

Date: February 5, 2020

To: Larimer County Planning Department

From: Randy Parks and Derek Nelson - Dewberry Engineers Inc.

Subject: Northern Integrated Supply Project – Traffic Impact Study



This section addresses requirements of the 1041 Permit item 8.d for Traffic Impact Study. It describes the effects of the NISP conveyance facilities that are within unincorporated parts of Larimer County. Such facilities include:

- Northern Tier Pipeline
- Poudre Release/Glade Release Pipeline
- Poudre Intake Pipeline
- County Line Pipeline
- Glade Reservoir Pump Station
- Poudre Diversion Pump Station

Methods

Effects on traffic and transportation were assessed based on existing roadway information from the Larimer County Road Information Locator webpage and, when needed, from CDOT Road Traffic Count data. The most recent available data from Larimer County was used, which came from the years 2000, 2009, 2015, 2017, and 2018; depending upon the node. Traffic volumes obtained from CDOT were conducted in 2014. The road classification and Annual Average Daily Traffic (ADT) count from nodes that were available along the alignments can be seen in Map Series 6 in Attachment D to the Project Description.

Since the County Line Pipeline is parallel and adjacent to the roadway, good traffic data existed along the entire alignment. The tabulated data was taken from the ADT found after one another and averaged. The reach between nodes were then designated as a work area. This data is presented in table 4.

Since the Northern Tier Pipeline, Poudre Intake Pipeline, and Poudre Release/Glade Release Pipeline do not parallel roadways consistently, data was tabulated through an alternative method by creating “Traffic Study Areas” which can be seen in map series 6 in Attachment D to the Project Description. Additionally, the density of traffic station locations was significantly less than along the County Line Pipeline, which necessitated a modified approach. Tables 1-3 in this memo list all areas, relevant traffic stations, traffic counts, approximate length of crossing, street impact, closure requirements and estimated duration for the Northern Tier, Poudre Intake, and Poudre Release/Glade Release Pipelines. The Traffic Study Areas were broken up as portions of the pipeline that parallel roadways within 100 feet, cross roadways with trenchless crossings, or cross gravel roads.

General NISP Conveyance Information

An alternatives alignment study was performed and the preferred alignment for NISP conveyance can be found as part of the Conveyance Routing Assessment (Technical Memorandum 3). Although the final design of the pipeline will be developed at a later date, the NISP conveyance lines are expected to have a 60-foot permanent easement and a 40-foot temporary construction easement. The NISP pipelines are planned to be routed as much as possible in private easement rather than public right-of-way. By routing most of the pipeline in private easements traffic impacts will be lessened.

Crossings

Water pipeline road crossings in Larimer County will be constructed using trenchless methods on all paved roadways and open-cut construction on unpaved roadways. A list of all anticipated trenchless and open-cut crossings is presented in Tables 1-4. Trenchless construction methods would cause only minor disruption to traffic and would have negligible short-term effects. Any roadway that is unpaved (e.g. gravel) would use open-cut construction. Open-cut construction of pipelines would require a trench to be dug along the length of the pipeline, affecting the segment of the road that requires the trench. The pipeline would then be laid in the trench, and the trench would be backfilled to pre-existing conditions. Roadways that would be open-cut would either have temporary lane closures or would be closed to traffic, and a detour route would be provided during construction. The NISP conveyance will likely cross the Great Western and Union Pacific Railroads in several places. Trenchless construction methods would be used at the railroad crossings.

General Compliance

For all pipeline alignments adjacent to or crossing the road ROW, Northern Water and/or construction contractors would be required to develop traffic control plans. Traffic control plans would be subject to approval by the transportation agency responsible for the impacted roadway. As such, short-term effects on local roadways during construction are expected to be minor for construction areas. If the level of construction activity impacted traffic to a greater magnitude than anticipated, the construction contractor would work with the responsible transportation agency to reduce the traffic effect to an acceptable level based on their policies and standards.

Further, it is understood that during final design, Northern Water will be required to represent anticipated haul/delivery routes and coordinate same with Larimer County.

All activities in or adjacent to, access to and from, and including hauling/delivery on Larimer County roads/ROW must abide by the Larimer County Access Policy and Larimer County Land Use Code.

Mitigation

Mitigation of traffic impacts will be addressed on a road-by-road basis and for local community/residences/businesses during final design. General mitigation measures that may be implemented include:

- Utilization of major roads and bridges for haul routes whenever feasible.

- Minimization of hauling/deliveries during peak driving hours.
- Coordination with the County and other entities to avoid planned concurrent road construction.
- Coordination with local schools on bus routes and pickup or drop-off times.
- Maintenance of access to residents and businesses to include emergency vehicles, trash pickup, and postal/delivery services.
- Stabilized construction access in accordance with erosion control and streets ordinances.
- Dust control during construction.

Durations

Construction durations per work area were estimated with production rates using factors including pipe diameter, route complexity, route length, available construction corridor area and access, utility density, and terrain challenges. Estimated construction durations per work area can be found in Tables 1-4.

MEMORANDUM
Table 1- Northern Tier Annual Average Daily Traffic (ADT)

	Traffic Station 1 Type	Traffic Station 1	Traffic Count 1	Traffic Station 2 Type	Traffic Station 2	Traffic Count 2	Traffic Count Used	Approx. Length (ft)	Street Impacted	Type of Impact	Closure Required?	Estimated Duration (Days)
Area N-1	CDOT	014B	3000	-	-	-	3000	300	HW 14	Trenchless Crossing	No	10
Area N-2	CDOT	014B	3000	-	-	-	3000	400	HW 14	Parallel	No	2
Area N-3	CDOT	105333	8800	-	-	-	8800	1500	HW 287	Parallel	No	8
Area N-4	CDOT	105333	8800	CDOT	000008	8200	8500	900	HW 287	Parallel	No	9
Area N-5	CDOT	105333	8800	CDOT	000008	8200	8500	1200	HW 287	Trenchless Crossing	No	40
Area N-6	CDOT	105333	8800	CDOT	000008	8200	8500	24,000	HW 287	Parallel	No	120
Area N-7	LC	488	800	-	-	-	800	300	CR 21-C	Trenchless Crossing	No	10
Area N-8	LC	488	800	LC	760	900	850	2800	W CR 56	Parallel	No	14
Area N-9	LC	488	800	LC	760	900	850	300	W CR 56	Trenchless Crossing	No	10
Area N-10	LC	418	2500	-	-	-	2500	300	Taft Hill Rd	Trenchless Crossing	No	10
Area N-11	LC	758	190	-	-	-	190	3000	Travis	Parallel	No	15

MEMORANDUM

Area N-12	CDOT	100004	7200	-	-	-	7200	300	HW 1	Trenchless Crossing	No	10
Area N-13	LC	763	130	-	-	-	130	300	E CR 56	Gravel Crossing	No- single lane flagged	8
Area N-14	LC	240	275	-	-	-	275	300	N CR 13	Gravel Crossing	No- single lane flagged	8
Area N-15	LC	199	130	-	-	-	130	300	Turnberry	Gravel Crossing	No- single lane flagged	8
Area N-16	LC	750	1400	LC	751	1400	1400	300	CR 54/Douglas	Trenchless Crossing	No	10
Area N-17	LC	750	1400	LC	751	1400	1400	3000	CR 54/Douglas	Parallel	No	15
Area N-18	LC	750	1400	LC	751	1400	1400	300	CR 54/Douglas	Trenchless Crossing	No	10
Area N-19	LC	750	1400	LC	751	1400	1400	1800	CR 54/Douglas	Parallel	No	9
Area N-20	LC	140	2400	-	-	-	2400	300	Giddings	Trenchless Crossing	No	10
Area N-21	LC	752	90	LC	753	80	85	10000	CR 54/Douglas	Parallel	No	50
Area N-22	CDOT	000127	34000	-	-	-	34000	800	I-25	Trenchless Crossing	No	27
Area N-23	LC	727	600	LC	728	350	475	6000	CR 52/Richards Lake	Parallel	No	30
Area N-24	LC	727	600	LC	728	350	475	300	CR 52/Richards Lake	Trenchless Crossing	No	10
Area N-25	LC	727	600	LC	728	350	475	3000	CR 52/Richards Lake	Parallel	No	15

MEMORANDUM

Area N-26	LC	727	600	LC	728	350	475	300	CR 52/Richards Lake	Parallel	No- single lane flagged	8
Area N-27	LC	727	600	LC	728	350	475	2300	CR 52/Richards Lake	Parallel	No	12
Area N-28	LC	727	600	LC	728	350	475	1800	CR 52/Richards Lake	Parallel	No	9
Area N-29	LC	24	130	-	-	-	130	300	CR 3	Gravel Crossing	No- single lane flagged	8
Area N-30	LC	729	235	LC	730	250	242.5	1000	CR 52/Richards Lake	Gravel	No- single lane flagged	25
Area N-31	LC	729	235	LC	730	250	242.5	1600	CR 52/Richards Lake	Parallel	No	8
Area N-32	LC	729	235	LC	730	250	242.5	300	CR 52/Richards Lake	Gravel Crossing	No- single lane flagged	8
Area N-33	LC	729	235	LC	730	250	242.5	6000	CR 52/Richards Lake	Parallel	No	30

Table 2- Poudre Intake Annual Average Daily Traffic (ADT)

	Traffic Station 1 Type	Traffic Station 1	Traffic Count 1	Traffic Station 2 Type	Traffic Station 2	Traffic Count 2	Traffic Count Used	Approx. Length (ft)	Street Impacted	Type of Impact	Closure Required?	Estimated Duration (Days)
Area P-1	CDOT	100637	31000	CDOT	100638	40000	35500	400	Mulberry	Trenchless Crossing	No	13
Area P-2	CDOT	100638	40000	-	-	-	40000	3000	Mulberry	Parallel	No	30
Area P-3	LC	192	4500	-	-	-	4500	300	Timberline	Trenchless Crossing	No	10
Area P-4	LC	134	2200	-	-	-	2200	300	Summit View	Trenchless Crossing	No	10
Area P-5	CDOT	101036	63000	-	-	-	63000	800	I-25	Trenchless Crossing	No	27
Area P-6	LC	671	1600	LC	672	2100	1850	300	Prospect	Trenchless Crossing	No	10
Area P-7	LC	418	2500	-	-	-	2500	300	CR 5	Trenchless Crossing	No	10
Area P-8	LC	67	1800	-	-	-	1800	300	CR 42 E	Trenchless Crossing	No	10

Table 3- Poudre Intake Annual Average Daily Traffic (ADT)

	Traffic Station 1 Type	Traffic Station 1	Traffic Count 1	Traffic Station 2 Type	Traffic Station 2	Traffic Count 2	Traffic Count Used	Approx. Length (ft)	Street Impacted	Type of Impact	Closure Required?	Estimated Duration (Days)
Area P/G R-1	CDOT	014B	3000	-	-	-	3000	5000	HW 287	Parallel	No	25
Area P/G R-2	CDOT	014B	3000	-	-	-	3000	300	HW 287	Trenchless Crossing	No	10
Area P/G R-3	CDOT	014B	3000	-	-	-	3000	500	HW 287	Parallel	No	2.5

Table 4- County Line Annual Average Daily Traffic (ADT)

Work Area	Station 1	ADT 1	Station 2	ADT 2	Average Traffic Count	Trenchless Crossings (paved)	Open-Cut Crossings (gravel)	Duration (days)
C-1	983	210	982	500	355	1. Trenchless crossing 2,640-feet north of CR 48 across CR 1 2. Trenchless crossing 1,780-feet north of CR 48 across CR 1 3. Trenchless crossing across CR 48 at the intersection with CR 1	0	117
C-2	981	500	980	475	488	1. Trenchless crossing across Hwy 14 at the intersection with CR 1	0	39
C-3	979	550	978	325	438	1. Trenchless crossing across CR 44 at the intersection with CR 1	0	39
C-4	977	650	1138	275	463	1. Trenchless crossing across Wildwing Dr. at CR 1 2. Trenchless crossing 2,375-feet north of WCR 78 across CR 1	1. Open-cut crossing across WCR 78	78
C-5	1138	275	1200	2000	1138	1. Trenchless crossing diagonally across the intersection of LCR 40 and CR 1 2. Trenchless crossing diagonally across the intersection of LCR 38 and CR 1 3. Trenchless crossing under railroad 6,500 feet south of LCR 38 4. Trenchless crossing 1,350-feet north of LCR 32E across CR 1 5. Trenchless crossing across LCR 32E at the intersection with CR 1	0	195
C-6	1200	2000	1199	1500	1750	0	0	15

MEMORANDUM

C-7	1199	1500	976	4500	3000	1. Trenchless crossing across Hwy 392	0	39
C-8	976	4500	1203	4700	4600	1. Trenchless crossing 1,900 feet south of Hwy 392 across CR 2. Trenchless crossing across Steeplechase Dr 3. Trenchless crossing across Bounty Dr 4. Trenchless crossing across WCR 62	1. Open-cut crossing across WCR 64	156
C-9	1203	4700	975	4800	4750	1. Trenchless crossing 2,530 feet south of WCR 62 across CR 1 2. Trenchless crossing 4,590 feet south of WCR 62 across CR 1	1. Open-cut crossing beneath WCR 60	78
C-10	975	4800	CDOT traffic count	2200	3500	1. Trenchless crossing across Hwy 34 2. Trenchless crossing 400 feet south of Hwy 34 3. Trenchless crossing 800 feet south of Hwy 34 under railroad 4. Trenchless crossing 2,800 feet south of Hwy 34 under railroad 5. Trenchless crossing under railroad at CR 20C 6. Trenchless crossing 6,000 feet south of Hwy 34 across CR1 7. Trenchless diagonal crossing across LCR 18 8. Trenchless crossing across LCR 16 9. Trenchless crossing north of LCR 14 and CR 1 across CR1	0	351