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April 29, 2016

Alan Rathbun- Director of Pipeline Safety Program
State of Washington Utilities and Transportation Commission
1300 S. Evergreen Park Dr. SW
P.O. Box 47250
Olympia, WA 98504-7250

RE: Docket PG-150120 – Response to March 22, 2016 WUTC Letter

Dear Mr. Rathbun:

In accordance with the Stipulated Agreement in Docket PG-150120 Cascade Natural Gas Corporation (CNGC) hereby submits its Maximum Allowable Operating Pressure (MAOP) Determination & Validation Plan. This plan outlines how CNGC will collect validation information, prioritize, and schedule steps to confirm the MAOP for referenced high pressure distribution and transmission pipelines in Washington.

If there are any questions regarding this submission please contact Jeremy Ogden at (509) 734-4509.

Sincerely,

Eric Martuscelli
Vice President, Operations
Cascade Natural Gas Corporation

Cascade Natural Gas Corporation

MAOP Determination & Validation Plan

in accordance with

Stipulated Agreement in Docket No. PG-150120

Cascade Natural Gas Corporation (Cascade) has prepared a Maximum Allowable Operating Pressure (MAOP) Determination & Validation Plan for all high pressure (HP) distribution and transmission pipelines in the State of Washington. HP distribution is defined as having an MAOP greater than 60 psig which produces a hoop stress less than 20% Specified Minimum Yield Strength (SMYS). The purpose of this plan is to determine and validate the MAOP of all HP distribution and transmission pipelines for which there is insufficient documentation to confirm the current MAOP. This MAOP Validation Plan consists of the following elements:

1. Summary of all HP distribution and transmission pipelines with data currently insufficient to demonstrate and confirm MAOP
2. Determination of MAOP for each segment of pipeline
3. Process that Cascade will use to validate data to calculate hoop stress for unknown pipe
4. Action plan for each pipeline segment
5. Rationale describing prioritization of each action plan
6. Process for corrective actions and updates to plan
7. Schedule listing time frames for completion of action plan for each pipeline segment

Critical information that can validate MAOP includes, but is not limited to, pipeline diameter, wall thickness, pipe grade (i.e. X52), pressure rating of fitting, longitudinal seam type, pressure test records, and as-built records.

Summary of HP Distribution and Transmission Pipelines

Table 1 – Summary of HP Distribution and Transmission Pipelines with Insufficient Data lists the HP distribution and transmission pipeline segments with data currently insufficient to demonstrate and confirm MAOP. This table also includes the MAOP, pipeline segment description, installation year, pipe diameter, pipe wall thickness, pipe grade, test pressure, % Specified Minimum Yield Strength (SMYS), critical missing information, and action plan. Information for this table was gathered through a comprehensive review of all of Cascade's available records. Critical missing information (wall thickness, pipe grade, pressure test) is highlighted in this table. Values shown in yellow highlighted fields indicate that Cascade has assumed the most stringent criteria for missing values.

If assuming the most stringent criteria resulted in a pipeline segment operating with a hoop stress of 20% SMYS or greater, that pipeline segment was reclassified as transmission and incorporated into Cascade's Transmission Integrity Management Program (TIMP) and was placed on a semiannual leak survey schedule. Additionally, these pipeline segments will have baseline assessments completed by February 2, 2018. Table 2 – Pipeline Segments Reclassified as Transmission lists the pipeline segments that were reclassified as transmission.

In some instances, assuming the most stringent criteria for missing information resulted in a pre-code pipeline segment operating at greater than 30% SMYS. Those pipelines segments, and the justification for the corresponding action plan, are described below.

1. 8" Bellingham HP Line #1 – Testing up to this point indicates that this pipeline has a yield strength of 46,000 psi. This results in the pipeline operating at 18.9% SMYS, rather than 36.3% SMYS. Additionally, lowering the pressure to 20% below MAOP (288 psig) will result in Cascade not being able to supply gas to all customers. For these reasons, Cascade does not feel that it is prudent to lower the operating pressure and has made this pipeline one of the highest priorities.
2. 8" Central Whatcom HP Line #3 – The current operating pressure is more than 20% below MAOP. Cascade does not plan to lower pressure further and has made this pipeline one of the higher priorities.
3. 8" Lake Terrell Road Transmission Line #9 – Pipeline is connected to 8" Central Whatcom HP Line, and the current operating pressure is more than 20% below MAOP. Additionally, Cascade's as-built documents for this pipeline call this pipe out as Grade B, which will result in the pipeline operating at 24.91% SMYS. This pipeline is currently operating as transmission and will continue to remain so. Cascade does not plan to lower pressure further and has made this pipeline one of the higher priorities.
4. 8" & 12" Bremerton Line #2 – Testing up to this point indicates that this pipeline has a yield strength of 46,000 psi and was manufactured with a high-frequency weld process. This results in the pipeline operating at 24.9% SMYS. Additionally, lowering the operating pressure to 20% below MAOP will result in Cascade not being able to supply gas to all customers in the Bremerton District. For these reasons Cascade does not feel that it is prudent to lower the operating pressure and has made this pipeline one of the highest priorities.
5. 8" Anacortes HP Line #1 – Testing up to this point indicates that this pipeline has a yield strength of at least 42,000 psi and was manufactured with a high frequency weld process. This results in the pipeline operating at 19.7% SMYS. For these reasons Cascade does not feel that it is prudent to lower the operating pressure and has made this pipeline one of the highest priorities.
6. 8" March Point HP Line #2 – Cascade will fabricate a regulator station and modify set points on the existing regulator station feeding this pipeline to lower the operating pressure to 20% below MAOP and meet customer demands. The lower operating pressure will result in the pipeline operating at 27.53% SMYS. In situ testing on this pipeline is Cascade's highest priority and will be performed in 2016.

Table 3 – Branch Lines with Insufficient Data lists the validated pipelines which have branch lines with data currently insufficient to determine and confirm MAOP. All of these branch lines will be pressure tested or replaced. Additionally, all HP services that are determined to have insufficient data to validate MAOP will be pressure tested or replaced.

Determination of MAOP

Table 4 – Pre-Code Pipelines with Pressure Test lists the pre-code pipelines with unknown characteristics whose current MAOP is based on a pressure test. Missing information, such as pipe grade or wall thickness, will be obtained through testing.

Table 5 – Pre-Code Pipelines without Pressure Test lists the pre-code pipelines with unknown characteristics that do not have a pressure test as the basis of determination of current MAOP. While

there are varying degrees of preliminary and partial documentation for some of these pipelines, Cascade does not have operating records from 1965-1970 as described in 49 CFR 192.619(a)(3).

In all but one instance – Bremerton Line 2 in Table 4 – the current MAOP is less than the most conservative design pressure calculated as prescribed in 49 CFR 192.105. In this instance, the assumed yield strength based on the most stringent criteria results in a design pressure lower than the MAOP. However, the pipeline has pressure test records and test results giving a preliminary indication that the yield strength is greater than the most stringent criteria.

Processes to Validate Data

In addition to gathering information through a comprehensive review of all available records, Cascade's plan will include gathering and validating data from pipelines in service. Methods that will be employed may include but are not limited to:

1. Measuring pipe wall thickness with Ultrasonic Thickness (UT) gauge
2. Validating pipe grade and/or longitudinal seam type through mechanical testing of samples at an accredited materials testing laboratory in accordance with 49 CFR 192.107
3. Validating pipe grade by non-destructive in situ testing as described in a letter to the Washington Utilities and Transportation Commission (UTC) on June 2, 2015
4. Confirming pipe diameter through field measurements
5. Pressure testing
6. Exposing rated fittings to validate pressure rating

As information is collected the records will be stored in accordance with WAC-480-90-228 and 480-90-999. Any process considered to validate data not listed above will be submitted to the UTC for review prior to use. Any new or innovative processes for validating pipe characteristics shall be submitted to the Commission for review.

Cascade has contracted with Parametrix, Inc. (Parametrix) to perform a statistical analysis of all pipeline segments with missing pipe grade and to determine the number of sampling points that will be required to validate pipe grade. This analysis will be conducted in accordance with 49 CFR 192 Appendix B – Qualification of Pipe. Parametrix will also work with Cascade's Engineering Services to identify the testing locations. Parametrix has completed the analysis for pipelines in Cascade's Bellingham and Mt. Vernon districts, and those results have been used to estimate the number of sampling points that will be required on pipelines in other districts until the analysis in the remaining districts is completed in 2016.

Cascade has also contracted ABI Services, LLC (ABI), located in Oak Ridge, Tennessee, to perform in situ testing at the determined locations. Information describing their testing process was sent to the UTC on June 2, 2015, and approval of this testing method was received on January 12, 2016. Das-Co of Idaho, Inc. will be the excavation contractor used for the in situ testing. Cascade has coordinated with above contractors to begin work the week of July 11, 2016.

Pressure Testing

In instances where pressure testing is required, Cascade's primary consideration is to isolate the pipeline and perform the pressure test. Test medium, pressure and duration will be based on current Cascade procedures. After completion of a successful pressure test, the pipeline will be put back into service.

In situations where isolation is not feasible due to factors such as customer loads or single feed systems, or construction constraints make replacement impractical, Cascade's secondary consideration is to pressure test an in-service pipeline. Cascade will consider two options for pressure testing an in-service pipeline. The first option is to use the current operating pressure as a test pressure. If it is determined that customer demands can be met by lowering the operating pressure by one third, Cascade will consider using the current operating pressure as a test pressure. A pressure recording device will be connected to the pipeline to record the pressure, and the pipeline will be leak surveyed. Test pressure, duration, and leak surveys will be performed as necessary to ensure discovery of all potentially hazardous leaks in the segment being tested. This is similar to Method 2 in the April 8, 2016 NPRM for transmission lines.

To establish the current operating pressure as MAOP, the second option for in-service pressure testing will be used. The process for this option is as follows:

1. A pressure recording device will be installed to monitor the pressure during the incremental increases
2. A leak survey will be performed at the current operating pressure
3. Operating pressure will be increased (in 10 psig increments or 25% of the total pressure increase, whichever produces the fewer number of increments)
4. Leak survey will be performed after each incremental pressure increase
5. When test pressure is reached, it will be held per Cascade procedures and engineering specifications
6. Final leak survey will be performed
7. Pressure will be reduced to at or below newly established MAOP

It is not Cascade's intent to use this method to increase the current MAOP, but to establish the current operating pressure, which Cascade has been using for decades, as MAOP.

All proposed pressure testing options meet Subpart J requirements.

Action Plan

Cascade has reviewed each segment of HP pipeline and identified those segments with missing critical information. Table 1 contains the pipelines by district and the overall action plans for each. The time frames for completion of each action plan are shown in Table 6 - Schedule. Plans of action include replacement, pressure testing, lowering pressure, mechanical testing of samples, statistical analysis and in situ testing, uprating, and operating pipeline with assumptions.

Prioritization

Cascade has prepared a matrix to individually evaluate each segment of HP distribution and transmission pipeline with missing critical information. Components of the priority matrix, in descending order of weighting, are: % SMYS of pipe and fittings, available pressure test records, number of High Consequence Areas (HCAs) on a pipeline segment, class location, age of pipe (i.e. pre-code), and length of segment. The matrix produced a total prioritization score for each segment of pipeline, and pipelines were addressed in descending order of priority. In general, pre-code pipeline segments operating at greater than 30% SMYS without pressure test records were the highest priorities, with subsequent priorities influenced by the availability of pressure test records.

Process for Corrective Actions and Update to Plan

Cascade will continue to evaluate all current and future HP distribution and transmission pipelines on an ongoing basis to verify that critical information used to validate MAOP is known and to identify when immediate corrective actions are required. Existing pipelines will be evaluated annually by Cascade's Engineering Services group through the Distribution Integrity Management Plan (DIMP) and model. The plan and model will be reviewed annually to ensure that all information obtained as part of this MAOP Validation & Determination Plan is incorporated. Documentation for new pipelines will be audited by Cascade's Standards & Compliance group or Engineering Services group as construction of new pipelines is completed. If any critical information necessary to validate MAOP is discovered to be insufficient, corrective actions will be taken. Corrective actions include, but are not limited to, review of records as well as the processes used to validate data listed above.

Until a pipeline's characteristics can be verified, Cascade will assume the most stringent criteria for unknown pipe characteristics, as described in 49 CFR 192.107 & 109. If these assumptions result in a pipeline operating at 20% SMYS or greater, the pipeline will be leak surveyed two (2) times per calendar year and incorporated into Cascade's TIMP. For these pipelines, Cascade will perform a threat evaluation, and incorporate the pipe into risk and pipe assessments. Baseline assessments for all pipelines reclassified as transmission status shall be completed within three (3) years of reclassification.

When information is verified that results in a pipeline operating at a higher or lower % SMYS, changing classification from transmission to HP distribution, or other similar actions, this plan will be amended and updated. If an amendment to the plan is necessary, Cascade will submit the proposed amended plan to Commission Staff for review at least ninety (90) days prior to the time Cascade submits the amended plan to the Commission for formal approval.

Cascade will also submit to Commission Staff an annual status report on the progress in implementing this plan. The annual status report will be submitted by January 31 of each year. As part of the annual status report every aspect of the plan will be reviewed and the tables and schedule will be revised as required. Test results will be updated, as well as any resulting changes in priorities and schedule. If Cascade decides to accept the most stringent criteria as the final resolution for a particular line segment,

that will be included in an amended plan or annual status report and submitted to the Commission for approval.

Schedule

Table 6 – Time Frames for Completion provides the beginning and completion years for the action plans for each HP distribution and transmission pipeline segment with missing critical information. The priority matrix was the basis for the scheduling of action plans. Fifty percent of pipeline mileage will be addressed by 2018, and the remaining pipelines will be addressed by 2026. The schedule will be reviewed and revised with each annual update.

TABLES

Table 1 – Summary of HP Distribution and Transmission Pipelines

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Length (Ft.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Under Rated Fitting Present	Action Plan
Bellingham District												
1	8" Bellingham Transmission Line	380	Line 1-1	1956	8.625	15,086	0.188	24,000	No Test	36.32%	N/A	In situ test, isolate and pressure test, replace section on James St.
2	Bellingham H.P. Distribution System	150	fish-1	1956	8.625	16,475	0.188	24,000	No Test	14.34%	N/A	Replacement
			fish-2	1956	10.75	15,630	0.188	24,000	No Test	17.87%	N/A	Replacement
			10c1315	1958	4.5	927	0.156	24,000	No Test	9.01%	N/A	Replacement
			10c1559	1958	4.5	520	0.156	24,000	No Test	9.01%	N/A	Replacement
			10c3298	1960	4.5	1,448	0.156	24,000	No Test	9.01%	N/A	Replacement
			10c4799	1962	2.375	221	0.154	24,000	No Test	4.82%	N/A	Replacement
			10c5321	1963	2.375	1,505	0.154	24,000	No Test	4.82%	N/A	Replacement
			10c8241	1964	4.5	2,356	0.188	35,000	No Test	5.13%	N/A	Isolate and pressure test
			10c9683	1965	6.625	988	0.188	35,000	No Test	7.55%	N/A	Replacement
			11480-1	1966	6.625	1,577	0.188	35,000	No Test	7.55%	N/A	Replacement
			11480-2	1966	8.625	396	0.188	35,000	No Test	9.83%	N/A	Replacement
			10c9831	1966	2.375	1,309	0.154	24,000	No Test	4.82%	N/A	Replacement
			13150	1967	2.375	2,025	0.154	35,000	No Test	3.30%	N/A	Downrate to distribution pressure
			20564-1	1972	4.5	219	0.156	24,000	225	9.01%	N/A	Replacement
			20564-2	1972	6.625	113	0.188	24,000	225	11.01%	N/A	Replacement
			20752	1972	4.5	63	0.188	35,000	100	5.13%	N/A	Replacement
			21298	1973	4.5	12	0.188	35,000	No Test	5.13%	N/A	Replacement
3	8" Central Whatcom Transmission Line	380	14c1314	1957	8.625	57,437	0.188	24,000	No Test	36.32%	N/A	In situ test, isolate and pressure test
			40855 (Transition fittings)	1993	8.625	10,579	0.188	46,000	680	36.30%	N/A	In situ test fittings
4	4" South Lynden H.P. Line	250	Line 4-1	1961	4.5	35,441	0.156	24,000	No Test	15.02%	N/A	In situ test, in-service pressure test
8	2" Nooksack H.P. Distribution System	250	16C7000	1963	2.375	732	0.154	24,000	No Test	8.03%	N/A	In situ test, in-service pressure test
			20048	1972	2.375	737	0.154	35,000	300	5.51%	N/A	In-service pressure test
			20519	1972	2.375	490	0.154	35,000	300	5.51%	N/A	In-service pressure test
9	8" Lake Terrell Rd Transmission Line	380	18734-1	1965	8.625	10,314	0.188	24,000	569	36.32%	N/A	In situ test
10	16" N. Whatcom Transmission Line	600	18794	1971	16	143,907	0.250	52,000	926	36.92%	Yes	Expose and verify or replace plugs in vault
12	4" North Lynden H.P. Line	400	25773	1978	4.5	8,161	0.188	35,000	600	13.68%	Yes	Expose and verify or replace caps on Sav-a-Valves
21	16" Squalicum Transmission Segment	250	41508	1993	16	2,600	0.281	24,000	620	29.66%	N/A	In situ test
Aberdeen District												
1	8" Kitsap Line (Phase 1)	499	20C6308-3	1963	8.625	35,770	0.188	46,000	750	24.88%	Yes	Expose and verify or replace caps on Sav-a-Valves
3	4" McCleary H.P. Line	150	79C6323	1963	4.5	225	0.156	24,000	No Test	9.01%	N/A	Line retired as part of gate replacement project in 2015
8	4" Montesano H.P. Distribution System	135	77C6321	1964	4.5	1,645	0.188	35,000	No Test	4.62%	N/A	In-service pressure test
9	2" Elma Rendering Plant H.P. Line	150	78C7902-1	1964	2.375	5,280	0.154	35,000	No Test	3.30%	N/A	Isolate and pressure test, replace upstream section
			78C7902-2	1964	4.5	252	0.156	24,000	No Test	9.01%	N/A	Replacement
12	2" Elma (R.H.D.) H.P. Line	100	25775	1978	2.375	1,307	0.154	35,000	100	2.20%	N/A	Downrate to IP use existing 100 psi test
15	12" Kitsap H.P. Line	499	44000	1995	12.75	34,782	0.312	52,000	1080	19.61%	Yes	Expose and verify or replace caps on Sav-a-Valves
Bremerton District												
2	8" & 12" Bremerton Transmission Line	499	BremertonL2-1	1963	8.625	2,843	0.188	24,000	750	47.69%	N/A	In situ test
6	4" Olympic View H.P. Line	499	20387	1973	4.5	14,540	0.188	42,000	750	14.22%	Yes	Replace plugs on next valve maintenance
11	8" Bremerton H.P. Line	144	20C6316	1964	8.625	4,510	0.188	46,000	No Test	7.18%	N/A	In-service pressure test
			18522	1971	8.625	2,863	0.188	35,000	No Test	9.44%	N/A	
Mount Vernon District												
1	8" Anacortes Transmission Line	360	MTVL1-1	1957	8.625	102,813	0.188	24,000	No Test	34.41%	Yes	In situ test 11 miles, replace 9 miles, isolate and pressure test 8 of 11 miles that were in situ tested, lower pressure on last 2.25 miles, expose and verify line stopper fittings at V-3 valve station
			18191	1972	8.625	80	0.188	35,000	No Test	23.59%	N/A	Replacement
2	8" March Point Transmission Line	360	11C1144-1	1957	8.625	8,134	0.188	24,000	No Test	34.41%	N/A	In situ test, isolate and pressure test between V-4 and R-89, replace north of R-89.
			11C1144-2	1957	8.625	814	0.250	24,000	No Test	25.88%	N/A	In situ test, isolate and pressure test.
			11C5628	1963	8.625	285	0.188	24,000	No Test	34.41%	N/A	Replacement
3	Anacortes H.P. Distribution System	105	MTVL3-1	1956	6.625	5,102	0.188	24,000	No Test	7.71%	N/A	Replacement
			MTVL3-2	1956	8.625	4,675	0.188	24,000	No Test	10.04%	N/A	Replacement
			11C1491	1958	2.375	3	0.154	24,000	No Test	3.37%	N/A	Retire
			11C2330	1959	2.375	70	0.154	24,000	No Test	3.37%	N/A	Retire
			11C2626	1959	2.375	127	0.154	24,000	No Test	3.37%	N/A	Replacement
			09801	1966	2.375	112	0.154	24,000	No Test	3.37%	N/A	Replacement
			14373	1968	2.375	1	0.154	35,000	100	2.31%	N/A	Retire
			15973	1973	2.375	25	0.154	35,000	100	2.31%	N/A	Replacement
4	4" Mount Vernon H.P. Line	250	MTVL4-1	1957	4.5	23,760	0.156	24,000	400	15.02%	N/A	In situ test
5	3" Burlington H.P. Line	249	211220	1957	3.5	5,769	0.156	24,000	No Test	11.64%	N/A	Replacement
7	4" North Texas Rd H.P. Line	250	11C2775	1960	2.375	914	0.154	24,000	No Test	8.03%	N/A	Replacement
			29320	1981	2.375	83	0.154	35,000	100	5.51%	N/A	Replacement
8	4" Arlington H.P. Line	249	Fish 18C4272	1961	4.5	10,177	0.156	24,000	No Test	14.96%	N/A	Replacement
10	4" Sedro-Woolley H.P. Line	100	14788	1968	4.5	1,880	0.188	35,000	No Test	3.42%	N/A	In-service pressure test
12	6" North Oak Harbor H.P. Line	400	17206	1972	6.625	19,048	0.188	42,000	675	16.78%	Yes	Expose and verify fittings replace if needed
14	16" Fredonia Transmission Line	500	30636 (1) (Transition Fittings and Elbows)	1983	16	64,426	0.281	52,000	750	59.30%	N/A	Expose and in situ test
16	16" March Point Transmission Line	500	40000 (Transition Fittings and Elbows)	1992	16	43,344	0.281	52,000	750	59.30%	N/A	Expose and in situ test

Critical Missing Information

Post Code Missing Pressure test

Insufficient Test Pressure Recorded

Table 1 – Summary of HP Distribution and Transmission Pipelines

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Length (Ft.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Under Rated Fitting Present	Action Plan
Longview District												
1	Longview-Kelso Transmission Segments and H.P. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	23,205	0.250	24,000	400	26.56%	N/A	Replacement
			Pre-CNGC-L1-2	1957	4.5	4,964	0.156	24,000	392	15.02%	N/A	Operate assuming most stringent criteria
			82C8335-2	1965	2.375	521	0.154	24,000	No Test	8.03%	N/A	Replacement
			82C8335-3	1965	4.5	152	0.156	24,000	No Test	15.02%	N/A	Replacement
2	4" Kalama H.P. Line	300	28621	1980	12.75	990	0.250	52,000	No Test	12.26%	N/A	Isolate and pressure test
3	4" Dike Road H.P. Line (Longview)	80	24676	1976	4.5	8,234	0.188	35,000	No Test	10.26%	N/A	Replacement
7	12" South Longview H.P. Line	499	82C8335	1965	4.5	6,463	0.156	24,000	No Test	4.81%	N/A	Replacement
8	8" Kalama Transmission Line	300	43600 (1) (Transition Fittings)	1995	12.75	18,373	0.312	24,000	1080	42.50%	N/A	In situ test
			51820 (1)	1996	8.625	2,049	0.332	46,000	750	8.47%	N/A	In situ test
			51820 (2)	1997	8.625	6,577	0.188	24,000	750	28.67%	N/A	In situ test
			51820 (3)	1997	8.625	550	0.250	24,000	750	21.56%	N/A	In situ test
			51820 (4)	1997	8.625	550	0.250	46,000	750	11.25%	N/A	In situ test
Yakima (Sunnyside) District												
1	3" Sunnyside H.P. Line	200	Fish-L1-1	1956	3.5	4,494	0.156	24,000	No Test	9.35%	N/A	Replacement
			15420	1969	3.5	42	0.156	24,000	150	9.35%	N/A	Replacement
			21440	1973	4.5	58	0.188	35,000	No Test	6.84%	N/A	Replacement
2	2" South Sunnyside H.P. Line	200	42C2530	1959	2.375	4,018	0.154	24,000	No Test	6.43%	N/A	Replacement
3	4" Grandview H.P. Line	250	Fish-L2-1	1956	4.5	4,736	0.156	24,000	No Test	15.02%	N/A	Replacement occurred in 2015
4	3" Prosser H.P. Line	250	Yakima4-1	1956	3.5	5,832	0.156	24,000	No Test	11.69%	N/A	Extend Line #13 to gate and R-1, retire line
			47c8256	1964	4.5	309	0.188	35,000	No Test	8.55%	N/A	Extend Line #13 to gate and R-1, retire line
5	6" Toppenish-Zillah Transmission Line	400	YakimaLS-1	1956	6.625	32,566	0.188	24,000	No Test	29.37%	N/A	In situ test, in-service pressure test
6	3" Zillah H.P. Line	400	fish-L6-1	1956	3.5	873	0.156	24,000	No Test	18.70%	N/A	Replacement
7	4" Wapato H.P. Line	152	fish-L7-1	1956	4.5	33,284	0.156	24,000	No Test	9.13%	N/A	In situ test, in-service pressure test
8	3" South Toppenish H.P. Line	175	fish-L8-1	1956	3.5	6,161	0.156	24,000	No Test	8.18%	N/A	Replacement
9	3" Granger H.P. Line	175	fish-L9-1	1956	3.5	31,347	0.156	24,000	No Test	8.18%	N/A	Replacement
Yakima District												
1	8" Yakima H.P. Line	200	Fish_968	1956	8.625	3,032	0.188	24,000	No Test	19.12%	N/A	Replacement
			FISH_968_Lat_26	1956	8.625	695	0.500	24,000	No Test	7.19%		Replacement
			40C4357	1961	8.625	4,891	0.188	24,000	350	19.12%		In situ test
			20375	1973	8.625	1,585	0.250	46,000	No Test	7.50%		Retire or isolate and pressure test
Wenatchee District												
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	1957	6.625	509	0.188	24,000	No Test	18.35%	N/A	Replacement
			WenL1-2	1957	8.625	15,956	0.188	24,000	No Test	23.89%		Replacement
			29378	1981	8.625	30	0.188	35,000	No Test	16.38%		Replacement
			60390	1981	4.5	2,041	0.156	24,000	375	15.02%		In situ test
2	2" Wheeler H.P. Line	250	WenL2-2	1962	2.375	2,375	0.154	24,000	No Test	8.03%	Yes	Replacement
			58C5745	1962	2.375	179	0.154	24,000	No Test	8.03%		Replacement
3	4" Othello Transmission Segment and HP Line	400	59c7038	1963	4.5	62,441	0.188	25,000	390	19.15%	N/A	Replace 1.82 miles, isolate and pressure test remainder of line
			18998	1971	6.625	191	0.188	35,000	531	20.14%		UT for Wall thickness; if .188 replace, if greater isolate and pressure test
6	4" South Moses Lake H.P. Line	250	14455	1968	4.5	2,927	0.188	35,000	No Test	8.55%	N/A	Isolate and pressure test
12	6" Wenatchee H.P. Line	225	2912 fish	1956	6.625	31,812	0.188	24,000	No Test	16.52%	N/A	In situ test, in-service pressure test
Kennewick District												
1	8"Attalia Transmission Line	300	O1C4776	1958	8.625	78,449	0.188	24,000	No Test	28.67%	Yes	In situ testing, add second gate to loop system, isolate and pressure test, expose and verify fittings and replace fittings if needed
			54C2565	1959	2.375	2	0.154	24,000	No Test	9.64%	N/A	
			14375 (1)	1968	8.625	49	0.188	35,000	No Test	19.66%	Yes	
			14375 (2)	1968	12.75	183	0.250	35,000	No Test	21.86%	N/A	
			14375 (3)	1968	12.75	42	0.375	35,000	No Test	14.57%	N/A	
			14375 (4)	1968	12.75	25	0.330	35,000	No Test	16.56%	N/A	
			14375 (5)	1968	12.75	111	0.250	52,000	No Test	14.71%	N/A	
3	4" East Finley H.P. Line	250	12614	1967	4.5	2,498	0.188	35,000	No Test	8.55%	N/A	Isolate and pressure test
			16256	1969	2.375	365	0.154	24,000	No Test	8.03%	N/A	Replacement
4	Pasco H.P. Distribution System	300	KennL4-1	1960	4.5	10,125	0.156	24,000	450	18.03%	N/A	In situ test
5	4" Northwest Pasco H.P. Line	300	11097 (1)	1966	4.5	2,847	0.188	35,000	No Test	10.26%	N/A	Isolate and pressure test
6	4" Glade Road H.P. Line	150	11097 (2)	1966	4.5	2,052	0.188	35,000	No Test	5.13%	N/A	Isolate and pressure test
7	2" Burbank H.P. Line	158	12301	1967	2.375	3,520	0.154	35,000	100	3.48%	N/A	In-service pressure test
8	4" Finley H.P. Line	200	53C2527	1959	4.5	12,391	0.156	24,000	No Test	12.02%	N/A	In situ test, isolate and pressure test
11	4" Plymouth H.P. Line	400	28141,D0069144, 28330	1980	4.5	4,112	0.188	35,000	600	13.68%	Yes	Expose and verify fittings replace if needed
Walla Walla District												
1	8" Walla Walla H.P. Line	150	WWL1-1	1956	8.625	4,595	0.188	24,000	No Test	14.34%	N/A	In situ test, in-service pressure test
2	3" College Place H.P. Line	150	WWL2-1	1956	3.5	2,474	0.156	24,000	No Test	7.01%	N/A	Retire

Critical Missing Information

Post Code Missing Pressure test

Insufficient Test Pressure Recorded

Table 2 - Pipeline Segments Reclassified as Transmission

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	% SMYS
Bellingham District								
1	8" Bellingham Transmission Line	380	Line 1-1	1956	8.625	0.188	24,000	36.32%
3	8" Central Whatcom Transmission Line	380	14c1314	1957	8.625	0.188	24,000	36.32%
			40855 (Transition fittings)	1972	4.5	0.156	24,000	36.32%
21	16" Squalicum Transmission Segment	250	41508	1993	16	0.281	24,000	29.66%
Mount Vernon District								
1	8" Anacortes HP Line	360	MTVL1-1	1957	8.625	0.188	24,000	34.4%
			18191	1972	8.625	0.188	35,000	23.6%
2	8" March Point H.P. Line	360	11C1144	1957	8.625	0.188	24,000	34.4%
			11C1144	1957	8.625	0.25	24,000	25.9%
			11C56.28	1963	8.625	0.188	24,000	34.4%
Longview District								
1	Longview-Kelso H.P. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	0.25	24,000	26.6%
8	8" Kalama H.P. Line	300	51820(1)	1996	8.625	0.322	46,000	8.5%
			51820(2)	1997	8.625	0.188	24,000	28.7%
			51820(3)	1997	8.625	0.25	24,000	21.6%
			51820(4)	1997	8.625	0.25	46,000	11.3%
Yakima District (Sunnyside)								
5	6" Toppenish-Zillah H.P. Line	400	YakimaL5-1	1956	6.625	0.188	24,000	29.4%
Wenatchee District								
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	1957	6.625	0.188	24,000	18.4%
			WenL1-2	1957	8.625	0.188	24,000	23.9%
			60390	1981	4.5	0.156	24,000	15.0%
3	4" Othello Transmission Line	400	18998	1971	6.625	0.188	35,000	20.1%
Kennewick								
1	8"Attalia H.P. Line	300	O1C4776	1958	8.625	0.188	24,000	28.7%
			14375 (1)	1968	8.625	0.188	35,000	19.7%
			14375 (2)	1968	12.75	0.25	35,000	21.9%
			14375 (3)	1968	12.75	0.375	35,000	14.6%
			14375 (4)	1968	12.75	0.33	35,000	16.6%
			14375 (5)	1968	12.75	0.25	52,000	14.7%

Critical Missing Information

Table 3 - Branch Lines with Insufficient Data

HP Line #	HP Line Name	MAOP (psig)	Branch Segments	
			# HP Invalidated	# Transmission Invalidated
Bellingham District				
5	4" South Everson H.P. Line	250	6	0
6	4" Ferndale H.P. Line	380	2	0
10	16" N. Whatcom Transmission Line	600	24	4
11	8" Kickerville Transmission Line	600	1	1
14	4" Blaine H.P. Line	250	4	0
15	4" South Sumas H.P. Line	170	1	0
17	10" Squalicum H.P. Line	380	1	0
18	20" Ferndale Transmission Line	600	2	0
19	20" Sumas Transmission Line	780	4	0
20	8" South Kickerville Transmission Line	380	1	0
22	4" & 6" Bay Road H.P. Line	150	3	0
23	4" West Ferndale H.P. Line	250	1	0
Aberdeen District				
1	8" Kitsap Line	366/499	15	0
2	8" Grays Harbor H.P. Line	305	5	0
4	4" Elma H.P. Line	150	4	0
5	4" Shelton H.P. Line	155	10	0
6	6" Aberdeen H.P. Line	150	6	0
7	4" Montesano H.P. Line	305	2	0
10	4" South Elma H.P. Line	150	2	0
11	2" North Shelton H.P. Line	125	8	0
14	4" North Shelton H.P. Line	250	5	0
15	12" Kitsap HP Line	499	3	0
16	4" Satsop H.P. Line	305	1	0
Bremerton District				
1	8" Kitsap Line	366/499	10	0
3	8" West Bremerton H.P. Line	250	10	0
4	4" Port Orchard H.P. Line	170	11	0
5	2" Belfair H.P. Line	499	1	0
6	4" Olympic View H.P. Line	499	3	0
7	8" North Kitsap H.P. Line	250	133	0
8	6" Port Orchard H.P. Loop Line	170	2	0
9	6" Bangor H.P. Line	250	1	0
12	6" North Bremerton H.P. Line	250	1	0

Table 3 - Branch Lines with Insufficient Data

HP Line #	HP Line Name	MAOP (psig)	Branch Segments	
			# HP Invalidated	# Transmission Invalidated
Mount Vernon District				
9	4" La Conner H.P. Line	151	4	0
11	6" Whidbey Island H.P. Line	400	17	0
15	6" Mount Vernon H.P. Line	250	1	0
16	16" March Point Transmission Line	500	1	0
19	4" South Anacortes H.P. Line	250	4	0
20	6" North Anacortes H.P. Line	105	2	0
21	6" South Mount Vernon H.P. Line	250	2	0
22	12" Anacortes H.P. Line (Phase 1)	500	7	0
23	4" South Texas Rd H.P. Line	500	2	0
Longview District				
9	6" South Kalama H.P. Line	300	6	0
10	4" Woodland H.P. Line	150	5	0
Yakima (Sunnyside) District				
10	2" Sunnyside H.P. Line	200	3	0
11	4" West Sunnyside H.P. Line	200	3	0
12	4" East Toppenish H.P. Line	400	1	0
14	Sunnyside H.P. Distribution System	200	1	0
15	4" Sunnyside H.P. Line	200	3	0
Yakima District				
2	4" Selah H.P. Line	250	3	0
3	4" Moxee H.P. Line	250	2	0
Wenatchee District				
4	6" Quincy H.P. Line	250	4	0
5	6" South Moses Lake H.P. Line	250	2	0
7	4" Wheeler H.P. Loop Line	250	7	0
8	Wheeler H.P. Distribution System	250	1	0
14	6" North Moses Lake H.P. Line	250	3	0
16	4" N Wheeler HP Line	250	1	0
Kenneiwck District				
2	6"& 8" Richland H.P. Line	250	13	0
12	4" Paterson H.P. Line	300	1	0
15	4" East Port of Pasco H.P. Line	300	3	0
17	6"& 8" North Richland H.P. Line	250	4	0
18	6" West Richland H.P. Line	250	2	0

Table 4 - Pre-Code Pipelines with Pressure Test

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Length (Ft.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Design Pressure (psig)
Bellingham District											
9	8" Lake Terrell Rd Transmission Line	380	18734-1	1965	8.625	10,314	0.188	24,000	569	36.32%	419
Bremerton District											
2	8" & 12" Bremerton Transmission Line	499	BremertonL2-1	1963	8.625	2,843	0.188	24,000	750	47.69%	419
Mount Vernon District											
4	4" Mount Vernon H.P. Line	250	MTVL4-1	1957	4.5	23,760	0.156	24,000	400	15.02%	399
Longview District											
1	Longview-Kelso Transmission Segments and H.P.	250	Pre-CNGC-L1-1	1957	12.75	23,205	0.250	24,000	400	26.56%	301
	Distribution Line		Pre-CNGC-L1-2	1957	4.5	4,964	0.156	24,000	392	15.02%	499
Yakima District											
1	8" Yakima H.P. Line	200	40C4357	1961	8.625	4,891	0.188	24,000	350	19.12%	419
Kennewick District											
4	Pasco H.P. Distribution System	300	KennL4-1	1960	4.5	10,125	0.156	24,000	450	18.03%	499

Critical Missing Information

Table 5 - Pre-Code Pipelines without Pressure Test

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Length (Ft.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Design Pressure (psig)
Bellingham District											
1	8" Bellingham Transmission Line	380	Line 1-1	1956	8.625	15,086	0.188	24,000	No Test	36.32%	419
2	Bellingham H.P. Distribution System	150	fish-1	1956	8.625	16,475	0.188	24,000	No Test	14.34%	335
			fish-2	1956	10.75	15,630	0.188	24,000	No Test	17.87%	269
			10c1315	1958	4.5	927	0.156	24,000	No Test	9.01%	399
			10c1559	1958	4.5	520	0.156	24,000	No Test	9.01%	399
			10c3298	1960	4.5	1,448	0.156	24,000	No Test	9.01%	399
			10c4799	1962	2.375	221	0.154	24,000	No Test	4.82%	747
			10c5321	1963	2.375	1,505	0.154	24,000	No Test	4.82%	747
			10c9831	1966	2.375	1,309	0.154	24,000	No Test	4.82%	747
3	8" Central Whatcom Transmission Line	380	14c1314	1957	8.625	57,437	0.188	24,000	No Test	36.32%	419
4	4" South Lynden H.P. Line	250	Line 4-1	1961	4.5	35,441	0.156	24,000	No Test	15.02%	499
8	2" Nooksack H.P. Distribution System	250	16C7000	1963	2.375	732	0.154	24,000	No Test	8.03%	934
Aberdeen District											
3	4" McCleary H.P. Line	150	79C6323	1963	4.5	225	0.156	24,000	No Test	9.01%	499
			78C7902-2	1964	4.5	252	0.156	24,000	No Test	9.01%	499
Mount Vernon District											
1	8" Anacortes Transmission Line	360	MTVL1-1	1957	8.625	102,813	0.188	24,000	No Test	34.41%	419
2	8" March Point Transmission Line	360	11C1144-1	1957	8.625	8,134	0.188	24,000	No Test	34.41%	419
			11C1144-2	1957	8.625	814	0.250	24,000	No Test	25.88%	557
			11C5628	1963	8.625	285	0.188	24,000	No Test	34.41%	419
3	Anacortes H.P. Distribution System	105	MTVL3-1	1956	6.625	5,102	0.188	24,000	No Test	7.71%	545
			MTVL3-2	1956	8.625	4,675	0.188	24,000	No Test	10.04%	419
			11C1491	1958	2.375	3	0.154	24,000	No Test	3.37%	934
			11C2330	1959	2.375	70	0.154	24,000	No Test	3.37%	934
			11C2626	1959	2.375	127	0.154	24,000	No Test	3.37%	934
			09801	1966	2.375	112	0.154	24,000	No Test	3.37%	934
5	3" Burlington H.P. Line	249	211220	1957	3.5	5,769	0.156	24,000	No Test	11.64%	642
7	4" North Texas Rd H.P. Line	250	11C2775	1960	2.375	914	0.154	24,000	No Test	8.03%	934
8	4" Arlington H.P. Line	249	Fish 18C4272	1961	4.5	10,177	0.156	24,000	No Test	14.96%	499
Longview District											
1	Longview-Kelso Transmission Segments and H.P. Distribution Line	250	82C8335-2	1965	2.375	521	0.154	24,000	No Test	8.03%	934
			82C8335-3	1965	4.5	152	0.156	24,000	No Test	15.02%	499
3	4" Dike Road H.P. Line (Longview)	80	82C8335	1965	4.5	6,463	0.156	24,000	No Test	4.81%	499
Yakima (Sunnyside) District											
1	3" Sunnyside H.P. Line	200	Fish-L1-1	1956	3.5	4,494	0.156	24,000	No Test	9.35%	642
			15420	1969	3.5	42	0.156	24,000	150	9.35%	642
2	2" South Sunnyside H.P. Line	200	42C2530	1959	2.375	4,018	0.154	24,000	No Test	6.43%	934
3	4" Grandview H.P. Line	250	Fish-L2-1	1956	4.5	4,736	0.156	24,000	No Test	15.02%	499
4	3" Prosser H.P. Line	250	YakimaL4-1	1956	3.5	5,832	0.156	24,000	No Test	11.69%	642
5	6" Toppenish-Zillah Transmission Line	400	YakimaL5-1	1956	6.625	32,566	0.188	24,000	No Test	29.37%	545
6	3" Zillah H.P. Line	400	fish-L6-1	1956	3.5	873	0.156	24,000	No Test	18.70%	642
7	4" Wapato H.P. Line	152	fish-L7-1	1956	4.5	33,284	0.156	24,000	No Test	9.13%	499
8	3" South Toppenish H.P. Line	175	fish-L8-1	1956	3.5	6,161	0.156	24,000	No Test	8.18%	642
9	3" Granger H.P. Line	175	fish-L9-1	1956	3.5	31,347	0.156	24,000	No Test	8.18%	642

Critical Missing Information

Insufficient Test Pressure Recorded

Table 5 - Pre-Code Pipelines without Pressure Test

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Length (Ft.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Design Pressure (psig)
Yakima District											
1	8" Yakima H.P. Line	200	Fish_968	1956	8.625	3,032	0.188	24,000	No Test	19.12%	419
			FISH_968_Lat_26	1956	8.625	695	0.500	24,000	No Test	7.19%	1113
Wenatchee District											
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	1957	6.625	509	0.188	24,000	No Test	18.35%	545
			WenL1-2	1957	8.625	15,956	0.188	24,000	No Test	23.89%	419
2	2" Wheeler H.P. Line	250	WenL2-2	1962	2.375	2,375	0.154	24,000	No Test	8.03%	934
			58C5745	1962	2.375	179	0.154	24,000	No Test	8.03%	934
12	6" Wenatchee H.P. Line	225	2912 fish	1956	6.625	31,812	0.188	24,000	No Test	16.52%	545
Kennewick District											
1	8"Attalia Transmission Line	300	O1C4776	1958	8.625	78,449	0.188	24,000	No Test	28.67%	419
			54C2565	1959	2.375	2	0.154	24,000	No Test	9.64%	934
3	4" East Finley H.P. Line		16256	1969	2.375	365	0.154	24,000	No Test	8.03%	934
8	4" Finley H.P. Line	200	53C2527	1959	4.5	12,391	0.156	24,000	No Test	12.02%	499
Walla Walla District											
1	8" Walla Walla H.P. Line	150	WWL1-1	1956	8.625	4,595	0.188	24,000	No Test	14.34%	419
2	3" College Place H.P. Line	150	WWL2-1	1956	3.5	2,474	0.156	24,000	No Test	7.01%	642

Critical Missing Information **Insufficient Test Pressure Recorded**

Table 6 - Time Frames for Completion

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Length (Ft.)	Action Plan	Year Action Plan Begins	Year Action Plan Completed
Bellingham District							
1	8" Bellingham Transmission Line	380	Line 1-1	15,086	In situ test, isolate and pressure test, replace section on James St.	2016	2017
2	Bellingham H.P. Distribution System	150	fish-1	16,475	Replacement	2019	2022
			fish-2	15,630	Replacement	2019	2022
			10c1315	927	Replacement	2019	2022
			10c1559	520	Replacement	2019	2022
			10c3298	1,448	Replacement	2019	2022
			10c4799	221	Replacement	2019	2022
			10c5321	1,505	Replacement	2019	2022
			10c8241	2,356	Isolate and pressure test	2022	2022
			10c9683	988	Replacement	2019	2022
			11480-1	1,577	Replacement	2019	2022
			11480-2	396	Replacement	2019	2022
			10c9831	1,309	Replacement	2019	2022
			13150	2,025	Downrate to distribution pressure	2017	2017
			20564-1	219	Replacement	2019	2022
			20564-2	113	Replacement	2019	2022
			20752	63	Replacement	2019	2022
			21298	12	Replacement	2019	2022
3	8" Central Whatcom Transmission Line	380	14c1314	57,437	In situ test, isolate and pressure test	2017	2018
			40855 (Transition fittings)	10,579	In situ test fittings	2018	2018
4	4" South Lynden H.P. Line	250	Line 4-1	35,441	In situ test, in-service pressure test	2020	2021
8	2" Nooksack H.P. Distribution System	250	16C7000	732	In situ test, in-service pressure test	2022	2023
			20048	737	In-service pressure test	2023	2023
			20519	490	In-service pressure test	2023	2023
9	8" Lake Terrell Rd Transmission Line	380	18734-1	10,314	In situ test	2018	2018
10	16" N. Whatcom Transmission Line	600	18794	143,907	Expose and verify or replace plugs in vault	2016	2016
12	4" North Lynden H.P. Line	400	25773	8,161	Expose and verify or replace caps on Sav-a-Valves	2016	2016
21	16" Squalicum Transmission Segment	250	41508	2,600	In situ test	2022	2022
Aberdeen District							
1	8" Kitsap Line (Phase 1)	499	20C6308-3	35,770	Expose and verify or replace caps on Sav-a-Valves	2016	2016
3	4" McCleary H.P. Line	150	79C6323	225	Line retired as part of gate replacement project in 2015	2015	2015
8	4" Montesano H.P. Distribution System	135	77C6321	1,645	In-service pressure test	2019	2019
9	2" Elma Rendering Plant H.P. Line	150	78C7902-1	5,280	Isolate and pressure test, replace upstream section	2020	2020
			78C7902-2	252	Replacement	2020	2020
12	2" Elma (R.H.D.) H.P. Line	100	25775	1,307	Downrate to IP use existing 100 psi test	2018	2018
15	12" Kitsap H.P. Line	499	44000	34,782	Expose and verify or replace caps on Sav-a-Valves	2016	2016
Bremerton District							
2	8" & 12" Bremerton Transmission Line	499	BremertonL2-1	2,843	In situ test	2016	2016
6	4" Olympic View H.P. Line	499	20387	14,540	Replace plugs on next valve maintenance	2016	2016
11	8" Bremerton H.P. Line	144	20C6316	4,510	In-service pressure test	2024	2024
			18522	2,863		2024	2024
Mount Vernon District							
1	8" Anacortes Transmission Line	360	MTVL1-1	102,813	In situ test 11 miles, replace 9 miles, isolate and pressure test 8 of 11 miles that were in situ tested, lower pressure on last 2.25 miles, expose and verify line stopper fittings at V-3 valve station	2016	2018
			18191	80	Replacement	2017	2017
2	8" March Point Transmission Line	360	11C1144-1	8,134	In situ test, isolate and pressure test between V-4 and R-89, replace north of R-89.	2016	2017
			11C1144-2	814	In situ test, isolate and pressure test.	2016	2017
			11C5628	285	Replacement	2017	2017
3	Anacortes H.P. Distribution System	105	MTVL3-1	5,102	Replacement	2016	2020
			MTVL3-2	4,675	Replacement	2016	2020
			11C1491	3	Retire	2016	2020
			11C2330	70	Retire	2016	2020
			11C2626	127	Replacement	2016	2020
			09801	112	Replacement	2016	2020
			14373	1	Retire	2016	2020
			15973	25	Replacement	2016	2020
4	4" Mount Vernon H.P. Line	250	MTVL4-1	23,760	In situ test	2021	2021
5	3" Burlington H.P. Line	249	211220	5,769	Replacement	2016	2016
7	4" North Texas Rd H.P. Line	250	11C2775	914	Replacement	2024	2024
			29320	83	Replacement	2024	2024
8	4" Arlington H.P. Line	249	Fish 18C4272	10,177	Replacement	2021	2021
10	4" Sedro-Woolley H.P. Line	100	14788	1,880	In-service pressure test	2025	2025
12	6" North Oak Harbor H.P. Line	400	17206	19,048	Expose and verify fittings replace if needed	2017	2017
14	16" Fredonia Transmission Line	500	30636 (1) (Transition Fittings and Elbows)	64,426	Expose and in situ test	2016	2016
16	16" March Point Transmission Line	500	40000 (Transition Fittings and Elbows)	43,344	Expose and in situ test	2016	2016

Table 6 - Time Frames for Completion

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Length (Ft.)	Action Plan	Year Action Plan Begins	Year Action Plan Completed
Longview District							
1	Longview-Kelso Transmission Segments and H.P. Distribution Line	250	Pre-CNGC-L1-1	23,205	Replacement	2017	2021
			Pre-CNGC-L1-2	4,964	Operate assuming most stringent criteria	2016	2016
			82C8335-2	521	Replacement	2017	2021
			82C8335-3	152	Replacement	2017	2021
			28621	990	Isolate and pressure test	2021	2021
2	4" Kalama H.P. Line	300	24676	8,234	Replacement	2024	2024
3	4" Dike Road H.P. Line (Longview)	80	82C8335	6,463	Replacement	2025	2025
7	12" South Longview H.P. Line	499	43600 (1) (Transition Fittings)	18,373	In situ test	2017	2017
8	8" Kalama Transmission Line	300	51820 (1)	2,049	In situ test	2021	2021
			51820 (2)	6,577	In situ test	2021	2021
			51820 (3)	550	In situ test	2021	2021
			51820 (4)	550	In situ test	2021	2021
Yakima (Sunnyside) District							
1	3" Sunnyside H.P. Line	200	Fish-L1-1	4,494	Replacement	2023	2023
			15420	42	Replacement	2023	2023
			21440	58	Replacement	2023	2023
2	2" South Sunnyside H.P. Line	200	42C2530	4,018	Replacement	2024	2024
3	4" Grandview H.P. Line	250	Fish-L2-1	4,736	Replacement occurred in 2015	2015	2015
4	3" Prosser H.P. Line	250	Yakima14-1	5,832	Extend Line #13 to gate and R-1, retire line	2022	2022
			47c8256	309	Extend Line #13 to gate and R-1, retire line	2022	2022
5	6" Toppenish-Zillah Transmission Line	400	YakimaL5-1	32,566	In situ test, in-service pressure test	2019	2020
6	3" Zillah H.P. Line	400	fish-L6-1	873	Replacement	2021	2021
7	4" Wapato H.P. Line	152	fish-L7-1	33,284	In situ test, in-service pressure test	2023	2024
8	3" South Toppenish H.P. Line	175	fish-L8-1	6,161	Replacement	2024	2024
9	3" Granger H.P. Line	175	fish-L9-1	31,347	Replacement	2026	2026
Yakima District							
1	8" Yakima H.P. Line	200	Fish_968	3,032	Replacement	2021	2021
			FISH_968_Lat_26	695	Replacement	2021	2021
			40C4357	4,891	In situ test	2021	2021
			20375	1,585	Retire or isolate and pressure test	2021	2021
Wenatchee District							
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	509	Replacement	2018	2018
			WenL1-2	15,956	Replacement	2018	2018
			29378	30	Replacement	2018	2018
			60390	2,041	In situ test	2020	2020
2	2" Wheeler H.P. Line	250	WenL2-2	2,375	Replacement	2025	2025
			58C5745	179	Replacement	2025	2025
3	4" Othello Transmission Segment and HP Line	400	59c7038	62,441	Replace 1.82 miles, isolate and pressure test remainder of line	2023	2024
			18998	191	UT for Wall thickness; if .188 replace, if greater isolate and pressure test	2023	2024
6	4" South Moses Lake H.P. Line	250	14455	2,927	Isolate and pressure test	2017	2017
12	6" Wenatchee H.P. Line	225	2912 fish	31,812	In situ test, in-service pressure test	2021	2022
Kennewick District							
1	8"Attalia Transmission Line	300	01C4776	78,449	In situ testing, add second gate to loop system, isolate and pressure test, expose and verify fittings and replace fittings if needed	2018	2023
			54C2565	2		2018	2023
			14375 (1)	49		2018	2023
			14375 (2)	183		2018	2023
			14375 (3)	42		2018	2023
			14375 (4)	25		2018	2023
			14375 (5)	111		2018	2023
3	4" East Finley H.P. Line	250	12614	2,498	Isolate and pressure test	2023	2023
			16256	365	Replacement	2023	2023
4	Pasco H.P. Distribution System	300	KennL4-1	10,125	In situ test	2023	2023
5	4" Northwest Pasco H.P. Line	300	11097 (1)	2,847	Isolate and pressure test	2017	2017
6	4" Glade Road H.P. Line	150	11097 (2)	2,052	Isolate and pressure test	2017	2017
7	2" Burbank H.P. Line	158	12301	3,520	In-service pressure test	2017	2017
8	4" Finley H.P. Line	200	53C2527	12,391	In situ test, isolate and pressure test	2022	2023
11	4" Plymouth H.P. Line	400	28141,D0069144, 28330	4,112	Expose and verify fittings replace if needed	2017	2017
Walla Walla District							
1	8" Walla Walla H.P. Line	150	WWL1-1	4,595	In situ test, in-service pressure test	2020	2021
2	3" College Place H.P. Line	150	WWL2-1	2,474	Retire	2019	2019