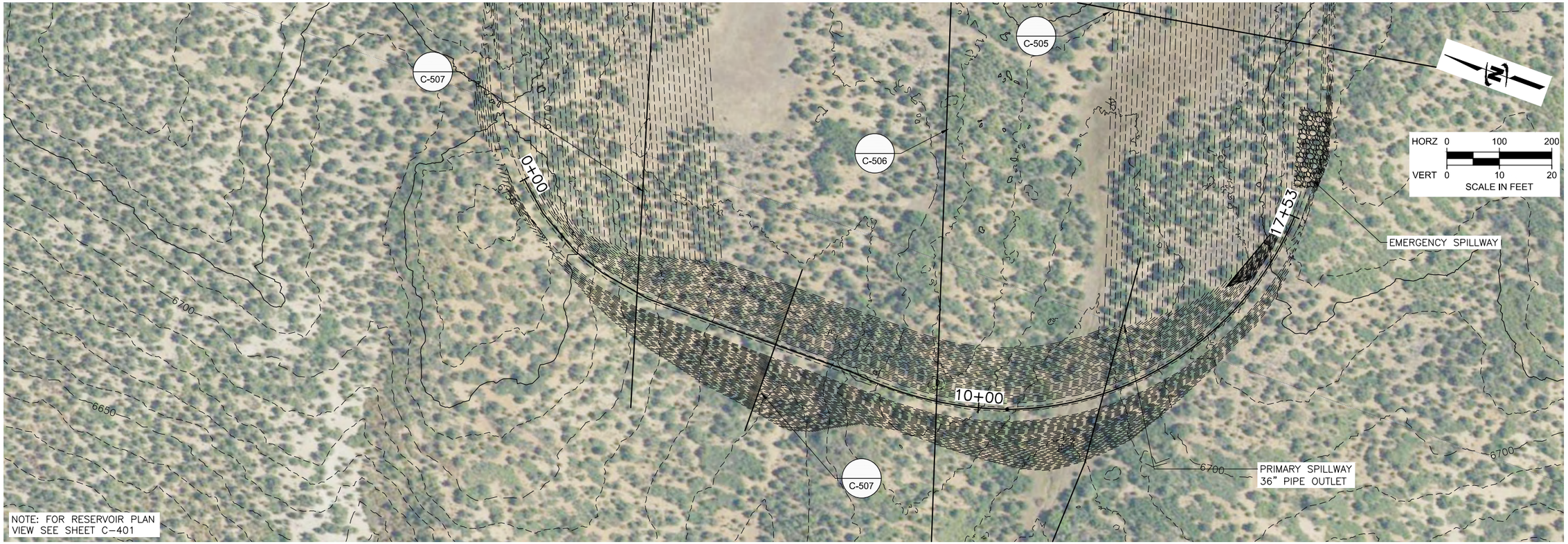
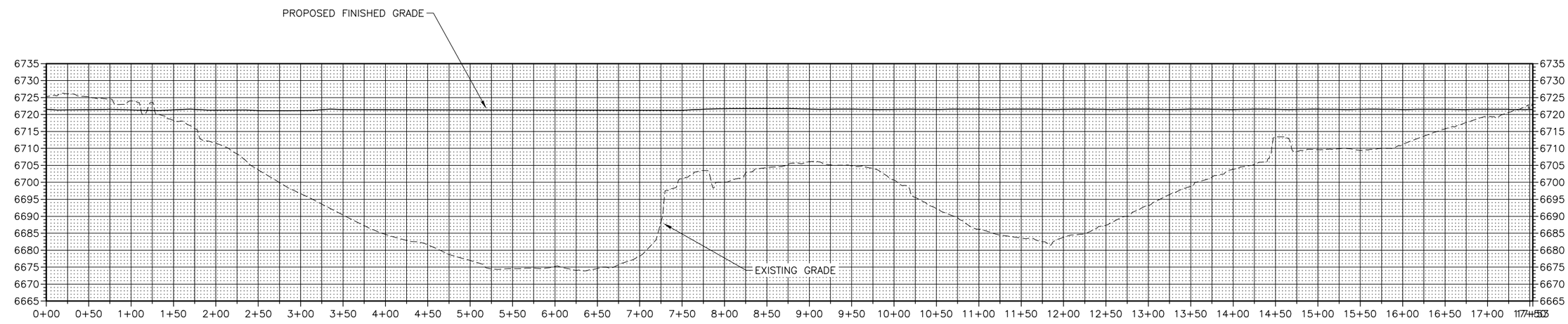
TYPICAL RESERVOIR DETAILS

FILE : 55-20-029_C-501X-RESVDETAILS
JUB PROJ. # : 55-20-029
DRAWN BY: ---
DESIGN BY: ---
CHECKED BY: ---
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 12/13/2022

SHEET NUMBER:
C-503

Plot Date:2/2/2023 9:27 AM Plotted By: Taylor Stauffer
Date Created:1/3/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-501X-RESVDETAILS.DWG





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SPRING CITY WATERSHED PLAN
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FREEMAN ALLRED RESERVOIR CROSS SECTION

FILE : 55-20-029_C-504X
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
CHECKED BY: TLA

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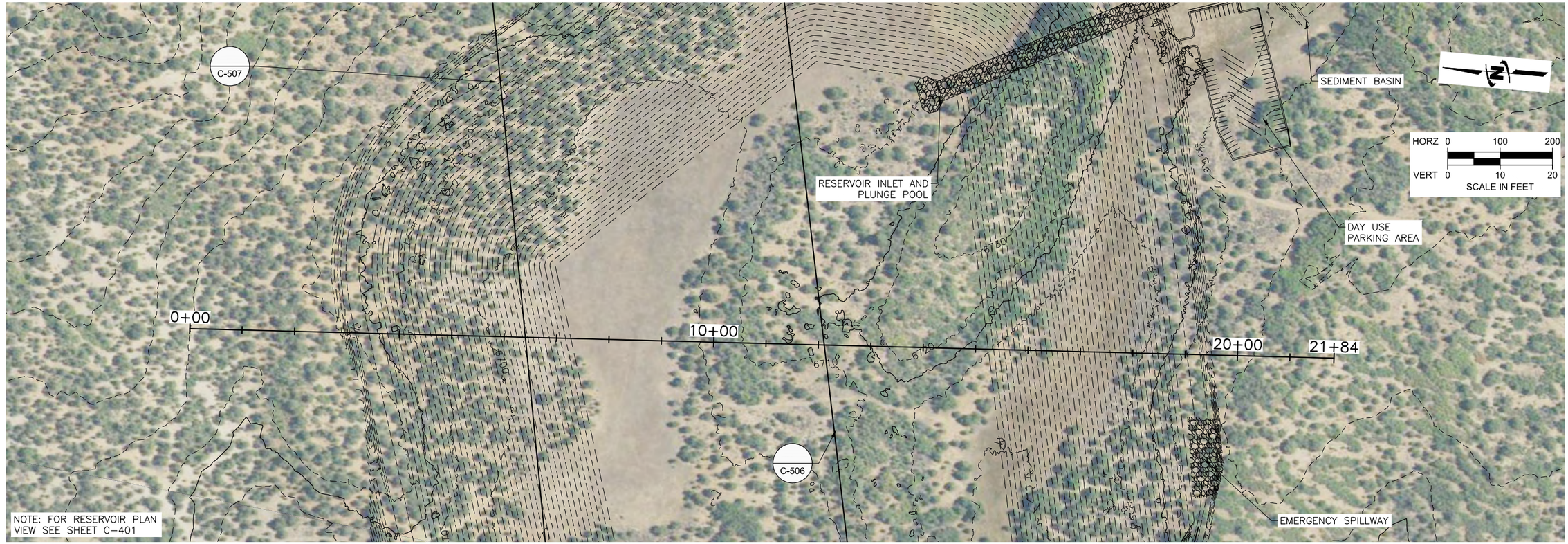
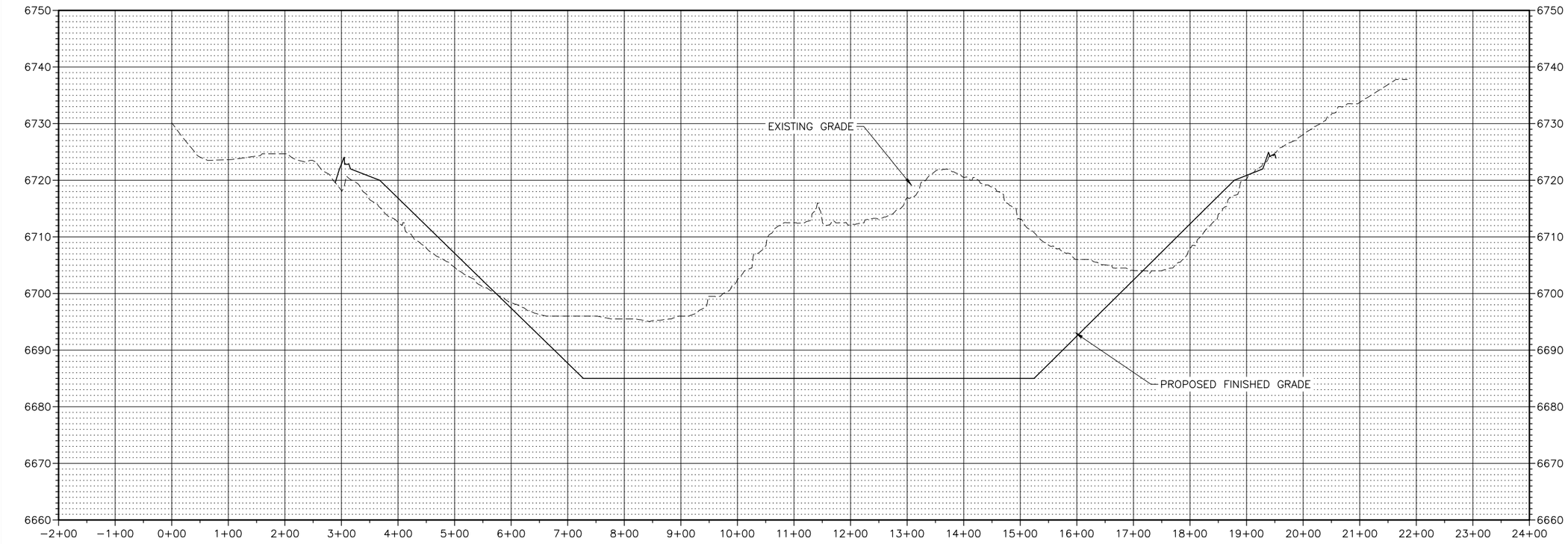
LAST UPDATED: 2/1/2023

SHEET NUMBER:
C-504

Plot Date:2/2/2023 9:29 AM Plotted By: Taylor Stauffer
Date Created:2/1/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-504X.DWG





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FREEMAN ALLRED RESERVOIR CROSS SECTION

FILE : 55-20-029_C-504X
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C-505

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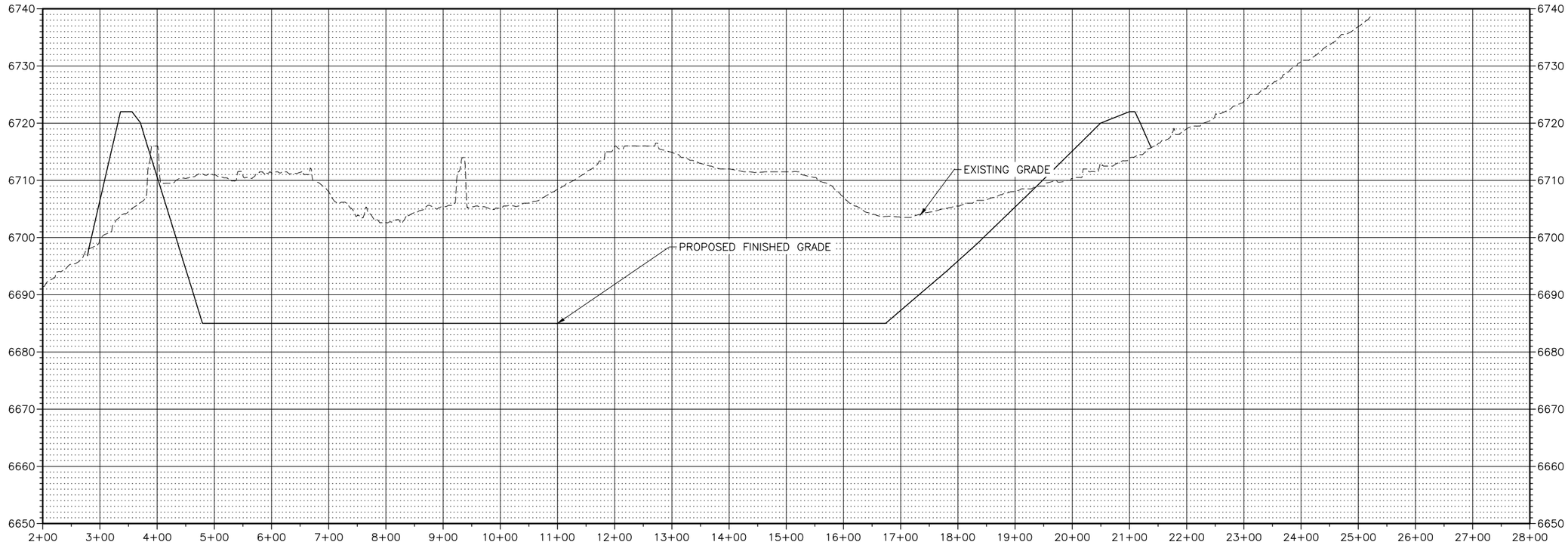

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FREEMAN ALLRED RESERVOIR CROSS SECTION

FILE : 55-20-029_C-504X
JUB PROJ. # : 55-20-029
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DESIGN BY: TBS
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ONE INCH
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SHEET NUMBER:
C-506

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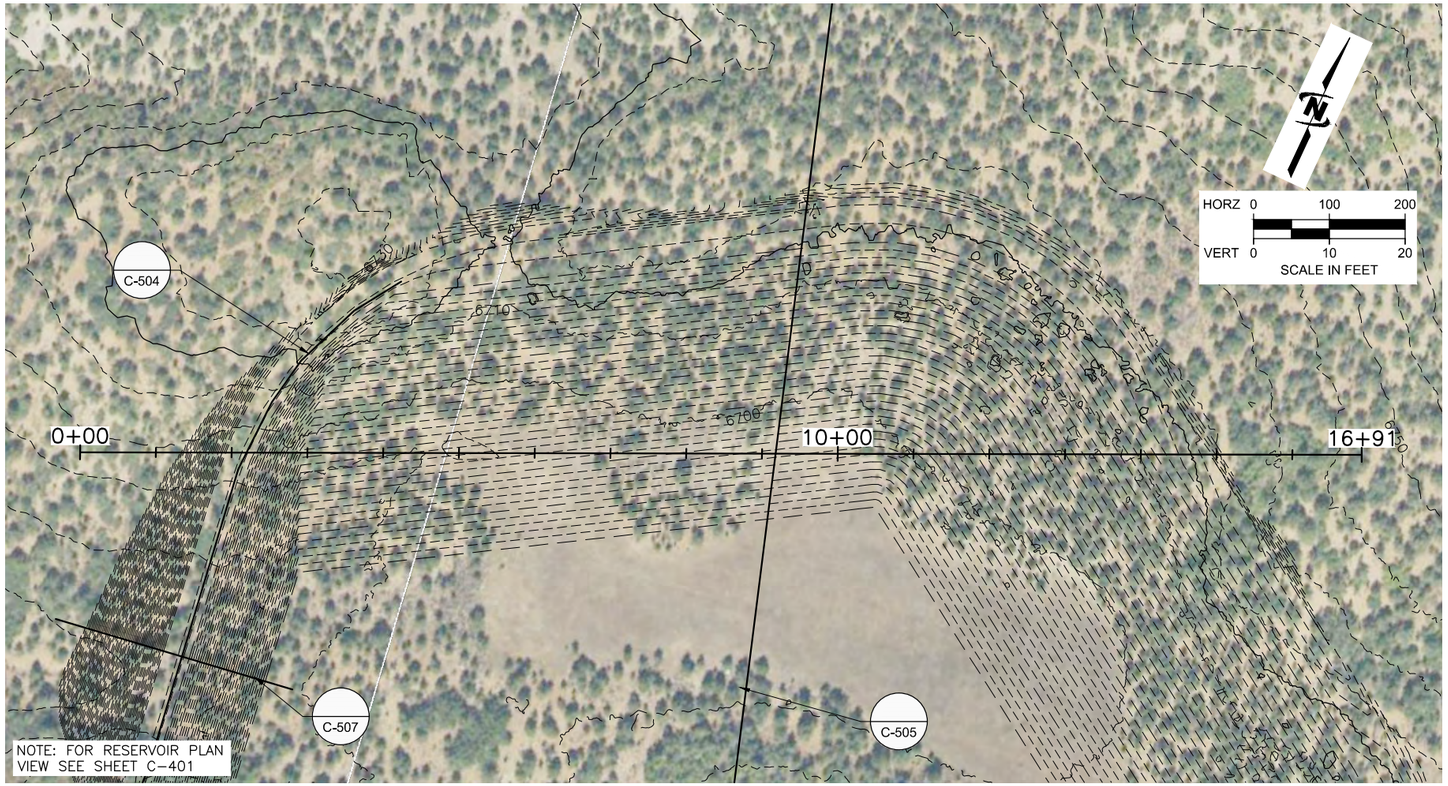
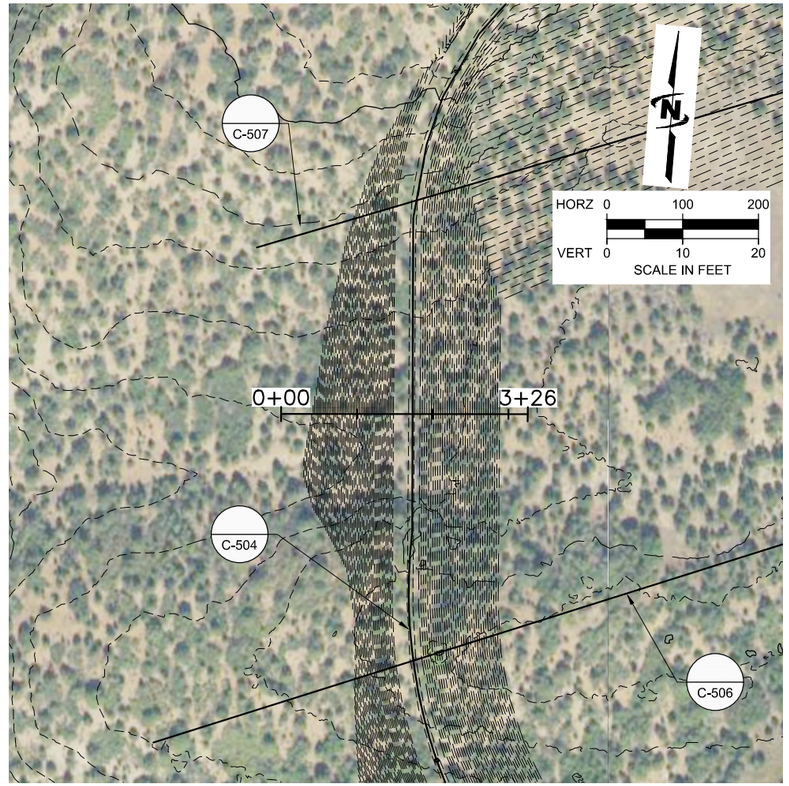
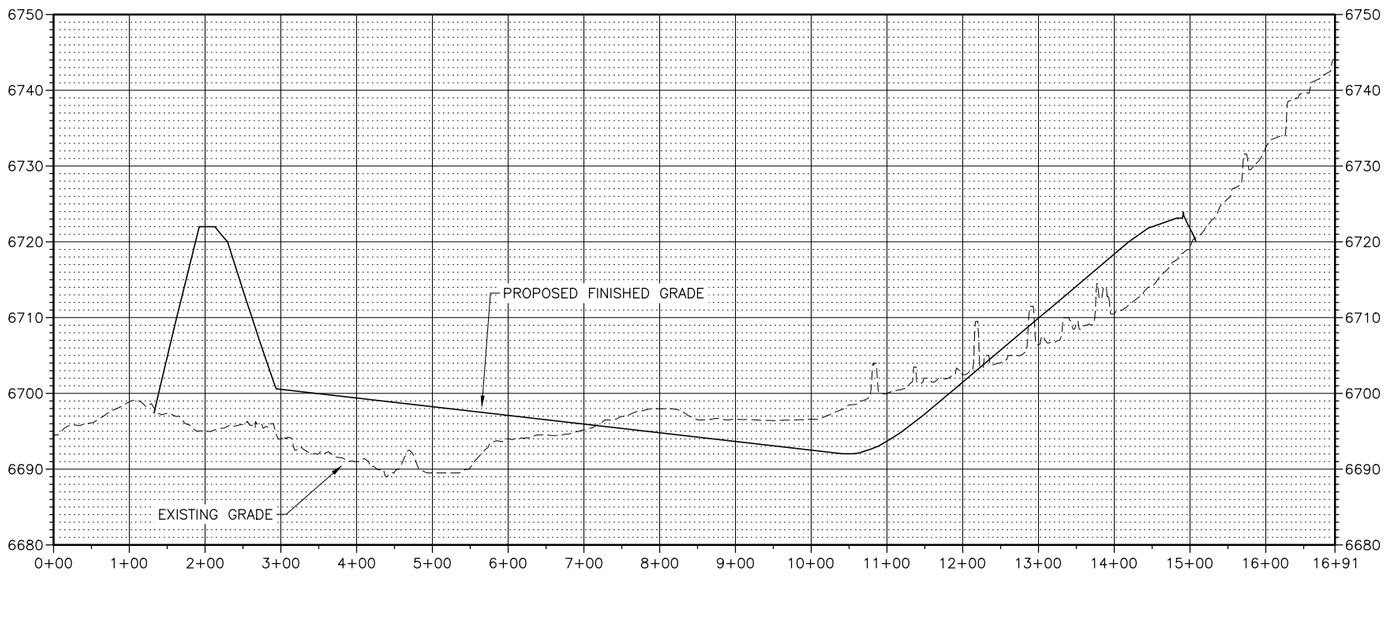
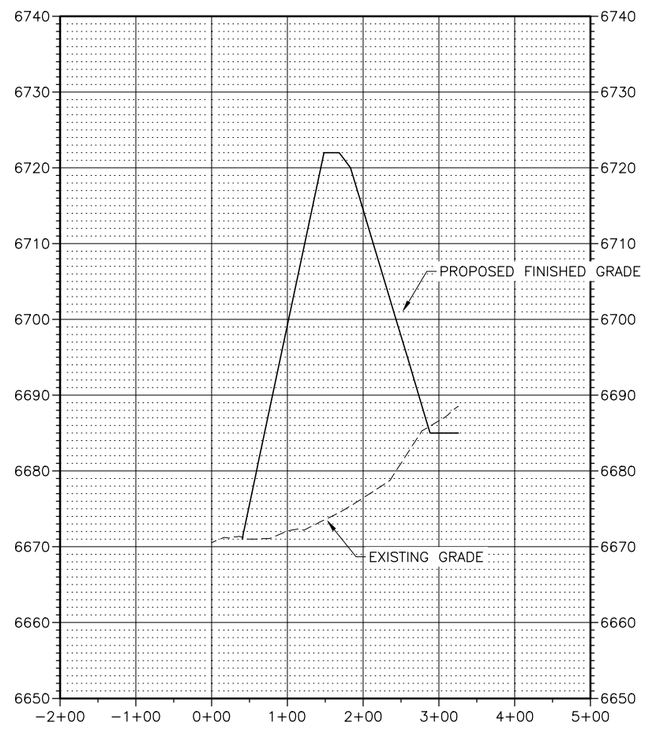
Date Created:2/1/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGGITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-504X.DWG









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SPRING CITY WATERSHED PLAN
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FILE : 55-20-029_C-504X
JUB PROJ. # : 55-20-029
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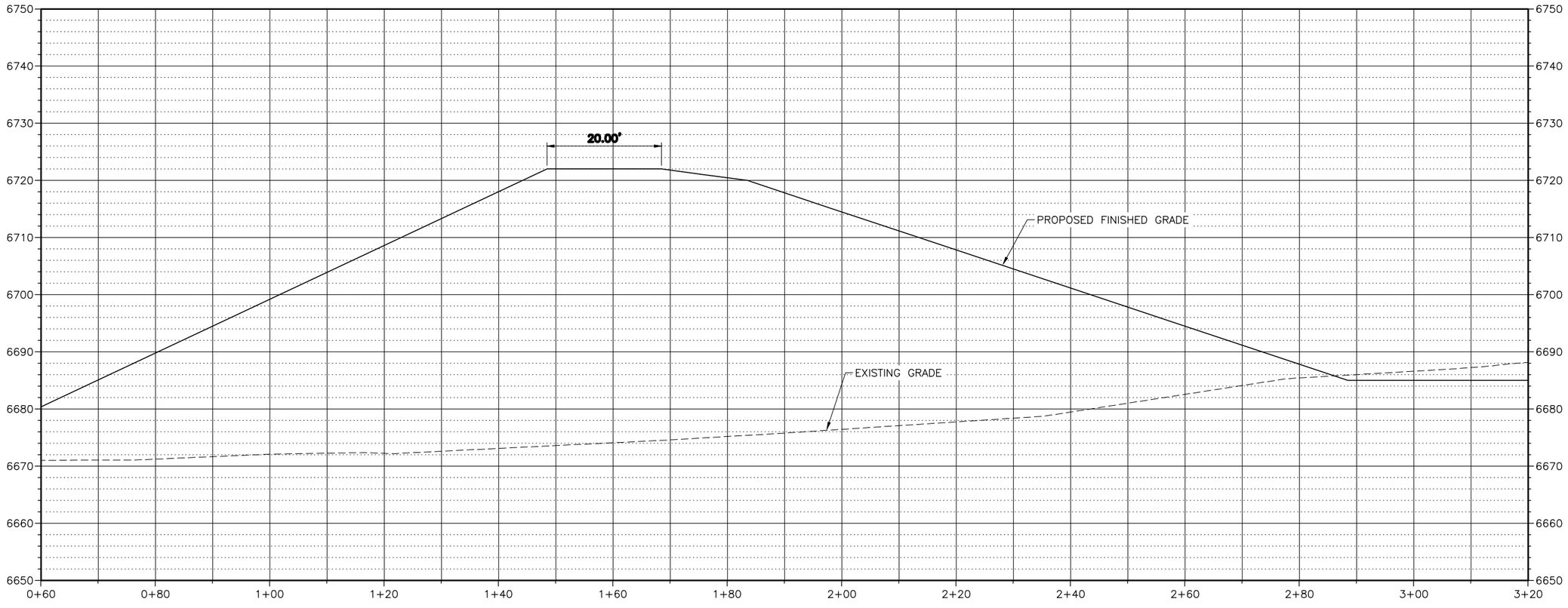
SHEET NUMBER:
C-507

Plot Date:2/2/2023 9:30 AM Plotted By: Taylor Stauffer
Date Created:2/1/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGCITY\PROJECTS\55-20-029_SPRINGCITYWATERSHEDPROJECT\DESIGN\CAD\SHEETS\55-20-029_C-504X.DWG

HORZ 0 10 20
VERT 0 10 20
SCALE IN FEET



A FREEMAN ALLRED RESERVOIR CROSS SECTION

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FREEMAN ALLRED RESERVOIR CROSS SECTION

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JUB PROJ. # : 55-20-029
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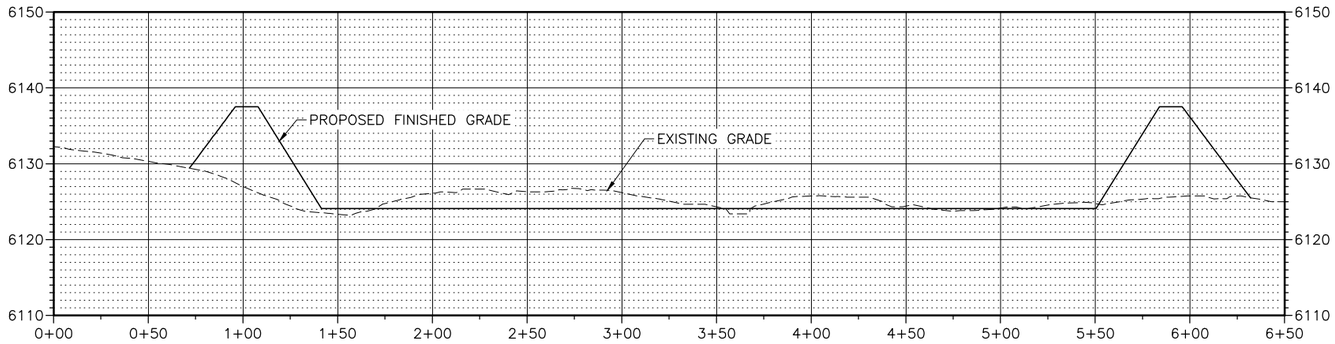
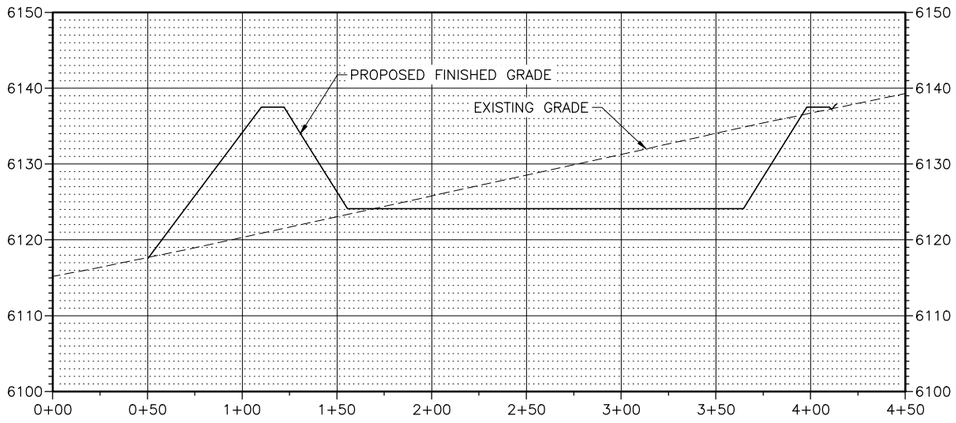
Plot Date:2/2/2023 9:30 AM Plotted By: Taylor Stauffer
Date Created:2/1/2023 \\JUB.COM\CENTRAL\CLIENTS\UT\SPRINGS\CITY\PROJECTS\55-20-029_SPRINGSCITYWATERSHEDPROJECT\DESIGN\CAD\SHEET\55-20-029_C-504X.DWG



A RESERVOIR CROSS SECTION



B RESERVOIR CROSS SECTION

HORZ 0 40 80
VERT 0 10 20
SCALE IN FEET

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SPRING CITY WATERSHED PLAN
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CITY REGULATING POND CROSS SECTIONS

FILE : 55-20-029_C-301X_19AF
JUB PROJ. # : 55-20-029
DRAWN BY: ----
DESIGN BY: TBS
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ONE INCH
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LAST UPDATED: 1/24/2023

SHEET NUMBER:
C-509