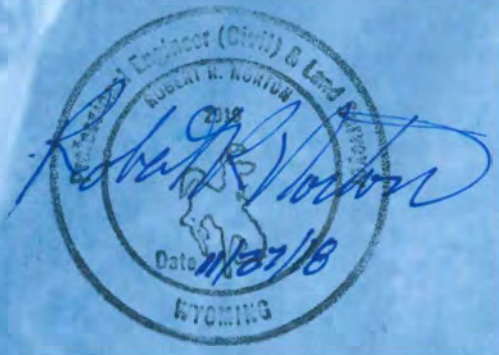
Teton County Solid Waste Transfer Station

Water Supply Study

Prepared for

TETON COUNTY INTEGRATED SOLID WASTE & RECYCLING



November 2018

NELSON ENGINEERING
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Teton County Solid Waste Transfer Station Water Supply Study

INTRODUCTION

The purpose of this study is to provide Teton County Solid Waste and Recycling options for providing water supply to the new Solid Waste Transfer Station and Composting Operations. Currently water is provided to the existing transfer station from a well located to the southeast. Water for the composting operation is hauled to the site.

HISTORY OF WATER SUPPLY

WATER WELL – The existing water well located on USFS land in the NE1/4 SW1/4 Section 27, T40N, R116W, was drilled and developed in 1986. Water rights for the well are fully adjudicated by the State Engineer's office under permit No. UW76440, for 75 gpm with a priority date of March 3, 1988.

The well was pump tested in August of 1986 at 100 gpm for 5 hours with a drawdown of 15 feet, from a static level at 178.7 feet to a pumping level of 193.7 feet below ground. State Engineer's records show a subsequent pump test at 190 gpm with 16 feet of drawdown after 24 hours of pumping.

The Wyoming Water Development Commission funded an investigation of the well for the purposes of serving Squaw Creek Water District. The investigation was conducted by AVI PC and consultants in June 2012. The well was pump tested at 94 to 105 gpm for 32 hours. The drawdown at the end of the test was approximately 13.2 feet; the investigation also included a video inspection of the well that indicated that, of the well casing perforations observed, only about 25% of the original openings remained open; however, the well continued to yield approximately 100 gpm during the 32-hour pump test. The 2012 investigation also noted that the static water level in the well had dropped from 178.7 feet in 1986 to 191.35 feet in 2012. The investigation also noted that the recovery of the well after the 32-hour pump test was very slow, with water levels at 193.85 after 3 days of recovery. The drop in static water of 12 feet from 1986 to 2012 and the slow recovery rate raise the question of the well's long-term yield. The investigation concluded that the well was not suitable for the Squaw Creek Water District's needs for a number of reasons, including permitting issues and the concern with the long-term potential yield of the well to meet the demand of the Water District.

Nelson Engineering installed a pressure data logger in the well that collected groundwater level at five-minute increments from September 13, 2018 to November 2, 2018. The groundwater level ranged from

191.1 feet below the top of casing when the pump was off to 193.5 feet below the top of casing when the pump had been operating. There was a gradual rise in the groundwater level from 192.1 to 191.1 over the period from Sept. 13th to Nov. 2nd. This data indicates that the aquifer recharge during this 50-day period was greater than the cumulative pumping rate. Another pressure data logger was installed in the well on Nov. 2nd and set to record water levels at 4-hour increments in an attempt to obtain long-term aquifer characteristics. The intent is to remove the data logger in April or May, 2019.

The results of the historic pumping records and the current records indicate that the initial pumping in 1986 dewatered an upper zone of water that has not recovered due to the constant pumping of the well, and that over time the aquifer did recover to the static levels found in 2012.

WELL PUMP – The existing well pump was installed in October 2017. The pump is an FPS 4400, (60FA5S4-PE) 60 gpm with 5 hp, 230 V, 1PH Franklin Electric motor. The manufacturer's pump curve indicates that the pump will produce 55 gpm at 240 ft TDH, 50 gpm at 270 ft TDH, 45 gpm at 290 ft TDH, and the shut off head is 400 ft (173 psi). The invoice indicates that 240 ft of new 3" C-Lock drop pipe was installed along with a new Flomatic check valve and 250 ft of 6/3 submersible pump cable.

PIPELINE – The existing water line from the well, a 3" diameter PVC SDR 21, 200 psi pressure pipe, was constructed in 1988. The location of the well and existing pipe line is shown on Figure No. 1. A pressure reducing valve was installed above the gun club to reduce the pressure at the manager's house.

CONTROLS – The well on/off operation was originally controlled with a pressure switch and hydropneumatic tank at the transfer station and a pressure switch at the gun club manager's house wired in series. A buried control wire was installed from the pressure switches to the well. When the transfer station was removed the pressure switch and hydropneumatic switch were removed. Currently the well control is only from the pressure switch at the gun club.

Figure No. 1 shows the location of the existing water system.

WATER DEMANDS

There are no water meters on the water system, therefore there are no accurate water use records. Based on the reported number of employees and type of water, NE estimated the average water use to be 2900 gpd. Utilizing power consumption records the estimated annual average water use from August 2016 to August 2017 was 986,000 gallons (2700 gpd); from August 2017 to August 2018 power consumption indicate a water use of 3,272,000 gallons. This higher power consumption is due to removal of transfer station controls and a break in the water line.

TRANSFER STATION AND SCALE HOUSE – The new transfer station and scale house will have a projected 15 employees plus wash down water for the scale house and transfer station. The projected employee water demand is 30 gpd/employee, the projected transfer station wash down water is 20 gpm for 2 hours per day, and the projected wash down water for the scale house is 10 gpm for 1.5 hours per day. The projected maximum day demand for these facilities is 3750 gpd; the average day demand is 2754

gpd. Irrigation for the landscaping around the new transfer station is estimated at 300 gpd and would occur during the night or early morning hours when the transfer station is not in use.

COMPOSTING OPERATION – The composting operation has the highest water demand. The current operator stated that they use 50,000 gpd for 45 days per year. The operator currently uses bladder tanks to store the water that is hauled to the site so that they have sufficient water to mix with the composting operation. If the 50,000 gpd is provided over a 16-hour period when the transfer station is not in operation, they would need 52 gpm to fill the bladder tanks.

GUN CLUB – The gun club currently has one manager's house, and they would like to install public restroom facilities. The water demand is estimated at 350 gpd for the house and 120 gpd for the public restrooms.

Without the composting operation the maximum day demand is 4,520 gallons and the average annual demand is 3,239 gpd, with a peak hour demand of 30 gpm. However, the 50,000 gpd for composting operations requires 52 gpm if the water is supplied in a 16-hour period when the transfer station is not in operation. If the composting operation is supplied over a 24-hour period and storage is provided to meet the hourly needs of the transfer station the 24-hour well demand would be 38 gpm.

The following table summarizes the estimate average day and maximum day demands for the water system:

Teton County Integrated Solid Waste Well - Future Daily Demand

	Units	Use	Max Day, gpd	Ave Day, gpd
Employees	15	30	450	225
Scale House wash down, (minutes x gpm)	90	10	900	129
Transfer Station wash down, (minutes x gpm)	120	20	2400	2400
Compost Site, gpd for 45 days			50,000	
Irrigation, gpd			300	250
Gun Club House			350	175
Gun Club Public Restrooms	40	3	120	60
			54,520	**3,239**

Estimated Annual Use, 3,432,235 gallons

WATER STORAGE

Water storage is typically installed to provided water for emergencies when the well or controls malfunction, to provide water to meet peak hour demands when the demand exceeds the supply and for fire suppression purposes.

The transfer station currently has two 25,000-gallon buried storage tanks and associated fire pumps dedicated to fire protection. Additional fire suppression storage is not required.

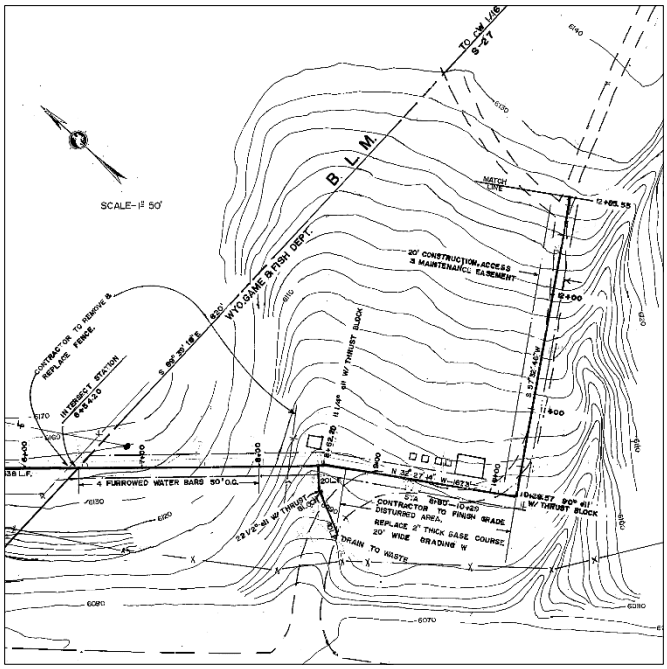
It is possible to operate the well pump utilizing a VFD controlled by pressure to meet peak hour demands. The only way to meet emergency demands when the pump or controls are malfunctioning or being repaired is with storage that can supply the demand when this occurs.

Because of the well location and accessibility, it is recommended that the storage be provided for approximately five days at average day demand, or 16,200 gallons. Additional storage, of 2700 gallons for peak hour equalization plus 1000 gallons for pump control, to assure adequate time between successive well pump starts, is recommended.

BASIC RECOMMENDATIONS

Nelson Engineering recommends that Teton County develop the existing well or drill a new well that will produce 55 gpm, install a buried 20,000-gallon storage tank, install a pipeline to convey the 55 gpm to the composting site, Pad 2, and 30 gpm to the transfer station, and install well pump controls that are based on the water level in the water storage tank. The following discussion of options is based on this basic recommendation.

OPTIONS



<u>OPTION 1:</u> Improve the access road to the existing well for tank construction and well maintenance. Redevelop the existing well, install a new 4" column pipe on the existing pump. Install a 20,000-gallon FRP buried storage tank on USFS land at the location of the existing air release valve, at elevation 6295. Construct a new 4" HDPE DR11 pipe from the well to the tank and from the tank through the gun club, following the existing alignment on USFS land and generally following the existing alignment through the gun club. Remove the existing pressure reducing valve (PRV). Utilize the recently constructed 4" pipe within the WYDOT right-of-way and construct a new 4" HDPE DR 11 pipe from the recently constructed pipe in WYDOT right-of-way to Pad 2. Construct new services with meters for the gun club, scale house and transfer station. Install a buried wire control system between the well and tank and a radio telemetry system to transfer well data and tank operating levels to the transfer station.

The advantage of this option is that it provides up to 55 gpm at 42 psi to Pad 2 for composting operations; this would allow the 50,000-gallon bladder tanks to be filled in a 16-hour time period when the transfer

station is not in operation. The pressure at the gun club would be 84-87 psi, and the pressure at the transfer station would be 58-62 psi. The well pump control would be at the tank with buried power and control wires from the well to the tank.

A schematic drawing of Option 1 is attached.

The disadvantage of Option 1 is that it would require a new permit from the USFS for the storage tank. Permitting will take time and is not assured as the final decision takes place outside of Teton County. Also access to the well and controls in the winter will be difficult.

The opinion of probable project cost for Option 1 is $1,023,900. The annual operation and maintenance cost of Option 1 is estimated to be $34,230 including labor, power, and facility replacement.

OPTION 2: Slight improvements to the access road to the well for well maintenance. Redevelop the existing well, install a new 4" column pipe on the existing pump. Install a 20,000-gallon buried storage tank on Teton County land above Pad 3, near the high transmission power line, at elevation 6285. Construct a new 4" HDPE DR11 pipe from the well to the location of the existing PRV and from the PRV across the gun range to the tank. Construct a new 4" HDPE DR 11 pipe from the tank to Pad 2. Construct a new 3" HDPE DR 11 pipe from Pad 2 to the transfer station, scale house, and existing blow off drain. Utilize the newly constructed water line in the WYDOT right-of-way and construct a new 3" HDPE DR 11 pipe to the gun club. Abandon the existing PRV and 3" PVC SDR 21 pipe from the PRV to the gun club. A radio telemetry system would be used to transfer control signals from the tank to the well and transmit well data and tank operating levels to the transfer station.

A schematic drawing of Option 2 is attached.

The advantage of Option 2 is that it provides up to 55 gpm at 40 psi to Pad 2 for composting operations; this would allow the 50,000-gallon bladder tanks to be filled in a 16-hour time period when the transfer station is not in operation. The pressure at the transfer station would be 55-58 psi, and the pressure at the gun club would be 77-82 psi. The controls would be at the tank with radio telemetry signals between the tank and the well. The tank would be on Teton County land and only renewal of the existing USFS lease would be required to upgrade the pipeline.

The disadvantage of Option 2 is that it would require power (120V/single phase) to the storage tank for the controls. Another disadvantage is that the well and tank controls are in different locations, and access to the well controls will be difficult in the winter.

The opinion of probable project cost for Option 2 is $893,800. The annual operation and maintenance cost of Option 2 is estimated to be $29,114 including labor, power, and facility replacement.

OPTION 3: Construct and develop a new well on WYG&F land near Flat Creek. Install a new 4" HDPE DR 9 pipe from the well to the blow off on the east side of the Highway, and construct a bore across newly constructed Highway 89. Construct a new 4" HDPE DR 11 pipe from the blow off past the transfer station to a tank located above Pad 3, near the high transmission power line, at elevation 6285. Install a 20,000-gallon buried storage tank above Pad 3 on Teton County land. Utilize the existing pipe in the WYDOT right-

of-way and construct a new 3" HDPE pipe to provide water to the gun club. Abandon the existing well and pipeline above the gun club.

A schematic drawing of Option 3 is attached.

The advantage of Option 3 is that it could provide 55 gpm, or more, at 41-43 psi to Pad 2 for composting operations; this would allow the 50,000-gallon bladder tanks to be filled in a 16-hour time period when the transfer station is not in operation. Pressure at the transfer station would be 61-64 psi. Pressure at the gun club would be 82-84 psi. The controls would be at the tank with radio telemetry signals between the tank and the well. The tank would be on Teton County land, and the pipeline would generally be along an existing road providing for easier maintenance.

The disadvantage of Option 3 is that it would require drilling a new well and well yield is never a certainty. A well drilled by the WWDC near Flat Creek for the Game Creek subdivision was abandoned; however, wells in the area serving the Little Horse Thief Canyon Subdivision and Cottonwood Cabins indicate that a 55 gpm well is possible. Three-phase power would have to be constructed to the well, and 120-volt single-phase power would be required at the storage tank for the controls. A long-term lease for the well and pipeline would need to be negotiated with the WYG&F. The well and tank controls are in different locations. Power costs would be higher because the well pump motor would be 10 hp to pump from the well to the tank. The operation and maintenance will be more difficult because of restricted access to the well when elk are on site.

The opinion of probable project cost for Option 3 is $1,117,700. The annual operation and maintenance cost of Option 3 is estimated to be $32,983 including labor, power, and facility replacement.

OPTION 4: No improvements to the access road to the well. Redevelop the existing well, utilize the existing pump and pump column. Utilize the existing water line from the well to blow off at the highway. Remove the PRV at the existing location. Install a new 4" HDPE DR11 pipe from the blow off to a tank located above Pad 3. Install a 20,000-gallon buried storage tank on Teton County land above Pad 3 at elevation 6285. Install water services with meters for the scale house, transfer station and gun club. A radio telemetry system would be used to transmit control signals from the tank to the well and to transmit well data and tank operating levels to the transfer station.

A schematic drawing of Option 4 is attached.

The advantage of Option 4 is that it provides 55 gpm to Pad 2 for composting operations; this would allow the 50,000-gallon bladder tanks to be filled in a 16-hour time period. Pressure at the transfer station would be 61-63 psi. Pressure at the gun club would be 82-88 psi. The controls would be at the tank with radio telemetry signals between the tank and the well. The tank would be on Teton County land.

The disadvantage of Option 4 is that it is the minimal approach utilizing the existing 30-year-old pipe. Option 4 would require power (120V/single phase) to the storage tank for the controls. Another disadvantage is that the well and tank controls are in different locations, and access to the well controls will be difficult in the winter.

The opinion of probable project cost for Option 4 is $552,400. The annual operation and maintenance cost of Option 4 is estimated to be $36,156 including labor, power, and facility replacement.

OPINION OF PROBABLE CONSTRUCTION COST and O&M COST OF EACH OPTION

A detailed estimate of the opinion of probable construction cost for each option and an estimate of the probable operation and maintenance cost of each option is attached.

LIFE CYCLE COST OF EACH OPTION

The life cycle cost comparison of the options includes capital cost and operation and maintenance cost. The capital cost is converted to an annual equivalent cost over the average life of the project at an interest rate of 6%. The average life of the overall water project is 30 years; the pipeline has a 50-year life, the storage tank a 30-year life and the electrical and controls have a 20-year life. The annual O&M costs are added to the annual equivalent capital cost to show the Annual Equivalent Life Cycle Cost of each option. The following table provides a cost comparison for the Options. Option 4 has the lowest initial capital cost, but because the water line will have to be replaced before the 30-year life of the facilities, the Annual Equivalent Life Cycle Cost is higher than the other alternatives. Option 2 has the lowest annual O&M cost and the lowest Annual Equivalent Life Cycle Cost.

Comparison of the Opinion of Probable Cost for each Option

	Capital Cost	Annual O&M Cost	Annual Equivalent Life Cycle Cost
Option 1	$ 1,023,900	$ 34,230	$ 108,617
Option 2	$ 893,800	$ 29,114	$ 94,048
Option 3	$ 1,117,700	$ 32,983	$ 114,184
Option 4	$ 552,400	$ 36,156	$ 125,163

RECOMMENDATION

Nelson Engineering recommends that Teton County pursue Option 2. Rehabilitate the existing well by redeveloping the well using air or water jetting and clean out the sediment in the bottom of the well. Utilize the existing well pump and motor to produce at least 55 gpm. Install a buried fiberglass reinforced plastic (FRP) 20,000-gallon storage tank near the power transmission line above Pad 3. Replace the existing pipeline with a 4” diameter pipe to convey 55 gpm from the well to the composting site at Pad 2. Install a new 3” diameter pipe from the 4” pipe terminated at Pad 2, utilizing the recently installed pipeline in the WYDOT right-of-way. Install new well pump controls that are based on the water level in the water storage tank and a radio telemetry system to transmit the data between the well, tank and transfer station.

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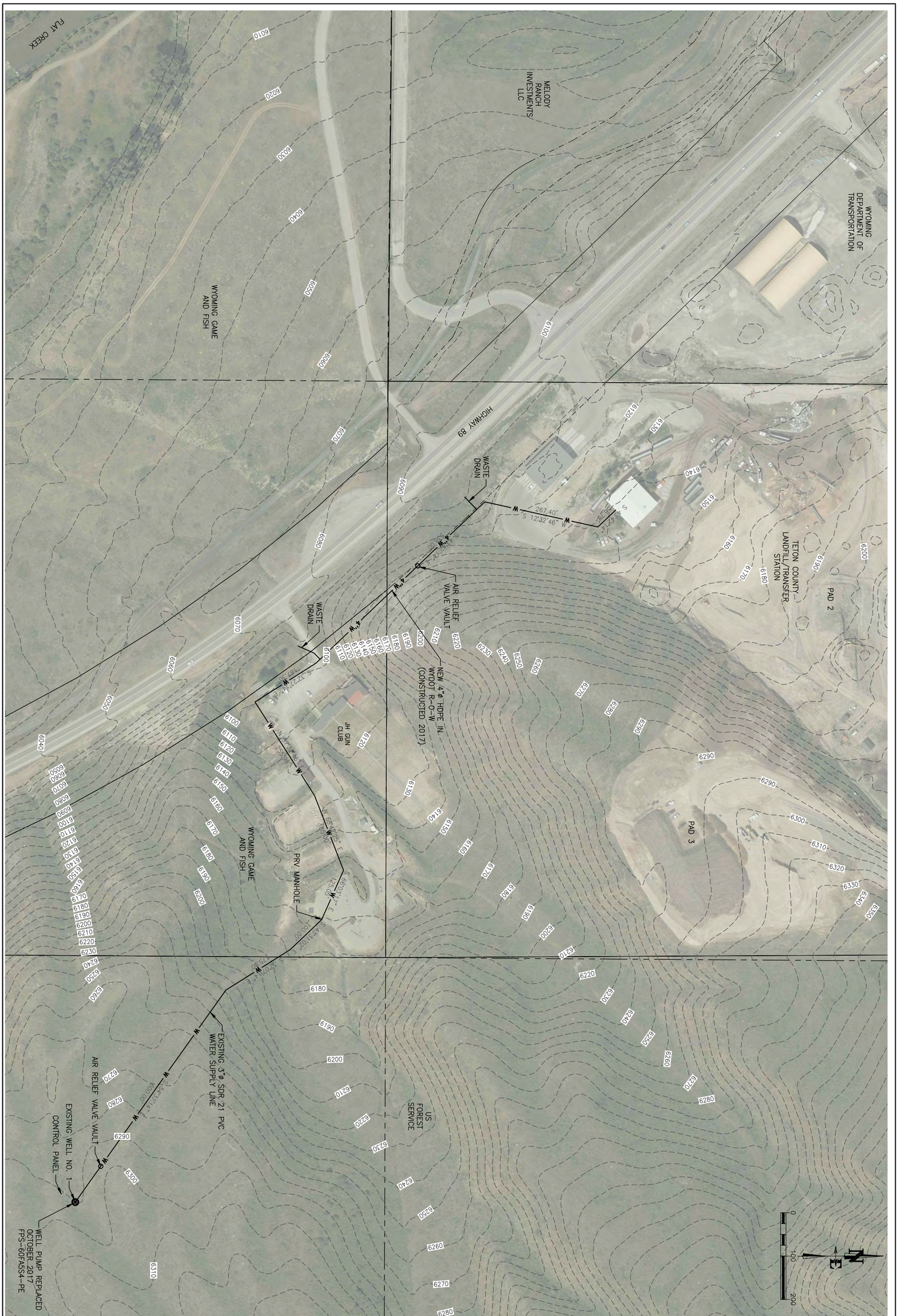

DRAWING NO: FIGURE 1	JOB TITLE: WATER SYSTEM SCHEMATIC DESIGN TETON COUNTY TRANSFER STATION	DRAWING TITLE: EXISTING WATER SYSTEM	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE: 10/9/2018	REV.
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				CHECKED:	
				APPROVED:	

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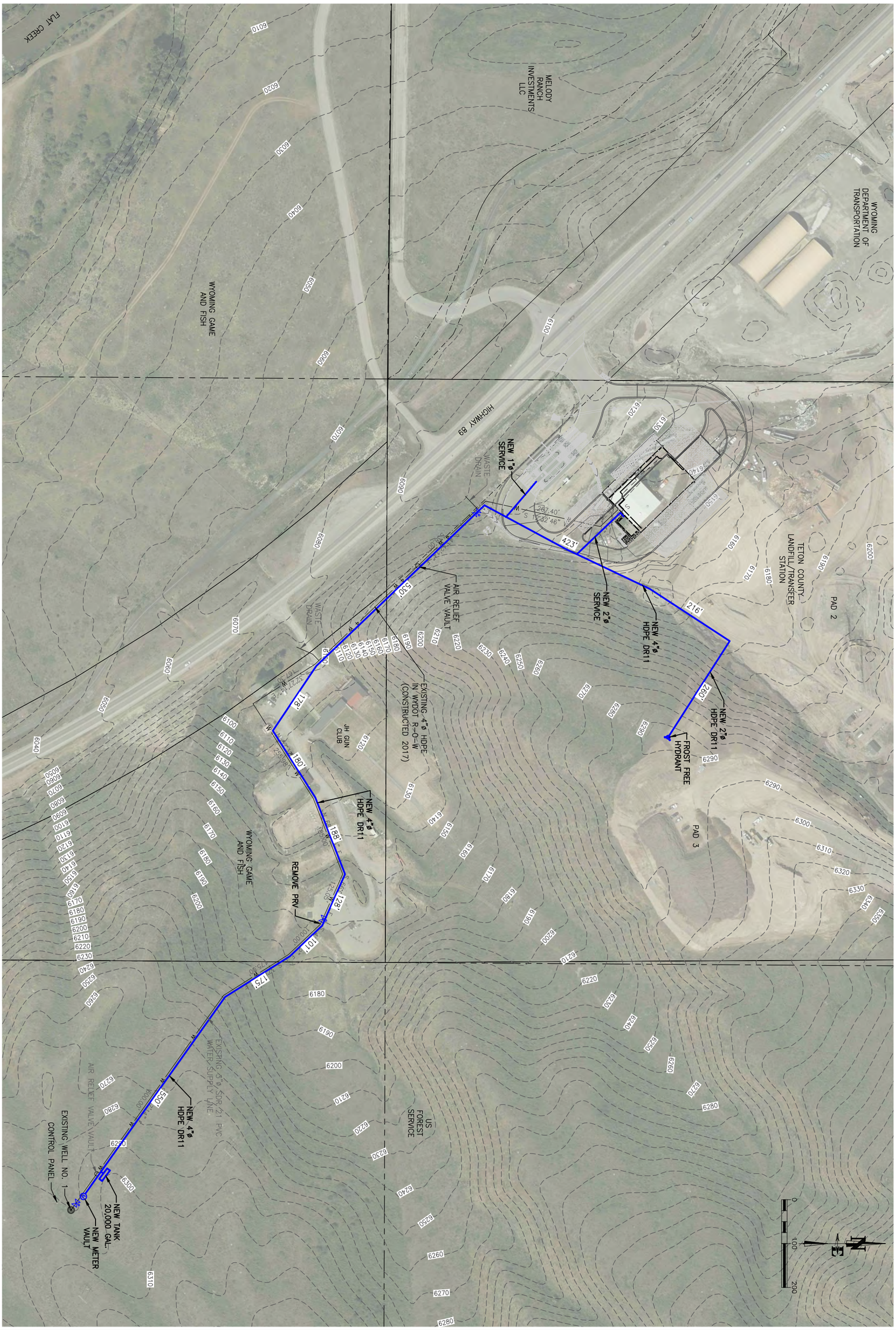

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JOB NO: 18-178-01					

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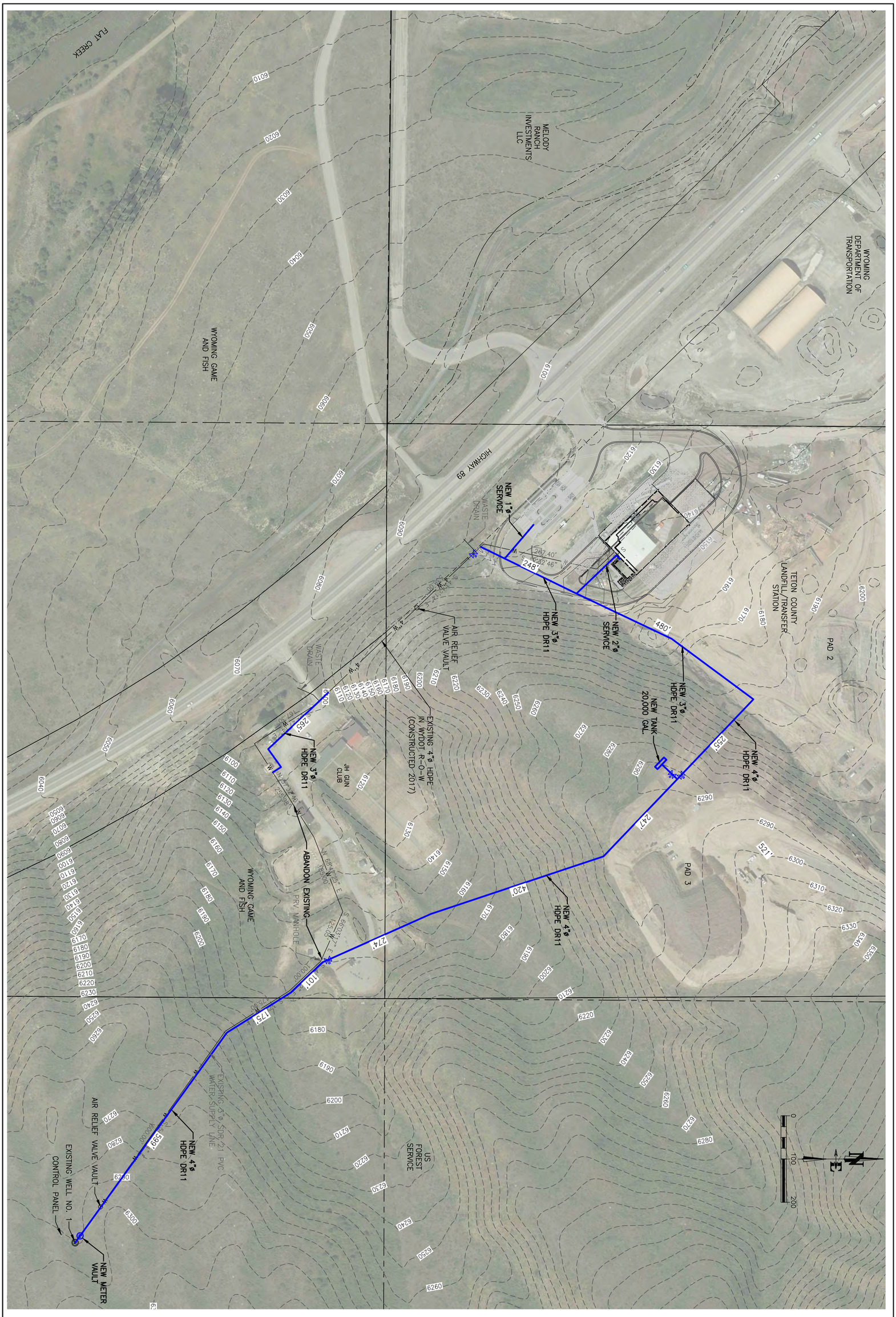

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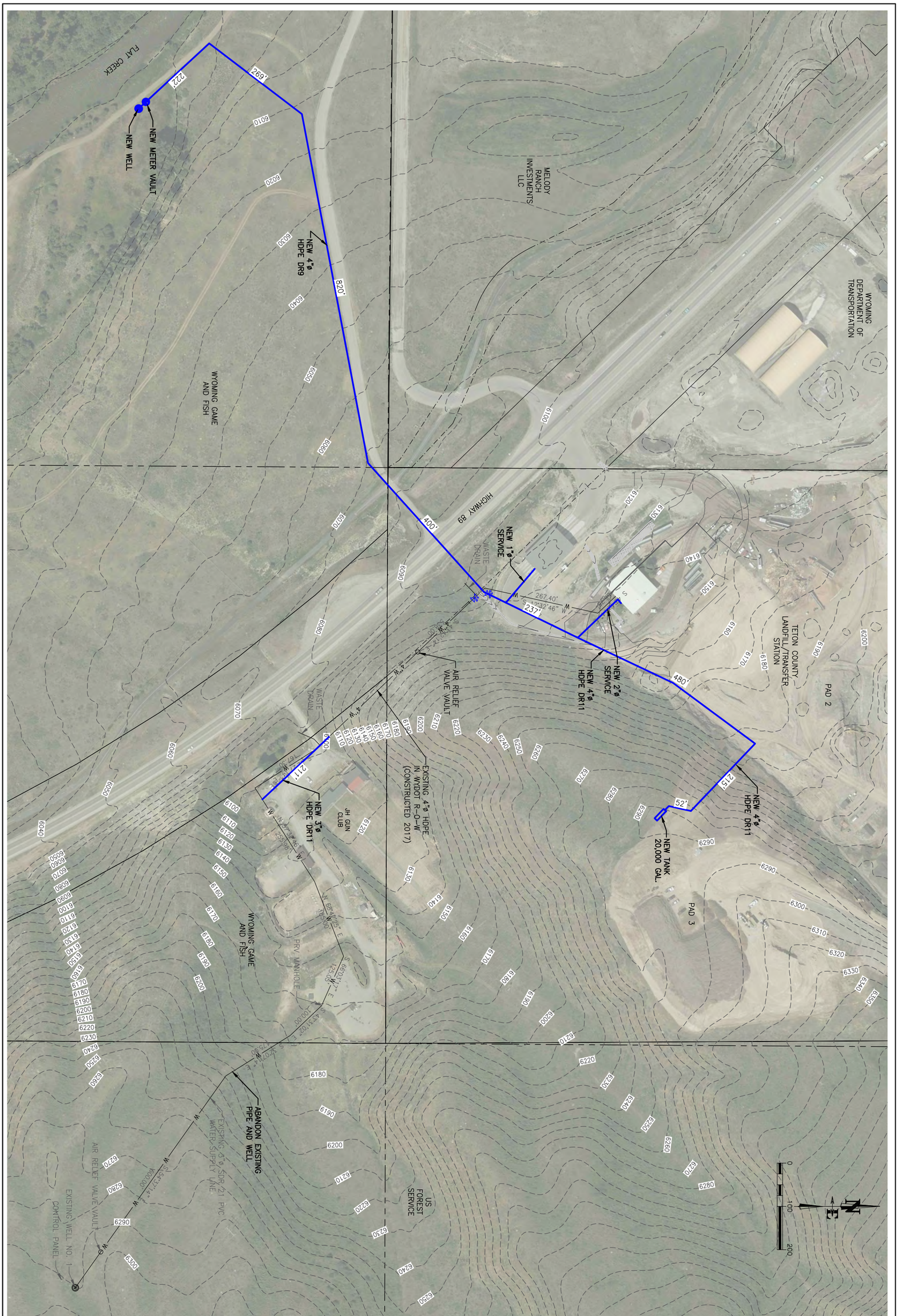

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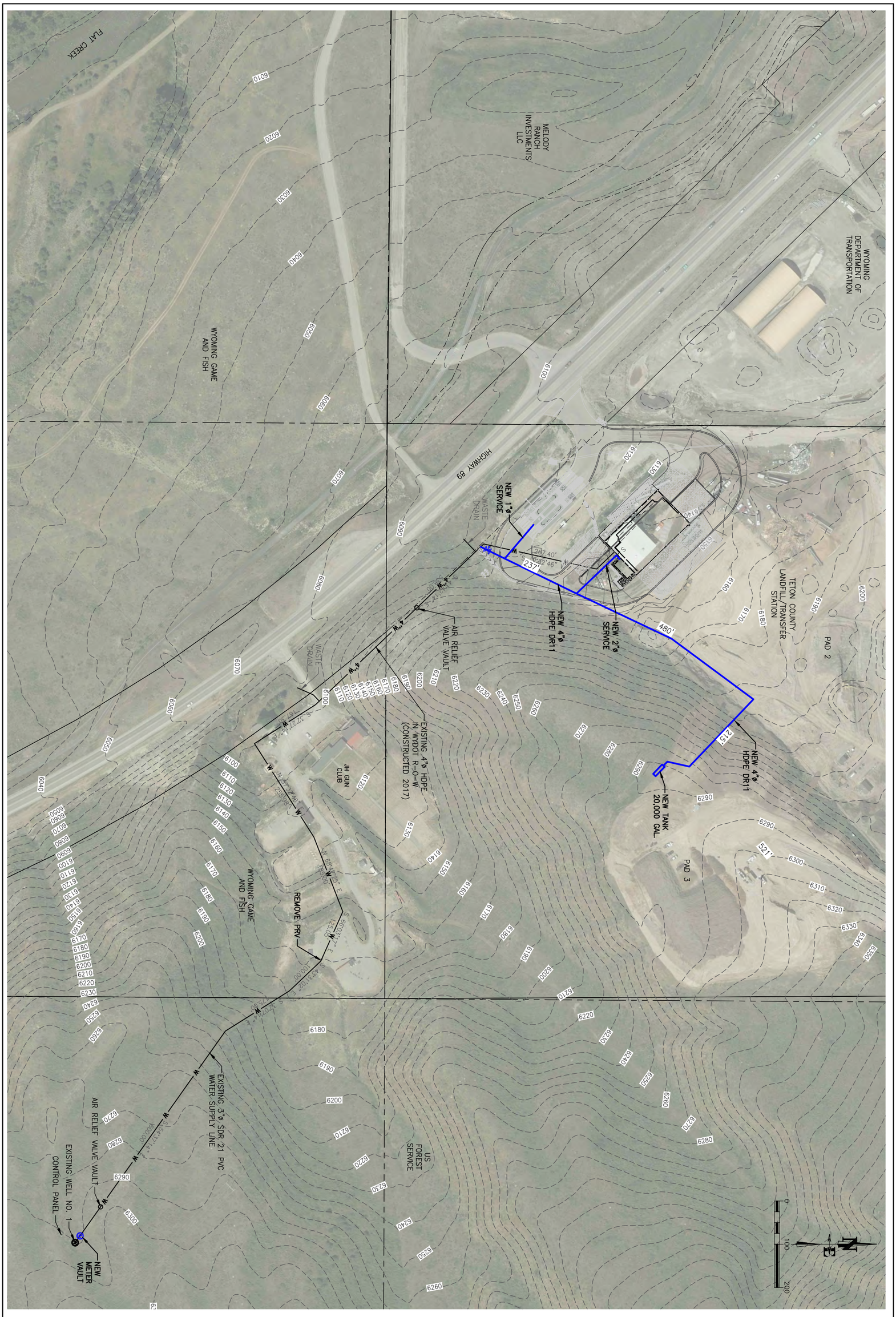

DRAWING NO: OPTION 4	JOB TITLE: WATER SYSTEM SCHEMATIC DESIGN TETON COUNTY TRANSFER STATION	DRAWING TITLE: SCHEMATIC PLAN OPTION 4	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE: 10/9/2018 SURVEYED: TCGIS ENGINEERED: RRN DRAWN: BJG CHECKED: APPROVED:	REV.
JOB NO: 18-178-01					

Teton County Solid Waste Transfer Station Water Supply

Option 1: Rehabilitate the existing system. New 4" HDPE water line following existing alignment to PRV and pad 2 and New Tank at high point on line, also new 3" line from PRV to Transfer station

Description	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	$72,240.00	$72,240.00
Access Road Improvements	LF	1,600	$88.00	$140,800.00
Well Rehabilitation	LS	1	$16,000.00	$16,000.00
Pump and Motor	LS	1	$10,000.00	$10,000.00
Pump Controls	LS	1	$25,000.00	$25,000.00
Storage Tank (20,000 gal, 10' dia x 37.5')	LS	1	$52,000.00	$52,000.00
Tank Excavation	CYD	690	$40.00	$27,600.00
Tank Placement and Backfill	TON	1,030	$50.00	$51,500.00
Tank Pipe connection and valves	LS	1	$5,000.00	$5,000.00
Power to Tank site for controls	LF	150	$30.00	$4,500.00
Meter and Vault, 3"	EA	1	$8,000.00	$8,000.00
Pipe line reconstruction Well to PRV (4" HDPE)	LF	776	$70.00	$54,320.00
Pipe line construction PRV to WYDOT (4" HDPE)	LF	700	$80.00	$56,000.00
Pipe line reconstruction WYDOT to Pad 2 (4" HDPE)	LF	670	$80.00	$53,600.00
2 to Pad 3 (2"HDPE)	LF	260	$70.00	$18,200.00
Isolation Valves	EA	6	$1,500.00	$9,000.00
Demo existing PRV	EA	1	$2,000.00	$2,000.00
Air/Vac Valves, with 4' dia manhole	EA	1	$5,000.00	$5,000.00
Blow off points	EA	1	$1,500.00	$1,500.00
Service hydrants	EA	2	$3,000.00	$6,000.00
Service to Buildings	EA	4	$7,500.00	$30,000.00
Gravel Surface Restoration	SF	33,120	$1.80	$59,616.00
Revegitation	SYD	5,300	$1.88	$9,964.00
Type 1 Erosion Control	SF	51,800	$0.80	$41,440.00
Type 2 Erosion Control	SF	27,600	$1.20	$33,120.00
Straw Wattles	LF	600	$4.50	$2,700.00
			Subtotal	$795,100.00
			Contingency 15%	$119,300.00
			Permitting and Easements (USFS & WYG&F)	$30,000.00
			Engineering Design	$79,500.00
			Total Opinion of Probable Project Cost Option 1	$1,023,900.00

Annual Operation and Maintenance Option 1

Annual Labor	100	hrs.	$ 6,000
System Maintenance/Replacement			$ 27,470
Power	5670	kw-hrs.	$ 340
Meter charge	$ 35	month	$ 420
Total Estimated Annual O&M Cost			$ 34,230

Teton County Solid Waste Transfer Station Water Supply

Option 2: New 4" HDPE water line from well to tank at Pad 3 and new 4" water line from Pad 3 to Pad 2, 3" HDPE to transfer station and Scale House, 3" line from Scale House to Gun Club. Utilize existing line in WYDOT ROW.

Description	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	$64,248.00	$64,248.00
Access Road Improvements	LF	300	$88.00	$26,400.00
Well Rehabilitation	LS	1	$16,000.00	$16,000.00
Pump and Motor	LS	1	$10,000.00	$10,000.00
Pump Controls	LS	1	$25,000.00	$25,000.00
Storage Tank under powerline Pad 3	LS	1	$52,000.00	$52,000.00
Tank Excavation	CYD	690	$30.00	$20,700.00
Tank Placement and Backfill	TON	1030	$50.00	$51,500.00
Tank Pipe connection	LS	1	$5,000.00	$5,000.00
Power to Tank Site for Controls	LF	790	$30.00	$23,700.00
3" Meter and Vault	EA	1	$8,000.00	$8,000.00
Pipe line Well to Tank 4" HDPE to Pad 2	LF	2060	$73.00	$150,380.00
Pipe line construction from Pad 2 to Transfer Sta 3" HDPE	LF	470	$70.00	$32,900.00
Pipe line construction from Transfer Sta to Gun Club 3" HDPE	LF	570	$70.00	$39,900.00
Isolation Valves	EA	6	$1,500.00	$9,000.00
Air/Vac Valves	EA	2	$5,000.00	$10,000.00
Blow off points	EA	1	$1,500.00	$1,500.00
Service hydrants	EA	2	$3,000.00	$6,000.00
Service to Buildings	EA	4	$7,500.00	$30,000.00
Gravel Surface Restoration	SF	16,500	$1.80	$29,700.00
Revegitation	SYD	10,900	$1.88	$20,492.00
Type 1 Erosion Control	SF	48,000	$0.80	$38,400.00
Type 2 Erosion Control	SF	27,900	$1.20	$33,480.00
Straw Wattles	LF	600	$4.50	$2,700.00
			Subtotal	$707,000.00
			Contingency 15%	$106,100.00
			Permitting and Easements (USFS and WYG&F)	$10,000.00
			Engineering Design	$70,700.00
			Total Opinion of Probable Project Cost Option 2	$893,800.00

Annual Operation and Maintenance Option 2

Annual Labor	100	hrs.	$ 6,000
Water System Maintenance/Replacement			$ 22,354
Power	5670	kw-hrs.	$ 340
Meter charge	$ 35	month	$ 420
Total Estimated Annual O&M Cost			$ 29,114

Teton County Solid Waste Transfer Station Water Supply

Option 3: New Well on WYG&F near Flat Creek, water line to tank above Pad 2

Description	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	$79,163.00	$79,163.00
Access Road Improvements	LF	0	$88.00	$0.00
Well Construction, Development and Testing	LS	1	$37,000.00	$37,000.00
Pitless, Pump and Motor	LS	0	$20,000.00	$26,400.00
3 phase power to well	LS	1	$60,000.00	$60,000.00
Pump Controls	LS	1	$25,000.00	$25,000.00
Abandon Existing Well	LS	1	$10,000.00	$10,000.00
Storage Tank	LS	1	$52,000.00	$52,000.00
Tank Excavation	CYD	690	$30.00	$20,700.00
Tank Placement and Backfill	TON	1030	$50.00	$51,500.00
Tank Pipe connection	LS	1	$5,000.00	$5,000.00
Power to Tank Site for Controls	LF	790	$30.00	$23,700.00
3" Meter and Vault	EA	1	$8,000.00	$8,000.00
Pipe line Well to Blow off	LF	1711	$73.00	$124,903.00
Pipe line construction from Blow off to Tank	LF	1017	$70.00	$71,190.00
Highway bore 8" dia.	LF	160	$600.00	$96,000.00
Pipe line WYDOT to Gun Club	LF	270	$70.00	$18,900.00
Isolation Valves	EA	4	$1,500.00	$6,000.00
Air/Vac Valves	EA	1	$5,000.00	$5,000.00
Blow off points	EA	1	$1,500.00	$1,500.00
Service hydrants	EA	2	$3,000.00	$6,000.00
Service to Buildings	EA	4	$7,500.00	$30,000.00
Gravel Surface Restoration	SF	22,500	$1.80	$40,500.00
Revegitation	SYD	7,300	$1.88	$13,724.00
Type 1 Erosion Control	SF	58,800	$0.80	$47,040.00
Type 2 Erosion Control	SF	6,900	$1.20	$8,280.00
Straw Wattles	LF	600	$4.50	$2,700.00
			Subtotal	$870,200.00
			Contingency 15%	$130,500.00
			Permitting and Easements (USFS and WYG&F)	$30,000.00
			Engineering Design	$87,000.00
			Total Opinion of Probable Project Cost Option 3	**$1,117,700.00**

Annual Operation and Maintenance Option 3

Annual Labor	100	hrs.	$ 6,000
System Maintenance/Replacement			$ 25,990
Power	9548	kw-hrs.	$ 573
Meter charge	$ 35	Month	$ 420
Total Estimated Annual O&M Cost			$ 32,983

Teton County Solid Waste Transfer Station Water Supply

Option 4: Use existing pipeline system to blow off, construct new 4" HDPE to tank above Pad 3

Description	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	$39,865.00	$39,865.00
Access Road Improvements	LF	300	$88.00	$26,400.00
Well Rehabilitation	LS	1	$16,000.00	$16,000.00
Pump and Motor	LS		$0.00	$0.00
Pump Controls	LS	1	$25,000.00	$25,000.00
Storage Tank (20,000 gal, 8' dia x 37.5')	LS	1	$52,000.00	$52,000.00
Tank Excavation	CYD	690	$30.00	$20,700.00
Tank Placement and Backfill	TON	1030	$50.00	$51,500.00
Tank Pipe connection and valves	LS	1	$5,000.00	$5,000.00
Power to Tank Site for Controls	LF	790	$30.00	$23,700.00
Meter and Vault, 3"	EA	1	$8,000.00	$8,000.00
Pipe line reconstruction blow off to Transfer Station (4" HDPE)	LF	265	$70.00	$18,550.00
Pipe line construction Transfer Station to Tank	LF	733	$85.00	$62,305.00
Isolation Valves	EA	4	$1,500.00	$6,000.00
Air/Vac Valves, with 4' dia manhole	EA		$5,000.00	$0.00
Blow off points	EA	-	$1,500.00	$0.00
Service hydrants	EA	2	$3,000.00	$6,000.00
Service to Buildings	EA	4	$7,500.00	$30,000.00
Gravel Surface Restoration	SF	8,000	$1.80	$14,400.00
Revegitation	SYD	3,500	$1.88	$6,580.00
Type 1 Erosion Control	SF	15,500	$0.80	$12,400.00
Type 2 Erosion Control	SF	10,500	$1.20	$12,600.00
Straw Wattles	LF	200	$4.50	$900.00
			Subtotal	$437,900.00
			Contingency 15%	$65,700.00
			Permitting and Easements (USFS and WYG&F)	$5,000.00
			Engineering Design	$43,800.00
			Total Opinion of Probable Project Cost Option 4	**$552,400.00**

Annual Operation and Maintenance Option 4

Annual Labor	200	hrs.	$ 6,000
System Maintenance/Replacement			$ 29,396
Power	5670	kw-hrs.	$ 340
Meter charge	$ 35	Month	$ 420
Total Estimated Annual O&M Cost			$ 36,156