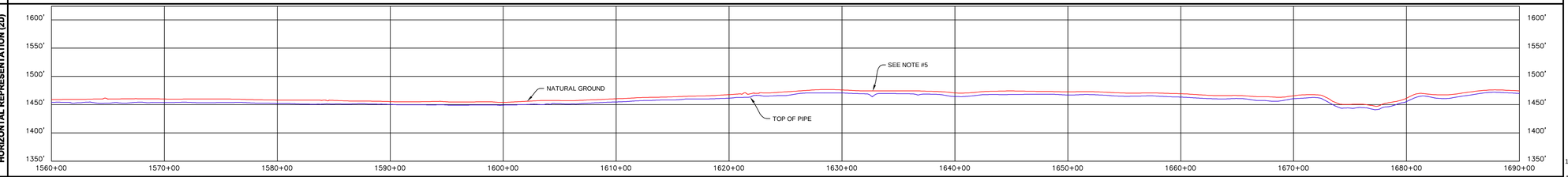
| RIGHT-OF-WAY HORIZONTAL REPRESENTATION (2D) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TRACT NUMBER | 1560+00 | ML-SD-CK-0658.0000 | RD-SD-CK-0658.0000 17ORD STREET | ML-SD-CK-0659.0000 | RD-SD-CK-0659.0000 414TH AVENUE | ML-SD-CK-0660.0000 | 1594+38 | ML-SD-CK-0661.0000 | RD-SD-CK-0661.0000 174TH STREET | ML-SD-CK-0662.0000 | 1647+79 | ML-SD-CK-0663.0000 | RD-SD-CK-0663.0000 179TH STREET | ML-SD-CK-0664.0000 | 1690+00 |
| OWNERSHIP/AGENCY | | | | | | | | | | | | | | | |
| LENGTH | | | 1564+69 | | | 1584+15 | | | | 1621+32 | | | | 1674+39 | |
| APPLICABLE DWG. NO. | | | | | | | | | | | | | | | |
| LAND USE | | | | | | | | | | | | | | | |

## PIPELINE PROFILE

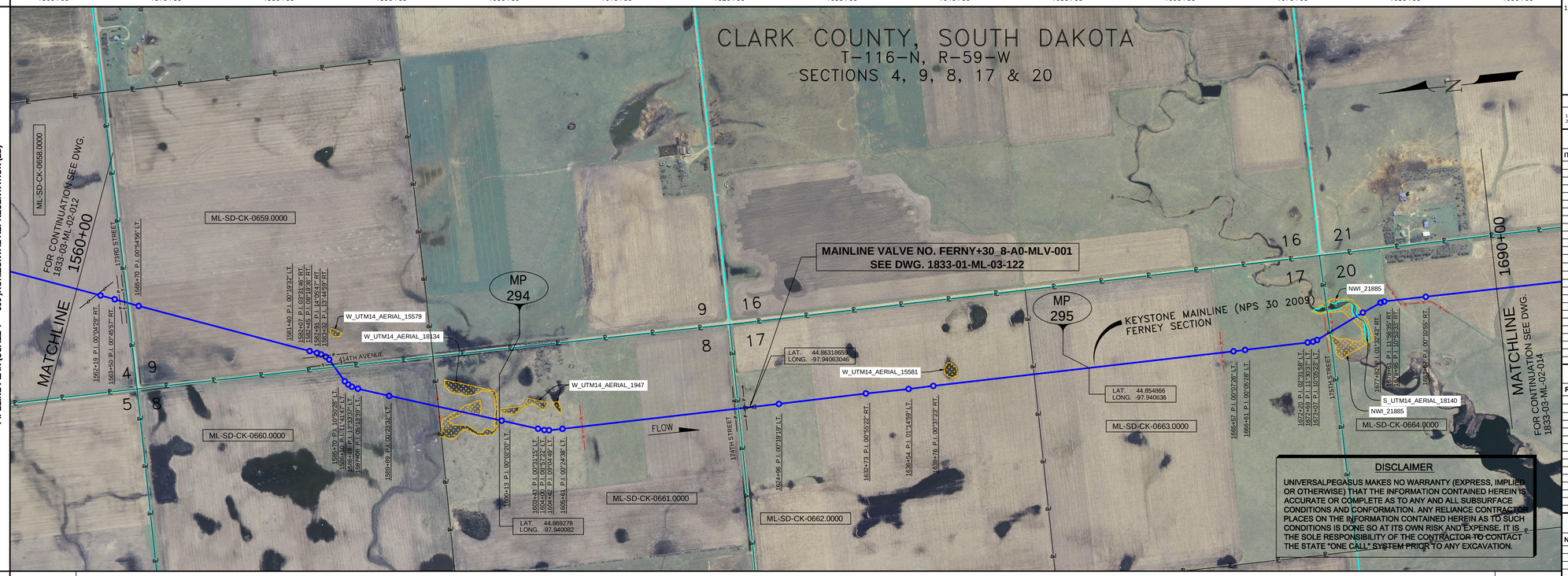
HORIZ. 1"=500' VER. 1"=100'
HORIZONTAL REPRESENTATION (2D)




## LEGEND

- KEYSTONE PIPELINE
- STATE BOUNDARY
- COUNTY/TOWNSHIP
- SECTIONS
- NATIONAL OR STATE RESERVATION BOUNDARY
- PROPERTY LINE
- FENCE
- EXCLUSIONARY FENCE
- POWER LINE
- TELEPHONE LINE
- BURIED CABLE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER / DRAIN
- FOREIGN PIPELINE
- RAILROAD
- HIGHWAY / ROAD
- STREAM / DITCH
- WETLAND
- INTERSTATE ROUTE
- U.S. ROUTE
- STATE ROUTE
- POINT OF INTERSECTION (PI)
- MP 95 PIPELINE MILEPOST
- DIRECTION OF FLOW
- HOUSE
- B BUILDING
- W WATER WELL
- MAINLINE VALVE
- ML-XX-XX-0000.0000 TRACT NUMBER

## PIPELINE PLAN (SCALE 1" = 500')HORIZONTAL REPRESENTATION (2D)

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## PIPELINE SCHEMATIC

- HEAVY-WALL PIPE
- WELD FITTING
- TRANSITION PIECE
- CASING PIPE
- CONCRETE COATING
- (3) SET-ON WEIGHTS
- PIPELINE WARNING SIGN
- PIPELINE MARKER
- MATERIAL ITEM
- GM GROUNDING MAT
- ZINC RIBBON
- AM AERIAL MARKER
- CATHODIC TEST STATION
- MAINLINE VALVE
- CHECK VALVE
- O.C. OPEN CUT
- BR. BORE
- D DRINKING WATER USA
- E ECOLOGICAL USA
- H HIGHLY POPULATED AREA
- K OPERATOR (KEYSTONE) DEFINED
- O OTHER POPULATED AREA
- S SOURCE WATER PROTECTION AREA
- W WELLHEAD PROTECTION AREA

## STATION/DESCRIPTION

### HORIZONTAL STATIONS (2D)

MATCHLINE 1560+00; 1561+90 12" NORTHERN PIPELINE GAS; 1562+19 P.I. 00°04'29" RT.; 1563+50 P.I. 00°45'57" RT.; 1563+97 UNDERGROUND POWERLINE; 1564+40 TELEPHONE LINE; 1564+58 EDGE OF ROAD; 1564+69 CL 17ORD STREET; 1564+80 EDGE OF ROAD; 1565+70 P.I. 00°54'56" LT.; 1581+49 P.I. 00°19'32" LT.; 1582+07 P.I. 03°31'46" RT.; 1582+45 P.I. 08°19'36" RT.; 1582+77 UNDERGROUND POWERLINE; 1582+91 P.I. 14°05'47" RT.; 1583+32 P.I. 13°44'59" RT.; 1583+84 TELEPHONE LINE; 1584+04 EDGE OF ROAD; 1584+15 CL 414TH AVENUE; 1584+26 EDGE OF ROAD; 1585+70 P.I. 10°50'28" LT.; 1586+48 P.I. 13°33'37" LT.; 1586+49 P.I. 00°23'32" LT.; 1589+49 P.I. 00°23'32" LT.; 1589+89 P.I. 00°23'32" LT.; 1594+37 FENCE (BARBED WIRE); 1600+13 P.I. 00°02'20" LT.; 1602+43 P.I. 00°21'15" LT.; 1604+00 P.I. 00°57'22" LT.; 1604+42 P.I. 00°04'49" LT.; 1605+61 P.I. 00°24'38" LT.; 1607+38 FENCE (BARBED WIRE); 1621+03 OVERHEAD POWERLINE; 1621+22 EDGE OF ROAD; 1621+32 CL 174TH STREET; 1621+41 EDGE OF ROAD; 1621+91 UNDERGROUND POWERLINE; 1622+35 FERNY+30_8-A0-MLV-001; 1624+06 P.I. 00°19'19" LT.; 1632+73 P.I. 00°55'22" RT.; 1635+54 P.I. 01°14'59" LT.; 1638+76 P.I. 00°27'23" RT.; 1664+56 FENCE (BARBED WIRE); 1665+57 P.I. 00°07'26" LT.; 1666+61 P.I. 00°05'28" LT.; 1672+20 P.I. 02°31'58" LT.; 1672+50 P.I. 11°36'32" LT.; 1672+60 P.I. 11°36'32" LT.; 1674+02 FENCE (BARBED WIRE); 1674+35 EDGE OF ROAD; 1674+45 CL 179TH STREET; 1674+55 EDGE OF ROAD; 1677+84 WATER EDGE; 1679+61 P.I. 11°56'35" RT.; 1679+66 P.I. 10°53'33" RT.; 1681+14 FENCE (BARBED WIRE); 1683+67 P.I. 00°10'55" RT.; MATCHLINE 1690+00

### SLOPE STATIONS (3D)

MATCHLINE 1561+07; 1562+90 12" NORTHERN PIPELINE GAS; 1562+28 3.0' CVR. (ABOVE) 3.0' CLR. (ABOVE); 1564+57 P.I. 00°45'57" RT.; 1565+03 UNDERGROUND POWERLINE; 1565+47 TELEPHONE LINE 7.0' CVR. (ABOVE) 3.0' CLR. (ABOVE); 1565+66 CL 17ORD STREET; 1566+87 EDGE OF ROAD; 1566+27 P.I. 00°54'56" LT.; 1568+38 6.9' CVR.; 1574+01 6.5' CVR.; 1581+49 P.I. 00°19'32" LT.; 1582+14 P.I. 03°31'46" RT.; 1582+52 P.I. 08°19'36" RT.; 1582+94 UNDERGROUND POWERLINE; 1583+99 P.I. 14°05'47" RT.; 1584+40 P.I. 13°44'59" RT.; 1584+91 TELEPHONE LINE 11.0' CVR.; 1585+12 EDGE OF ROAD; 1585+22 CL 414TH AVENUE; 1585+32 EDGE OF ROAD; 1586+78 P.I. 10°50'28" LT.; 1586+94 P.I. 13°33'37" LT.; 1587+49 P.I. 13°33'37" LT.; 1588+14 P.I. 00°13'39" LT.; 1590+98 P.I. 00°23'32" LT.; 1596+46 FENCE (BARBED WIRE); 1600+76 4.7' CVR.; 1601+04 M.P. 294; 1601+29 P.I. 00°02'20" LT.; 1603+53 P.I. 00°21'15" LT.; 1605+10 P.I. 00°57'22" LT.; 1605+52 P.I. 00°04'49" LT.; 1606+72 P.I. 00°24'38" LT.; 1608+49 FENCE (BARBED WIRE); 1622+03 OVERHEAD POWERLINE; 1622+12 0.4' CVR. POWERLINE HT = 25'; 1622+22 EDGE OF ROAD; 1622+34 CL 174TH STREET; 1622+45 EDGE OF ROAD; 1622+79 5.2' CVR.; 1623+03 UNDERGROUND POWERLINE; 1623+47 FERNY+30_8-A0-MLV-001; 1625+70 6.0' CVR.; 1626+07 P.I. 00°19'19" LT.; 1633+85 P.I. 00°55'22" RT.; 1636+26 5.6' CVR.; 1637+67 P.I. 01°14'59" LT.; 1638+88 P.I. 00°27'23" RT.; 1648+52 5.3' CVR.; 1653+84 M.P. 295; 1665+69 FENCE (BARBED WIRE); 1666+71 P.I. 00°07'26" LT.; 1667+75 P.I. 00°05'28" LT.; 1670+01 6.2' CVR.; 1672+38 P.I. 02°31'58" LT.; 1672+50 P.I. 11°36'32" LT.; 1672+65 P.I. 11°36'32" LT.; 1675+19 FENCE (BARBED WIRE); 1675+24 EDGE OF ROAD; 1675+35 CL 179TH STREET; 1675+45 EDGE OF ROAD; 1675+55 FENCE (BARBED WIRE); 1677+84 WATER EDGE; 1677+89 CL CREEK; 1678+41 P.I. 11°56'35" RT.; 1678+46 P.I. 10°53'33" RT.; 1679+96 P.I. 10°53'33" RT.; 1681+14 FENCE (BARBED WIRE); 1683+67 P.I. 00°10'55" RT.; 1685+05 5.8' CVR.; MATCHLINE 1691+20

### PIPE SLOPE REPRESENTATION (2D)

1561+07; (2) 420' FBE; 1562+44; (10); 1563+47; 1565+27; (3) 82' FBE & ARO BR.; 1566+09; 1567+21; (94); (2) 1,850' FBE; 1581+84; 1584+59; (3) 120' FBE & ARO BR.; 1585+79; 1596+45; (2) 3,624' FBE; 1608+49; 1622+03; (3) 79' FBE & ARO BR.; 1622+82; (6) 52' FBE; 1623+34; FOR VALVE ASSEMBLY MATERIAL SEE DWG. 1833-01-ML-03-122; (419) 26'; 1623+60; (6) 73' FBE; 1624+33; (2) 5,084' FBE; 1665+70; 1675+17; (3) 80' FBE & ARO O.C.; 1675+97; 1676+00; 1676+48; 1677+15; 1678+84; 1680+03; 1682+33; (2) 1,523' FBE; 1691+20

TYPE 'F2'

### CPS (3D)

TEST SECTION 38-1
ILTO-025-2010

### TEST SECTIONS (3D)

### ENVIRONMENTAL MITIGATION/RECLAMATION STATIONS (2D)

- TOPSOIL SALVAGE METHOD
- STREAMS
- WETLANDS
- TIMING CONSTRAINTS
- **STATIONS**
- MONITORING
- RECLAMATION
- SPECIAL CONSIDERATIONS

## GENERAL NOTES

1) ALL CHAINAGES ARE IN FEET UNLESS OTHERWISE SPECIFIED.

2) DATUM ELEVATION AND PROJECTION ARE BASED ON MEAN SEA LEVEL AND NAD 83.

3) FIELD PIPE LOCATING REQUIRED TO DETERMINE PLACEMENT OF PIPELINE WITHIN PERMANENT EASEMENT.

4) UNLESS OTHERWISE NOTED, 48 INCHES MINIMUM COVER EXCEPT 36 INCHES IN AREAS OF CONSOLIDATED ROCK.

5) NO ACTUAL AS-BUILT GROUND SHOTS WERE TAKEN AT THIS LOCATION. THE PROFILE REPRESENTS A PROJECTION FROM SHOTS TAKEN AT 150' TO 250' INTERVALS.

6) THE TYPE OF COATING APPLIED TO THE FIELD WELDS DURING THE ORIGINAL CONSTRUCTION WAS TWO COMPONENT LIQUID EPOXY. THE COATING PRODUCTS USED WERE DENSO 7200 OR SPC SP-2888.

7) THE SUBSTANTIAL CONSTRUCTION COMPLETION DATE, BASED ON CALIPER PIG RUN, WAS OCTOBER 08, 2009 FOR M.P. 259.21 TO M.P. 301.75 AND OCTOBER 10, 2009 FOR M.P. 301.75 TO M.P. 343.98.

8) ORIGINAL IN-SERVICE DATE OF THE KEYSTONE PIPELINE (PHASE 1): JUNE 30, 2010.

9) CPS CALCULATION DATE: MAY 2010.

10) ORION STATION SERIES NUMBER: 1182700.

11) TO DETERMINE THE MILE POST AT A GIVEN LOCATION, ADD THE 3D STATION NUMBER FROM THIS SEGMENT TO STATION NUMBER 13922+16 AND DIVIDE BY 5280.

## OPERATING AND TEST PRESSURE

1. THE MAXIMUM OPERATING PRESSURE (MOP) IS 1440 PSIG.
2. THE MINIMUM TEST PRESSURE WAS 1801 PSIG.

## BILL OF MATERIALS (3D)

| ITEM NO. | DESCRIPTION | QUANTITY |
|---|---|---|
| 2 | 30" O.D. X 0.386" W.T., API -5LX-70 W/FBE COATING | 12,501' |
| 3 | 30" O.D. X 0.516" W.T., API -5LX-70 W/FBE COATING & ABRASION RESISTANT OVERCOAT | 361' |
| 6 | 30" O.D. X 0.429" W.T., API -5LX-70 W/FBE COATING | 125' |
| 418 | MAINLINE VALVE ASSEMBLY, FERNY+30_8-A0-MLV-001 (+26') | 1 EA |
| | PIPELINE MARKERS | 0 EA |
| | PIPELINE WARNING SIGNS | 12 EA |
| | CATHODIC TEST STATION | 5 EA |
| | AERIAL MARKER | 1 EA |

## REFERENCE DRAWINGS

| REF. NO. | DRAWING NO. | REV. NO. | DRAWING TITLE |
|---|---|---|---|
| 418 | 1833-01-ML-03-122 | 3 | MAINLINE VALVE |
| | | | FERNY+30_8-A0-MLV-001 |
| | 1833-01-ML-03-123 | 0 | MAINLINE VALVE |
| | | | FERNY+30_8-A0-MLV-001 |

## REVISIONS

| NO. | DATE | REV. BY | CHCK BY | APPRD BY | ENV. APPRD | DESCRIPTION |
|---|---|---|---|---|---|---|
| 1 | 5/12/08 | UEI | RDG | LAG | SEC | ISSUED FOR CONSTRUCTION |
| 2 | 10/12/08 | UEI | | | | ISSUED FOR AS-BUILT |
| | | | | | | 1833-03-ML-02-013 |
| | | | | | | REPLACES COVERAGE OF |
| | | | | | | IFC DRAWINGS |
| | | | | | | 1833-03-ML-02-020, |
| | | | | | | 1833-03-ML-02-021, |
| | | | | | | 1833-03-ML-02-022 |

## ENGINEERING RECORDS

| | INITIAL | DATE | | INITIAL | DATE |
|---|---|---|---|---|---|
| DRAWN BY | UEI | 10/02/08 | ENV. APPRD. | | |
| CHECKED BY | | | APPRD. BY | | |
| | | | COMPANY APPROVED | | |

## PROFESSIONAL ENGINEER

| NAME | STATE | LIC# | REV# | DATE |
|---|---|---|---|---|
| LOYS ALVIN GRAY, III | SD | CE9004 | | |

SCALE: 0 125 250 500 Feet

TransCanada — In business to deliver

UNIVERSAL PEGASUS INTERNATIONAL

KEYSTONE MAINLINE (NPS 30 2009) FERNEY SECTION

| FIA# | SPREAD | DISCIPLINE |
|---|---|---|
| 1833 | SPREAD 3B | DISCIPLINE 03 |

# AS-BUILT ALIGNMENT

M.P. 293.24 TO M.P. 295.71

SHEET 13 OF 20 SHEETS

STA. 1561+07 TO STA. 1691+20 (3D)

DRAWING NO. 1833-03-ML-02-013 REV. 2