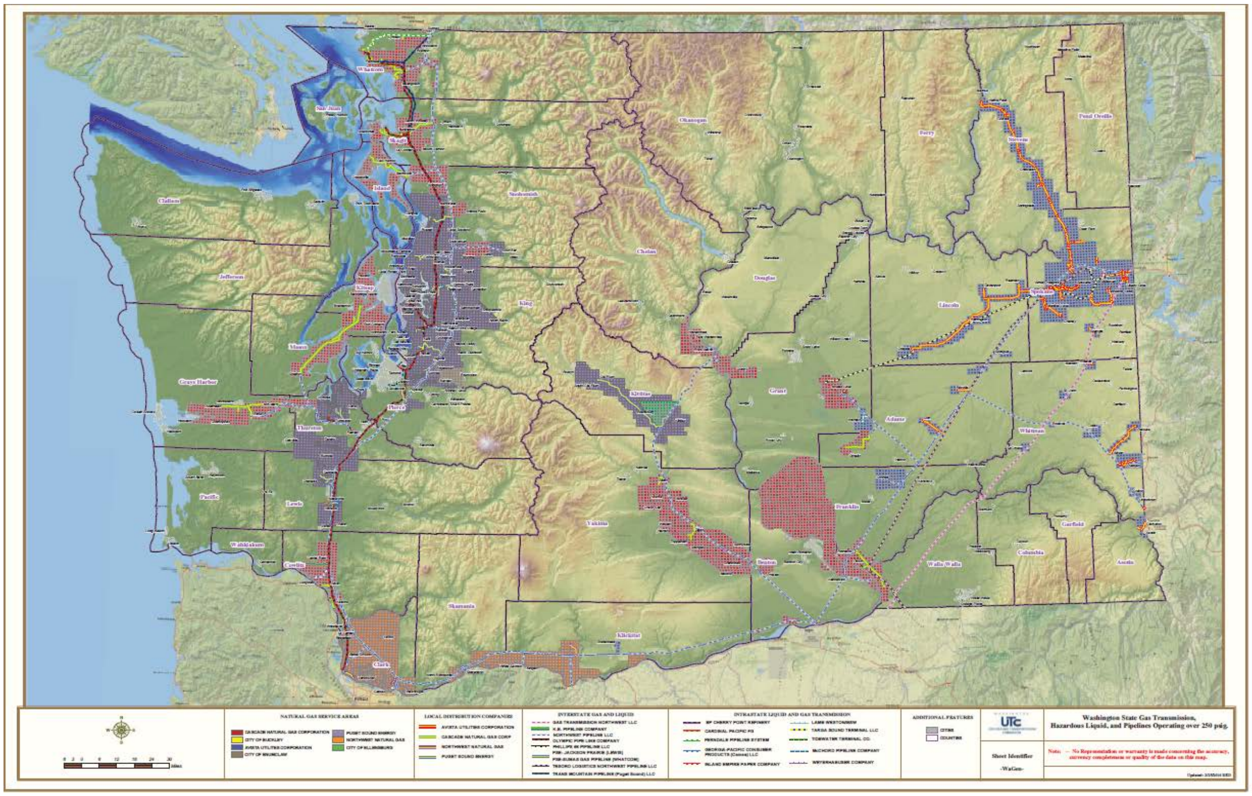
APPENDIX A

Cascade serves the regions shaded in red.



APPENDIX B

STATE OF WASHINGTON
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

CERTIFIED MAIL

April 11, 2013

Mr. Eric Martuscelli
Vice President-Operations
Cascade Natural Gas Corporation
8113 W. Grandridge Blvd.
Kennewick, WA 99336

Dear Mr. Martuscelli:

RE: 2013 Natural Gas Standard Inspection – Cascade Natural Gas (CNG) - Longview District

Staff from the Washington Utilities and Transportation Commission (staff) conducted a standard inspection from March 25-28, 2013, of Cascade Natural Gas Corporation's (CNG) Longview District gas system. The inspection included a review of district records and inspection of selected pipeline facilities.

Our inspection indicates two probable violations as noted in the enclosed report. We also noted four areas of concern, which unless corrected, could potentially lead to future violation of state and/or federal pipeline safety rules.

Your response needed
Please review the attached report and respond in writing by May 13, 2013. The response should include how and when you plan to bring the probable violations into full compliance. We also request your response to our areas of concern.

What happens after you respond to this letter?
The attached report presents staff's decision on probable violations and does not constitute a finding of violation by the commission at this time.

After you respond in writing to this letter, there are several possible actions the commission, in its discretion, may take with respect to this matter. For example, the commission may:

- Issue an administrative penalty under RCW 81.88.040, or
- Institute a complaint, seeking monetary penalties, changes in the company's practices, or other relief authorized by law, and justified by the circumstances, or
- Consider the matter resolved without further commission action.

If you have any questions, or if we may be of any assistance, please contact Dennis Ritter at (360) 664-1159. Please refer to the subject matter described above in any future correspondence pertaining to this inspection.

Sincerely,

David D. Lykken
Pipeline Safety Director

Enclosure

cc: Steve Kessie, Manager-Operations Services, CNG
Tina Beach, Manager of Standards & Compliance, CNG
Patti Chartrey, Pipeline Safety Specialist, CNG

Enclosure

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
2013 Natural Gas Pipeline Safety Inspection
Cascade Natural Gas Corporation-Longview District

The following probable violations and areas of concern of Title 49 CFR Part 192 and WAC 480-93 were noted as a result of the 2013 inspection of the Cascade Natural Gas Corporation Longview District. The inspection included a random selection of records (operation and maintenance, emergency response, damage prevention) and field inspection of the pipeline facilities.

PROBABLE VIOLATIONS

1. **49 CFR §192.619 Maximum allowable operating pressure (MAOP) - Steel or plastic pipelines**

(a) *No person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:*

(1) *The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part.*

Finding(s):

During the records review to confirm MAOP of HP lines, the 6" Kalama HP replacement project constructed in 1995 was evaluated. As part of the record review, as-builts, invoices, bills of lading and other information from the job file were reviewed. The pipe used in this project was FBE coated, 6-inch steel. What strength pipe was actually put in the ground is unclear. CNG procures their own materials for construction. They order materials based on CNG part numbers identified in their CNG Parts Catalogue. For the Kalama project, one record, "Cost Analysis Sheet for Expenditure Requisition", identified the pipe as part No. PXW-650X42. According to the CNG Part Numbering system, this would be X42 (42000 psi yield strength) pipe. However on all "Material Transfer Records" and as-built records it's listed as PXW-650, without the X42 designation. This is significant as CNG has several pipe specifications listed in their part numbering system, each with different designations for pipe strength. For example, if listed as PXW-650, its class B pipe, with 35,000 for yield strength. If listed as PXW-650X42, then pipe strength is 42,000. The actual construction related documents-Material Transfer Records and as-builts do not have the X42 designation shown. CNG is searching their records for any additional information on this project, however, the records available during this inspection are inconsistent and do not allow confirmation of MAOP according to this subpart.

Whether the pipe is X42 or Class B, CNG's current MAOP would be satisfactory. However, CNG is not sure what pipe specification is in the ground in Kalama, and therefore, not sure of what the MAOP should be. Records (and their management), especially of MAOP confirming documents, must be complete, accurate and readily available. CNG must confirm the MAOP of the 6" Kalama HP line. If pipe material cannot be ascertained, then 49 CFR 192.105 requires using 24,000 as the pipe strength in the design pressure formula to calculate MAOP.

2. **<u>WAC 480-93-188 Gas Leak Surveys</u>**

(3) Each gas pipeline company must conduct gas leak surveys according to the following minimum frequencies:

(a) Business districts - at least once annually, but not to exceed fifteen months between surveys. All mains in the right of way adjoining a business district must be included in the survey;

(b) High occupancy structures or areas - at least once annually, but not to exceed fifteen months between surveys;

<u>Finding(s):</u>

CNG CP 716 has the following definition: ***High Occupancy Structure or Area (HOS/A)***- *A building or an outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by twenty or more persons on at least five days a week for ten weeks in any twelve-month period. (The days and weeks need not be consecutive.).* Additionally, CNG CP 715 defines the following: ***Public Building or Area (PB/A)– Washington*** *– A building or an outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by <u>twenty</u> or more persons on at least five days a week for ten weeks in any twelve-month period. (The days and weeks need not be consecutive.).* WAC 480-93-005(14) also uses this same language to define "*High occupancy structures or areas*".

CNG CP 716.04 gives the survey type and schedule for these areas as:

Public Building Inspection (PBI)	At least once each calendar year, but at intervals not exceeding 15 months

During the records review, CNG attempted to locate annual leak survey records for several Public Buildings/Areas identified by WUTC prior to the inspection. These were the Woodland Intermediate School, Castle Rock Community Church and St. Mark's Episcopal Church (both in Castle Rock). CNG could not locate annual survey records for these areas. According to the leak survey, these areas were in fact surveyed on a 3 year basis, typical of non-business district surveys done' in this district. This might be indicative of a larger CNG issue.

According to Tina Beach, when CNG changed from a paper based work order system to a new computer based system in 2010, some of the public building inspections (PBIs) which CNG checked annually did not make it into the new system. CNG attempted to go back and rectify this by hand, but according to Tina Beach and Tom Wilson, some were missed. Exactly how many is unknown, in this district or all of CNG's service area districts. As such, UTC will require CNG to evaluate, for each of their districts, how many of these structures/areas are in each district and compare this with what is actually being surveyed on an annual basis. A listing of these structures/areas, by district with addresses, will be sent to UTC after completion of this evaluation. Any structure/areas identified which are not on the current listing of such facilities in CNG's system will be immediately surveyed and added to the annual survey. These "new" facilities will be noted on the listing to be sent to WUTC as newly identified. Please identify when these tasks will be completed.

Note during the inspection there was some confusion regarding non-customers whose property fronts a street which has a buried gas main. UTC's position is there is no difference between non-customers and customers in the definition of HOS/PBs. CNG is to survey the right-of-way fronting these areas on an annual basis, regardless of whether they are a customer or not. If there is a service to the property, CNG is to survey the service to the building wall per 480-93-188 (1) (d).

AREAS OF CONCERN

1. **WAC 480-93-170-Tests and Reports for Pipelines**

(7) *Each gas pipeline company must keep records of all pressure tests performed for the life of the pipeline and must document the following information:*

- *(a) Gas Pipeline Company's name;*
- *(b) Employee's name;*
- *(c) Test medium used;*
- *(d) Test pressure;*
- *(e) Test duration;*
- *(f) Line pipe size and length;*
- *(g) Dates and times; and*
- *(h) Test results.*

Finding(s):

CNG's 2012, *12" V90 Replacement Project* included a pressure test of the installation after completion. After inspecting the data sheet from the pressure testing, it was noted that CNG failed to identify the test medium used on the record document per procedure CP 665.036. In response, CNG pointed out that CP 665 also states that valve installations may only use nitrogen for the test medium. CNG also produced an Airgas invoice for nitrogen supplied for the test dated 8/7/2012-which is the date of the first test.

The issue, however, is not whether nitrogen was used, as it appears that it was, but rather the record document for a critical component of the distribution system which confirms MAOP was incomplete. Given the series of recent catastrophic events relating to pipelines and the subsequent investigation noting that records management of these critical MAOP confirming documents was less than satisfactory, it is surprising to find these records for a very recent construction project to be compromised. The WUTC and PHMSA believe this to be a critical issue which must be emphasized at all levels of CNG's organization. Records (and their management), especially of MAOP confirming documents, must be complete, accurate and readily available. Please ensure that CNG places the appropriate level of scrutiny on this situation so that a future violation, incident or loss of life or property does not occur.

2. **WAC 480-93-188 Gas leak surveys**

(4) *Each gas pipeline company must conduct special leak surveys under the following circumstances:*

(c) Unstable soil areas where active gas pipelines could be affected;

Finding(s):
During a pre-inspection site visit, it was noted that a section of Mt. Brynion Road near the intersection of Williams Finney Road appeared to have recent pavement work completed. It appeared that Mt. Brynion Road was moving downhill due to movement of the underlying land-i.e. a landslide. When CNG staff was asked about this situation, they did not know of any landslide issues in this area and said all landslide issues are handled by CNG's engineering department. The District Manager also added that they currently do a special leak survey on a portion of the high pressure 12-inch line that feeds Longview Fibre whenever they get a "heavy rain". This location was located on UTC's mapping system which has historic landslides plotted. The location corresponds to a historic landslide area near the pipeline. CNG staff indicated that landslide training is not part of the OQ program and that landslide occurrences are handled on a case by case basis by CNG's engineering department.

UTC is concerned that in areas, such as Longview, where known and potentially still active, historic landslide areas could affect CNG's pipelines, that a program is not in place to alert CNG's personnel of potential dangers. UTC believes CNG should train their staff to be cognizant of potential landslide indicators to identify and potentially prevent future catastrophic incidents from occurring. Procedures should be developed to identify and manage this threat.

3. **49 CFR §192.805 Qualification program**

Each operator shall have and follow a written qualification program. The program shall include provisions to:

(a) Identify covered tasks;
(b) Ensure through evaluation that individuals performing covered tasks are qualified;
(g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.
(h) After December 16, 2004, provide training, as appropriate, to ensure that individuals performing covered tasks have the necessary knowledge and skills to perform the tasks in a manner that ensures the safe operation of pipeline facilities; and

Finding(s):
During the field OQ evaluation, an employee was asked to take rectifier reads at GB02 Kalama. The employee responded that he was not "comfortable" performing this covered task as he does not perform it routinely—one other employee routinely performs this task. According to CNG OQ records, this employee is qualified to perform this task. If the employee is properly qualified per CNG's OQ qualification program, they should not be "uncomfortable" in performing covered tasks. CNG needs to "*ensure that individuals performing covered tasks have the necessary knowledge and skills to perform the tasks in a manner that ensures the safe operation of pipeline facilities*". CNG needs to determine what additional training or other appropriate methodology needs to be employed to ensure its employees are qualified and competent to perform OQ covered tasks.

4. **<u>49 CFR §192.616 Public Awareness</u>**

(e) *The program must include activities to advise affected municipalities, school districts, businesses, and residents of pipeline facility locations.*

(f) *The program and the media used must be as comprehensive as necessary to reach all areas in which the operator transports gas.*

<u>Finding(s):</u>
In their Public Awareness plan, CNG identified, “Affected public-non customers” as a stakeholder audience but did not send them targeted information as required. As noted in the 2012 PA Plan effectiveness review, they failed to use targeted brochures, pamphlets etc. to inform this group. Instead, they used TV, radio etc. CNG needs to ensure the PA plan (CNG plans on updating its plan by April, 2012) reaches its intended audience by targeting its identified stakeholders with specific information for that group.

APPENDIX C

STATE OF WASHINGTON
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

CERTIFIED MAIL

May 29, 2013

Mr. Eric Martuscelli
Vice President-Operations
Cascade Natural Gas Corporation
8113 W. Grandridge Blvd.
Kennewick, WA 99336

Dear Mr. Martuscelli:

RE: 2013 Natural Gas Standard Inspection – Cascade Natural Gas (CNG) - Bellingham District

Staff from the Washington Utilities and Transportation Commission (staff) conducted a standard inspection from May 13-16, 2013 of Cascade Natural Gas Corporation's (CNG) Bellingham District gas system. The inspection included a review of district records and inspection of selected pipeline facilities.

Our inspection indicates one probable violation as noted in the enclosed report. We also noted two areas of concern, which unless corrected, could potentially lead to future violation of state and/or federal pipeline safety rules.

Your response needed
Please review the attached report and respond in writing by July 1, 2013. The response should include how and when you plan to bring the probable violations into full compliance. We also request your response to our areas of concern.

What happens after you respond to this letter?
The attached report presents staff's decision on probable violations and does not constitute a finding of violation by the commission at this time.

After you respond in writing to this letter, there are several possible actions the commission, in its discretion, may take with respect to this matter. For example, the commission may:

- Issue an administrative penalty under RCW 81.88.040, or
- Institute a complaint, seeking monetary penalties, changes in the company's practices, or other relief authorized by law, and justified by the circumstances, or
- Consider the matter resolved without further commission action.

If you have any questions, or if we may be of any assistance, please contact Dennis Ritter at (360) 664-1159. Please refer to the subject matter described above in any future correspondence pertaining to this inspection.

Sincerely,

David D. Lykken
Pipeline Safety Director

Enclosure

cc: Steve Kessie, Manager-Operations Services, CNG
Tina Beach, Manager of Standards & Compliance, CNG
Vicki Ganow, Pipeline Safety Specialist, CNG

Enclosure

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
2013 Natural Gas Pipeline Safety Inspection
Cascade Natural Gas Corporation-Bellingham District

The following probable violation and areas of concern of Title 49 CFR Part 192 were noted as a result of the 2013 inspection of the Cascade Natural Gas Corporation Bellingham District. The inspection included a random selection of records (operation and maintenance, emergency response, damage prevention) and field inspection of the pipeline facilities.

PROBABLE VIOLATIONS

1. ***49 CFR §192.619 Maximum allowable operating pressure (MAOP) - Steel or plastic pipelines***

(a) *No person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:*

(1) *The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part.*

(2) *The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:*

(i) *For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.*

(ii) *For steel pipe operated at 100 p.s.i. (689 kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table:*

Factors (see Note)

Class location	*Segment Installed Before Nov. 12, 1970*	*Segment Installed After Nov. 11, 1970*	*Segment Converted under§192.14*
1	*1.1*	*1.1*	*1.25*
2	*1.25*	*1.25*	*1.25*
3	*1.4*	*1.5*	*1.5*
4	*1.4*	*1.5*	*1.5*

Note: For offshore segments installed, or updated, or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated, or converted after July 31, 1977 that are located on an offshore platform or on a platform in inland navigable waters including a pipe riser, the factor is 1.5

(3) *The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable date in the third column or the segment was uprated according to the requirements in subpart K of this part:*

Pipeline segment	*Pressure date*	*Test date*
-Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006. *-Onshore transmission line that was a gathering line not subject to this part before March 15, 2006.*	*March 15, 2006, or date line becomes subject to this part, whichever is later.*	*5 years preceding applicable date in second column.*
Offshore gathering lines	July 1, 1976	July 1, 1971
All other pipelines	July 1, 1970	July 1. 1965

(4) *The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.*

(b) *No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with §192.195.*

(c) *The requirements on pressure restrictions in this section do not apply in the following instance. An operator may operate a segment of pipeline found to be in satisfactory condition, considering its operating and maintenance history, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column of the table in paragraph (a)(3) of this section. An operator must still comply with §192.611.*

(d) *The operator of a pipeline segment of steel pipeline meeting the conditions prescribed in § 192.620(b) may elect to operate the segment at a maximum allowable operating pressure determined under § 192.620(a)*

Finding(s):

During the records review to confirm MAOP of HP lines, CNG staff were asked to produce the MAOP confirming documents for Line 1-8" Bellingham HP. CNG at the time of the inspection could not produce supporting MAOP documents for this line. This line was installed in 1957. The two documents CNG did produce cannot be considered reliable records. One was undated and titled "Construction Specification for Proposed Pipeline (Order Cause Nos.U-8799-8800, Rule 20)". This document notes the pipeline was to be tested to a pressure of 500 psi. The other document was a 1970 letter to Lee Johnson & Associates which states that the line was "built to the following specifications" including pipe grade, diameter, thickness, coating and construction test pressure. These documents do not provide a definitive answer supporting the current

MAOP of 380 psi as they are not original record documents. CNG is searching their files for any additional information on this pipeline, however, the records available during the inspection do not allow confirmation of MAOP according to this subpart.

Records (and their management), especially of MAOP confirming documents, must be complete, accurate and readily available. CNG needs to have documents which support all the "facts" outlined in the 1970 letter to Lee Johnson & Associates for Line 1-8" Bellingham HP. If pipe material cannot be ascertained, then 49 CFR 192.105 requires using 24,000 as the pipe strength in the design pressure formula to calculate MAOP.

Additionally, records management (not being able to find MAOP confirming documents) was also an issue during the 2013 CNG Longview inspection. It appears that this is not an isolated incident. Therefore, CNG must confirm the MAOP of all their HP lines with supporting documentation for Bellingham as well as all other districts. Please tell us the date by which CNG can produce the confirmation with supporting documentation.

AREAS OF CONCERN OR FIELD OBSERVATIONS

2. ***WAC 480-93-124 Pipeline Markers***

(1) Each gas pipeline company must place pipeline markers at the following locations:

(a) Where practical, over pipelines operating above two hundred fifty psig;

(b) Over mains and transmission lines crossing navigable waterways (custom signage may be required to ensure visibility);

(c) Over mains and transmission lines at river, creek, drainage ditch, or irrigation canal crossings where hydraulic scouring, dredging, or other activity could pose a risk to the pipeline (custom signage may be required to ensure visibility);

(d) Over gas pipelines at railroad crossings;

(e) At above ground gas pipelines except service risers, meter set assemblies, and gas pipeline company owned piping downstream of the meter set assembly. The minimum lettering size requirements located in 49 CFR § 192.707 (d)(1) do not apply to services;

(f) Over mains located in Class 1 and 2 locations;

(g) Over transmission lines in Class 1 and 2 locations, and where practical, over transmission lines in Class 3 and 4 locations; and

(h) Over mains and transmission lines at interstate, U.S. and state route crossings where practical.

(2) If practical, the gas pipeline company must place markers on both sides of any crossing listed in subsection (1) of this section.

Finding(s):

During pre-inspection field reconnaissance it was noted that at several locations-Sumas Ave. at Johnson Creek, Double Ditch Rd at Main St. in Lynden and E. Badger Rd at Fishtrap Creek in Lynden- CNG markers were not present. When asked about these locations, CNG sent personnel out to evaluate. It was determined that markers were needed. CNG generated work-orders and had these installed before end of inspection. However, it brings up the question as to how many more water crossings might need markers. CNG needs to evaluate all water crossings per (1)(c) above and determine if markers are needed. If markers are needed, they shall be installed and added to CNG's GIS system. Please tell us the date by which CNG will have this evaluation completed.

3. ***192.467 External corrosion control: Electrical isolation.***
   (d) Inspection and electrical tests must be made to assure that electrical isolation is adequate.

Finding(s):
During the field inspection of the Sumas Gate station, CNG personnel noted that they cannot check isolation between the CNG and Spectra piping as this would require a border crossing to physically test. CNG stated that their corrosion personnel are aware of this and are working on a solution. CNG must be able to inspect and test the isolation between the two systems. Please tell us the date by which CNG will have a solution for this area of concern.

APPENDIX D

Woodard, Marina (UTC)

From:	Beach, Tina <Tina.Beach@cngc.com>
Sent:	Friday, June 28, 2013 1:07 PM
To:	Woodard, Marina (UTC)
Cc:	Kessie, Steve; Martuscelli, Eric; Ganow, Vicki; Marek, Chanda; Nelson, Greg; Bergner, Kathy
Subject:	CNGC Response to Bellingham District Inspection
Attachments:	CNGC_Response_2013-6-28 Bellingham Dist Insp.pdf

Dear Marina;

Please find the attached Response to 2013 Natural Gas Standard Inspection – Bellingham District due July 1, 2013 . Please forward to the appropriate Washington Utility and Transportation staff. As requested by Mr. Lykken and Mr. Subsits Cascade Natural Gas Corporation will need only to provide this electronically unless requested otherwise by your agency. Please contact Steve Kessie at 509-734-4575 with any additional questions or comments you have regarding this response.

Tina R. Beach
Manager of Standards and Compliance
Cascade Natural Gas Corporation
8113 Grandridge Blvd.
Kennewick, WA 99336
(509) 734-4576 Kennewick office
(206) 445-4121 Work cell
(509) 737-9803 Fax
(406) 939-2240 Home cell
tina.beach@cngc.com

RECEIVED
JUN 28 2013
State of Washington
UTC
Pipeline Safety Program

CASCADE NATURAL GAS CORPORATION
A Subsidiary of MDU Resources Group, Inc.

8113 W. GRANDRIDGE BLVD., KENNEWICK, WASHINGTON 99336-7166
TELEPHONE 509-734-4500 FACSIMILE 509-737-9803
www.cngc.com

RECEIVED
JUN 28 2013
State of Washington
UTC
Pipeline Safety Program

June 28, 2013

David Lykken- 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

Subject: Response to 2103 Natural Gas Standard Inspection – Bellingham District

Dear Mr. Lykken,

This letter is intended to address all probable state safety code violations and areas of concern. We specifically are addressing how and when we plan to bring the probable violations and areas of concern into full compliance. The inspection was conducted on May 13-16, 2013 in Bellingham, Washington.

The following is in response to one probable violation and two areas of concern:

PROBABLE VIOLATIONS

1. 49 CFR §192.619 Maximum allowable operating pressure (MAOP)- Steel or plastic pipelines

(a) No person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:

(1) The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part.

(2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:

(i) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.

(ii) For steel pipe operated at 100 p.s. i. (689 kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table:

Factors (see Note)

Class location	*Segment Installed Before Nov. 12, 1970*	*Segment Installed After Nov. 11, 1970*	*Segment Converted under§192.14*
1	*1.1*	*1.1*	*1.25*
2	*1.25*	*1.25*	*1.25*
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Note: For offshore segments installed, or updated, or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated, or converted after July 31, 1977 that are located on an offshore platform or on a platform in inland navigable waters including a pipe riser, the factor is 1.5.

(3) The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable date in the third column or the segment was uprated according to the requirements in subpart K of this part:

Pipeline segment	*Pressure date*	*Test date*
-Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006. *-Onshore transmission line that was a gathering line not subject to this part before March 15, 2006.*	*March 15, 2006, or date line becomes subject to this part, whichever is later.*	*5 years preceding applicable date in second column.*
Offshore gathering lines	July 1, 1976	July 1, 1971
All other pipelines	July 1, 1970	July 1, 1965

(4) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

(b) No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure fi'om being exceeded, in accordance with § 19 2.19 5.

(c) The requirements on pressure restrictions in this section do not apply in the following instance. An operator may operate a segment of pipeline found to be in satisfactory condition, considering its operating and maintenance his/my, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column of the table in paragraph (a)(3) of this section. An operator must still comply with §192.611.

(d) The operator of a pipeline segment of steel pipeline meeting the conditions prescribed in§ 192.620(b) may elect to operate the segment at a maximum allowable operating pressure determined under§ 192.620(a).

Finding(s):

During the records review to confirm MAOP of HP lines, CNG staff were asked to produce the MAOP confirming documents for Line 1-8" Bellingham HP. CNG at the time of the inspection could not produce supporting MAOP documents for this line. This line was installed in 1957. The two documents CNG did produce cannot be considered reliable records. One was undated and titled "Construction Specification for Proposed Pipeline (Order Cause Nos.U-8799-8800, Rule 20)". This document notes the pipeline was to be tested to a pressure of 500 psi. The other document was a 1970 letter to Lee Johnson & Associates which states that the line was "built to the following specifications" including pipe grade, diameter, thickness, coating and construction test pressure. These documents do not provide a definitive answer supporting the current MAOP of 380 psi as they are not original record documents. CNG is searching their files for any additional information on this pipeline, however, the records available during the inspection do not allow confirmation of MAOP according to this subpart.

Records (and their management), especially of MAOP confirming documents, must be complete, accurate and readily available. CNG needs to have documents which support all the "facts" outlined in the 1970 letter to Lee Johnson & Associates for Line 1-8" Bellingham HP. If pipe material cannot be ascertained, then 49 CFR 192.105 requires using 24,000 as the pipe strength in the design pressure formula to calculate MAOP.

Additionally, records management (not being able to find MAOP confirming documents) was also an issue during the 2013 CNG Longview inspection. It appears that this is not an isolated incident. Therefore, CNG must confirm the MAOP of all their HP lines with supporting documentation for Bellingham as well as all other districts. Please tell us the date by which CNG can produce the confirmation with supporting documentation.

Cascade Response

Cascade Natural Gas Corporation (CNGC) acknowledges that MAOP confirming documents for Line 1 8" Bellingham HP were not available during the audit. A review of all CNGC HP records has been initiated and is anticipated to be completed by September 30, 2013. As part of this review, CNGC will address any HP lines whose MAOP confirming documents cannot be located.

AREAS OF CONCERN OR FIELD OBSERVATIONS

2. WAC 480-93-124 Pipeline Markers

(1) Each gas pipeline company must place pipeline markers at the following locations:

(a) Where practical, over pipelines operating above two hundred fifty psig;

(b) Over mains and transmission lines crossing navigable waterways (custom signage may be required to ensure visibility);

(c) Over mains and transmission lines at river, creek, drainage ditch, or irrigation canal crossings where hydraulic scouring, dredging, or other activity could pose a risk to the pipeline (custom signage may be required to ensure visibility);

(d) Over gas pipelines at railroad crossings;

(e) At above ground gas pipelines except service risers, meter set assemblies, and gas pipeline company owned piping downstream of the meter set assembly. The minimum lettering size requirements located in 49 CFR § 192.707 (d)(I) do not apply to services;

(f) Over mains located in Class I and 2 locations;

(g) Over transmission lines in Class 1 and 2 locations, and where practical, over transmission lines in Class 3 and 4locations; and

(h) Over mains and transmission lines at interstate, US and state route crossings where practical.

(2) If practical, the gas pipeline company must place markers on both sides of any crossing listed in subsection (I) of this section.

Finding(s):

During pre-inspection field reconnaissance it was noted that at several locations-Sumas Ave. at Johnson Creek, Double Ditch Rd at Main St. in Lynden and E. Badger Rd at Fishtrap Creek in Lynden- CNG markers were not present. When asked about these locations, CNG sent personnel out to evaluate. It was determined that markers were needed. CNG generated work-orders and had these installed before end of inspection. However, it brings up the question as to how many more water: crossings might need markers. CNG needs to evaluate all water crossings per (1) (c) above and determine if markers are needed. If markers are needed, they shall be installed and added to CNG's GIS system. Please tell us the date by which CNG will have this evaluation completed.

Cascade Response

CNGC has initiated the supplementary pipeline marker evaluation in the Bellingham district. The evaluation is anticipated to be completed by December 31, 2013. A correction should be noted for one of the field locations cited in the finding. Markers were not placed on East Badger Road at Fishtrap Creek as CNGC does not have a main or a transmission line that crosses the creek at this location but other crossings near this area were inspected for markers and remediation was made where needed.

3. 192.467 External corrosion control: Electrical isolation

(d) Inspection and electrical tests must be made to assure that electrical isolation is adequate.

Finding(s):

During the field inspection of the Sumas Gate station, CNG personnel noted that they cannot check isolation between the CNG and Spectra piping as this would require a border crossing to physically test. CNG stated that their corrosion personnel are aware of this and are working on a solution. CNG must be able to inspect and test the isolation between the two systems. Please tell us the date by which CNG will have a solution for this area of concern

Cascade Response

During the field inspection, CNGC's staff performed the OQ task as assigned, however answering the question regarding electrical isolation was beyond the scope of his expertise. CNGC's Corrosion Department has responsibility for monitoring all work performed in the field as it relates to corrosion control. To address the isolation question posed by WUTC staff, the Manager of Corrosion Control was consulted to explain the process for checking electrical isolation at the Sumas Gate Station and to verify it is being monitored. He indicated this takes place during the annual CP surveys. The process is to take a pipe to soil potential within the Sumas Gate Station to verify normal CP operations. Should the potential indicate a change in normal CP operations, a Corrosion Control Tech. would initiate troubleshooting to determine the cause of the deficiency. CNGC will continue to monitor electrical isolations during the annual survey.

Please contact Steve Kessie at 509-734-4575 with questions or comments.

Respectfully Submitted,

Eric Martuscelli,
Vice President, Operations
Cascade Natural Gas Corporation

APPENDIX E

Woodard, Marina (UTC)

From:	Ogden, Jeremy <Jeremy.Ogden@cngc.com>
Sent:	Friday, September 27, 2013 3:50 PM
To:	Woodard, Marina (UTC)
Cc:	Martuscelli, Eric; Kessie, Steve; Beach, Tina
Subject:	CNGC Response to Bellingham District Inspection
Attachments:	CNGC Response - MAOP Validation - 9-27-13.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Red Category

RECEIVED
SEP 27 2013
State of Washington
UTC
Pipeline Safety Program

Marina:

Please find attached Cascade Natural Gas's response to 2013 Natural Gas Standard Inspection – Bellingham District due September 30, 2013. Please forward to the appropriate WUTC staff. Please contact me with any additional questions or comments. Thank you.

Jeremy

Jeremy Ogden, P.E. | Director, Engineering Services

Cascade Natural Gas Corporation
A Subsidiary of MDU Resources Group, Inc.
8113 Grandridge Blvd, Kennewick, WA 99336
[office] 509.734.4509
[cell] 509.440.1467
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CASCADE NATURAL GAS CORPORATION®
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In the Community to Serve®

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www.cngc.com

September 27, 2013

RECEIVED
SEP 27 2013
State of Washington
UTC
Pipeline Safety Program

David D. Lykken
Pipeline Safety Director
Washington Utilities and Transportation Commission
1300 S. Evergreen Park Drive S.W.
P.O. Box 47250
Olympia, WA 98504-7250

Subject: Cascade Natural Gas – Maximum Allowable Operating Pressure (MAOP)

David:

In response to a 2013 inspection performed by WUTC staff in the Bellingham District, Cascade Natural Gas (Cascade) has recently completed a review of the documentation on its high pressure (HP) pipelines which are operating in the state of Washington. The purpose of this review is to validate the Maximum Allowable Operating Pressure (MAOP) for each pipeline. This review included records located in Cascade's General Office, district offices, off-site storage facilities, and electronically stored files. As a result of this review Cascade discovered 28 pipeline sections with missing or insufficient documentation to validate the current MAOP. Cascade has prepared a plan of action for these pipelines and TABLE 1 – PLAN OF ACTION following this letter summarizes this plan.

Cascade has prepared a schedule to gather missing or insufficient information, or to replace the affected pipeline section. This schedule will cover 13 years and will address all 28 pipeline sections from most critical to least critical, with only two exceptions. These exceptions are pipeline sections that are already planned for replacement. This schedule can be seen in TABLE 2 – SCHEDULE TO GATHER INFORMATION.

In addition, as a result of the review described above, some of Cascade's pipelines will be operating with an MAOP based on an assumed yield strength of 24,000 psi, as prescribed in §192.107. TABLE 3 – PIPELINES ASSUMING YIELD STRENGTH OF 24,000 PSI following this letter summarizes this information. Please note that the MAOP for these pipelines did not change, only the hoop stress and subsequent %SMYS calculations. Additionally, none of the changes resulted in a pipeline being stressed to greater than 20% SMYS. Because these pipeline sections are operating safely, no other action is planned.

Cascade appreciates the working relationship that we have with the WUTC. We feel that our efforts to date, coupled with the plan presented in this correspondence, will enhance the safety and reliability of our system. We look forward to working with you and your staff as we further

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refine the details of this plan. If you have any questions or would like to discuss anything further, please feel free to contact me to discuss.

Sincerely,

Jeremy Ogden, P.E.
Director, Engineering Services
Cascade Natural Gas Corporation
jeremy.ogden@cngc.com
509-734-4509

enclosures

TABLE 1 - PLAN OF ACTION

Line #	Description	Year Installed	Critical Information	Plan of Action
Aberdeen District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
12	2" Elma HP Line	1978	Pressure test documentation	Validate operating pressure.
Bellingham District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	8" HP Line	1956	Pipe grade and wall thickness	Remove sections of retired in place pipe and test for pipe grade and wall thickness. Prepare sampling plan for further testing if necessary.
2	2" Bellingham HP Distribution System	1967	Pressure test documentation	Pipeline will be removed/downrated as part of future project to remove pipelines from aging bridges.
3	8" Central Whatcom HP Line	1957	Pipe grade and wall thickness	Test samples from James Street and Lampman Road, and any other points that are available, for pipe grade and wall thickness. Prepare sampling plan for further testing if necessary.
21	16" Squalicum HP Line	1993	Pipe grade	Prepare sampling plan to verify pipe grade of 2,600 ft of pipeline.
Bremerton District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
2	8" Bremerton Line	1963	Pipe grade	Test abandoned sections to verify pipe grade.
11	8" Bremerton HP Line	1971	Pressure test documentation	Validate operating pressure.
Kennewick District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	8" Attalia HP Line	1958	Pipe grade	Test previously removed sections for pipe grade.
1	12" Attalia HP Line	1968	Pipe grade and wall thickness	Test and/or remove 183 ft section.
4	Pasco HP Distribution System	1995	Pipe material	Work Order states Iron pipe in one section. Test pipe to verify material, grade, and thickness. Alternative is to replace 187 ft section of pipeline.
16	4" North Pasco HP Line	Various	Pressure test documentation	Validate operating pressure test or replace 531 ft section of pipeline.
18	6" West Richland HP Line	2010	Pressure test documentation	Validate operating pressure.
Longview District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	12" Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness. Test retired in place sections and sections which have previously been removed.
1	8" Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	In process of being replaced.
2	4" Kalama HP Line	1976	Pressure test documentation	Validate operating pressure.
8	8" Kalama HP Line	1996-1997	Pipe grade, wall thickness, and pressure test documentation	Test retired in place pipe and samples removed during replacements. Validate operating pressure on applicable sections.
Mt. Vernon District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	8" Anacortes HP Line	1972	Pipe grade	As-builts show X-42 pipe, MTR shows Grade B. In-situ testing and/or replacement of 80 ft of pipeline will be required.
1	8" Anacortes HP Line	1957	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
2	8" March Point HP Line	1957	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
15	6" Mt. Vernon HP Line	2009	Pressure test documentation	Validate operating pressure.
Walla Walla District - None				
Wenatchee District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	6" & 8" Moses Lake HP Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
2	2" Wheeler HP Line	1962	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
3	4" Othello Line	1971	Wall thickness	Validate operating pressure or replace 191 ft section of pipeline.
Sunnyside District (Merged with Yakima District)				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
5	6" Toppenish-Zillah HP Line	1956	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
5	6" Toppenish-Zillah HP Line	1993	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
6	3" Zillah HP Line	1956	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
8	3" South Toppenish HP Line	1956	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
Yakima District				
Line #	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
1	8" Yakima HP Line	1978	Pressure test documentation	Validate operating pressure.

TABLE 2 - SCHEDULE TO GATHER INFORMATION

District	Line #	Description	Year Installed	Critical Information	Plan of Action
2014					
Bellingham	1	8" HP Line	1956	Pipe grade and wall thickness	Remove sections of retired in place pipe and test for pipe grade and wall thickness. Prepare sampling plan for further testing if necessary.
Bellingham	3	8" Central Whatcom HP Line	1957	Pipe grade and wall thickness	Test samples from James Street and Lampman Road, and any other points that are available, for pipe grade and wall thickness. Prepare sampling plan for further testing if necessary.
Mt. Vernon	1	8" Anacortes HP Line	1957	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
2015					
Mt. Vernon	1	8" Anacortes HP Line	1972	Pipe grade	As-builts show X-42 pipe, MTR shows Grade B. In-situ testing and/or replacement of 80 ft of pipeline will be required.
Bremerton	2	8" Bremerton Line	1963	Pipe grade	Test abandoned sections to verify pipe grade.
2016					
Longview	2	4" Kalama HP Line	1976	Pressure test documentation	Validate operating pressure.
Sunnyside	5	6" Toppenish-Zillah HP Line	1956	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
Bellingham	21	16" Squalicum HP Line	1993	Pipe grade	Prepare sampling plan to verify pipe grade of 2,600 ft of pipeline.
Bellingham	2	2" Bellingham HP Distribution System	1967	Pressure test documentation	Pipeline will be removed/downrated as part of future project to remove pipelines from aging bridges.
2017					
Mt. Vernon	2	8" March Point HP Line	1957	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
Longview	8	8" Kalama HP Line	1996-1997	Pipe grade, wall thickness, and pressure test documentation	Test retired in place pipe and samples removed during replacements. Validate operating pressure on applicable sections.
2018					
Kennewick	1	8" Attalia HP Line	1958	Pipe grade	Test previously removed sections for pipe grade.
Longview	1	12" Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness. Test retired in place sections and sections which have previously been removed.
Wenatchee	1	6" & 8" Moses Lake HP Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
2019					
Longview	1	12" Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness. Test retired in place sections and sections which have previously been removed.
Kennewick	1	12" Attalia HP Line	1968	Pipe grade and wall thickness	Test and/or remove 183 ft section.
Sunnyside	5	6" Toppenish-Zillah HP Line	1993	Pipe grade and wall thickness	Test samples from abandoned sections and those removed during replacements. If needed, prepare sampling plan.
2020					
Longview	1	12" Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness. Test retired in place sections and sections which have previously been removed.
Wenatchee	3	4" Othello Line	1971	Wall thickness	Validate operating pressure or replace 191 ft section of pipeline.
2021					
Bremerton	11	8" Bremerton HP Line	1971	Pressure test documentation	Validate operating pressure.
2022					
Kennewick	16	4" North Pasco HP Line	Various	Pressure test documentation	Validate operating pressure test or replace 531 ft section of pipeline.
Mt. Vernon	15	6" Mt. Vernon HP Line	2009	Pressure test documentation	Validate operating pressure.
2023					
Kennewick	18	6" West Richland HP Line	2010	Pressure test documentation	Validate operating pressure.
2024					
Aberdeen	12	2" Elma HP Line	1978	Pressure test documentation	Validate operating pressure.
Kennewick	4	Pasco HP Distribution System	1995	Pipe material	Work Order states Iron pipe in one section. Test pipe to verify material, grade, and thickness. Alternative is to replace 187 ft section of pipeline.
2025					
Yakima	1	8" Yakima HP Line	1978	Pressure test documentation	Validate operating pressure.
Wenatchee	2	2" Wheeler HP Line	1962	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
2026					
Sunnyside	8	3" South Toppenish HP Line	1956	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.
Sunnyside	6	3" Zillah HP Line	1956	Pipe grade and wall thickness	Prepare sampling plan to verify pipe grade and wall thickness.

TABLE 3 - PIPELINES ASSUMING YIELD STRENGTH OF 24,000 PSI				
Aberdeen District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
4	4" Elma HP Line	R-6 to R-60	150	7.48%
8	4" montesano HP Distribution System	R-4 to R-5	135	6.73%
9	2" Elma Rendering Plant HP Line	Route 8 Crossing	150	7.48%
Bellingham District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
2	4" Bellingham HP Distribution System	High Street	155	9.31%
2	8" Bellingham HP Distribution System	Original line	155	14.81%
2	10" Bellingham HP Distribution System	Original line	155	15.85%
4	4" South Lynden HP Line	Original line	250	12.47%
8	2" Nooksach HP Distribution System	Tap line 4 south	250	8.03%
Bremerton District - None				
Kennewick District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
4	Pasco HP Distribution System	Original line and N. of 8th St.	300	14.96%
Longview District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
3	4" Dike Road HP Line	Original Line	80	4.81%
Mt. Vernon District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
3	6" Anacortes HP Distribution System	518 Hillcrest Drive to R-32	105	7.71%
3	8" Anacortes HP Distribution System	R-31 to 518 Hillcrest Drive	105	10.04%
4	4" Mt. VernonHP Line	Original Line	250	12.47%
5	3" Burlington HP Line	R-18 to R-19	249	11.64%
7	4" North Texas Road HP Line	North Texas Road near R-85	250	8.03%
8	4" Arlington HP Line	Gate to R-86	249	12.42%
Walla Walla District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
1	8" Walla Walla HP Line	Original Line	150	14.34%
2	3" College Place HP Line	Original Line	150	7.01%
Wenatchee District				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
10	6" West Wheeler HP Line	205 ft segment installed in 1997	250	18.35%
12	6" Wenatchee HP Line	Original line	225	16.52%
Sunnyside District (Merged with Yakima District)				
Line #	**Description**	**Segment Description**	**MAOP (psig)**	**Revised %SMYS**
1	3" Sunnyside HP Line	Original line	200	9.35%
2	2" South Sunnyside HP Line	North section of line	200	6.43%
3	4" Grandview HP Line	Original line	250	12.47%
4	3" Prosser HP Line	O-01 to R-1	250	11.69%
7	4" Wapato HP Line	Original line	152	7.58%
9	3" Granger HP Line	Original line	175	8.18%
Yakima District - None				

APPENDIX F

Regarding the CNG High Pressure (HP) Pipeline Maximum Allowable Operating Pressure--Supporting Documentation
Data Request

October 10, 2013

To: Steve Kessie, CNG, Manager-Operations Services (via email)

Please provide the UTC with the following data requests (DR).

The scope of the following DR's should be limited to the high pressure (HP) lines in CNG's Washington system which have insufficient documentation to determine MAOP.

DR No.1

Please provide an updated Table 1 (or a new table) which lists ALL of the pipeline segments which have deficient MAOP records. Also add the following pipe data columns to Table 1 (or a new table): 1) grade; 2) wall thickness; 3) test pressure; 4) year installed; 5) %SMYS--based on existing (current) operations; 6) pipe segment length; 7) a column denoting transmission or not; 8) class location.

DR No.2

Please provide an updated Table 3 which shows only those pipelines from Table 1 which CNG reduced the pipe strength to 24,000 as allowed in 49 CFR 192.107(b). Also, please add a new column for 1) wall thickness (real or assumed and clarify which), 2) pipe length and 3)class location.

DR No.3

Please provide leak history and any exposed pipe condition reports for all pipelines which have deficient/unknown MAOP records.

DR No.4

Please provide and update to Table 2 indicating why CNG placed a particular pipeline in year one versus year 4 or 10 (ie: Was this decision based on location? leak history? HCAs? permitting? customer base?, etc.).

APPENDIX G

STATE OF WASHINGTON
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

CERTIFIED MAIL

November 5, 2013

Eric Martuscelli
Vice President-Operations
Cascade Natural Gas Corporation
8113 W. Grandridge Blvd
Kennewick, WA 99336

Dear Mr. Martuscelli:

RE: 2013 Natural Gas Standard Inspection –Tri-Cities and Walla Walla Districts

The Washington Utilities and Transportation Commission (UTC) staff conducted a natural gas safety standard inspection, during the week of October 14-18, 2013, of Cascade Natural Gas (CNG) – Tri-Cities and Walla Walla Districts. The inspection included a records review and inspection of the pipeline facilities.

Our inspection indicates four probable violations as noted in the enclosed report. We also noted two areas of concern which, unless corrected, could potentially lead to future violations of state or federal pipeline safety rules.

Your response needed
Please review the attached report and respond in writing by December 6, 2013. The response should include how and when you plan to bring the probable violations into full compliance.

What happens after you respond to this letter?
The attached report presents staff's decision on probable violations and does not constitute a finding of violation by the commission at this time.

After you respond in writing to this letter, there are several possible actions the commission, in its discretion, may take with respect to this matter. For example, the commission may:

- Issue an administrative penalty under RCW 81.88.040, or;

- Institute a complaint, seeking monetary penalties, changes in the company's practices, or other relief authorized by law, and justified by the circumstances, or;
- Consider the matter resolved without further commission action.

We have not yet decided whether to pursue a complaint or penalty in this matter. Should an administrative law judge decide to pursue a complaint or penalty, your company will have an opportunity to present its position directly to the commissioners.

We would like to note that during this was the fourth of four CNG inspections completed this year. It was clear that overall, CNG's records and compliance have greatly improved over previous inspections. We expect CNG to continue on this course and would like to thank CNG's personnel for their cooperation and assistance during these inspections.

If you have any questions, please contact Dennis Ritter, Pipeline Safety Engineer at (360) 664-1159. Please refer to the subject matter described above in any future correspondence pertaining to this inspection

Sincerely,

David D. Lykken
Pipeline Safety Director

Enclosure

cc: Steve Kessie, Manager-Operations Services, Cascade Natural Gas Corporation
Tina Beach, Manager of Standards & Compliance, Cascade Natural Gas Corporation
Vicki Ganow, Pipeline Safety Specialist, Cascade Natural Gas Corporation
Kevin McCallum, Pipeline Safety Specialist, Cascade Natural Gas Corporation

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
2013 Standard Natural Gas Safety Inspection
Cascade Natural Gas, Tri-Cities and Walla Walla Districts

The following probable violations of Title 49, CFR Part 192 and WAC 480-93 were noted as a result of the natural gas safety inspection of CNG's Tri-Cities and Walla Walla district records, plans, procedures and pipeline facilities.

PROBABLE VIOLATIONS

1. **WAC 480-93-185 Gas leak investigation:**

   (1) Each gas pipeline company must investigate any odor, leak, explosion, or fire, which may involve its gas pipelines, promptly after receiving notification. Where the investigation reveals a leak, the gas pipeline company must grade the leak in accordance with WAC 480-93-186, and take appropriate action. The gas pipeline company must retain the leak investigation record for the life of the pipeline.

   Finding(s):
   CNG failed to grade 3 leaks as noted below. All three of these leaks were severed lines:
   a. Kennewick WO#197180, 10/25/12—contractor who struck line had pinched off broken end so gas was not "blowing", however, the line was severed and not graded per CNG CP 750.
   b. Kennewick WO#20064, 3/14/13—form noted "blowing gas". Leak grade was not graded per CNG CP 750.
   c. Kennewick WO#200503, 3/16/13—landscaper cut the service which had an EFV which prevented gas from blowing. However, line as severed and not graded per CNG CP 750:

2. **WAC 480-93-186 Leak evaluation:**

   *(3) The gas pipeline company must check the perimeter of the leak area with a combustible gas indicator. The gas pipeline company **must perform a follow-up** inspection on all leak repairs with residual gas remaining in the ground as soon as practical, **but not later than thirty days** following the repair.*

   Finding(s):
   Two instances were found were CNG failed to follow up the initial leak response within the required 30 days:
   a. Kennewick WO#194048, 6/27/12—651 Oklahoma St., First response was 6/27/12; follow up was 8/30/12.
   b. Kennewick WO#202022, 9/5/13—679 S. Oklahoma St., First response was 9/5/13; follow up was on 10/8/13.

3. **WAC 480-93-188 Gas leak surveys:**

   (1) Each gas pipeline company must perform gas leak surveys using a gas detection instrument covering the following areas and circumstances:

(a) *Over all mains, services, and transmission lines including the testing of the atmosphere near other utility (gas, electric, telephone, sewer, or water) boxes or manholes, and other underground structures;*

Finding(s):
CNG uses printouts from its GIS mapping system to allow field crews the ability to "highlight" the pipelines they survey on a real time basis. In reviewing these leak survey records, several pipeline segments, stubs or services in both Tri Cities and Walla Walla were not highlighted. In some instances there was an issue, such as a locked gate, preventing access. CNG's procedure requires this to be noted on a separate "AOC" sheet (CNG 297) so it can be surveyed at a later date. Several non-highlighted pipeline facilities did not appear on AOC sheets and therefore, it could not be determined if the line had actually been surveyed. See attached sheets for locations.

4. **WAC 480-93-180 Plans and procedures.**

(1) *Each gas pipeline company must have* ***and follow*** *a gas pipeline plan and procedure manual (manual) for operation, maintenance, inspection, and emergency response activities that is specific to the gas pipeline company's system. The manual must include plans and procedures for meeting all applicable requirements of 49 CFR §§ 191, 192 and chapter 480-93 WAC, and any plans or procedures used by a gas pipeline company's associated contractors.*

Finding(s):
CNG CP 754.033 states, "Personnel shall grade each meter set and service riser listed in the shutdown section using the inspection criteria in section .02. If a meter set or riser is noted as "Needs Paint", or "Needs Repair", a description of the condition should be taken of the condition in the space provided. An individual completing a set of meters shall indicate by signing and dating the page of the report they completed."

During atmospheric corrosion control records review in Walla Walla, it was noted that there were pages of records which did not have a signature or name, just a date (see below). Additionally, it was noted the many different ways that CNG field personnel "signed" the forms: initials, first name, last name, or a combination of all three. The practice should be consistent for all personnel.

- 2012 Walla Walla   Book 1, Shutdown section 26-I008, pg 11/451
- 2013 Walla Walla   Book 1, Shutdown section 26-I001, pgs 17-22/1382
- 2013 Walla Walla   Book ?, Shutdown section 26-I004, pgs 113-122/1382

AREAS OF CONCERN AND RECOMMENDATIONS

1. **49 CFR §192.517(a) Records/**

(a) *Each operator shall make, and retain for the useful life of the pipeline, a record of each test performed under §§ 192.505 and 192.507. The record must contain at least the following information:*

(1) *The operator's name, the name of the operator's employee responsible for making the test, and the name of any test company used.*

(2) *Test medium used.*

(3) *Test pressure.*
(4) *Test duration.*
(5) *Pressure recording charts, or other record of pressure readings.*
(6) *Elevation variations, whenever significant for the particular test.*
(7) *Leaks and failures noted and their disposition.*

2. **<u>49 CFR § 192.619 Maximum Allowable Operating Pressure Steel or plastic pipelines:</u>**

(a) *No person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:*

(1) *The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part. However, for steel pipe in pipelines being converted under §192.14 or uprated under subpart K of this part, if any variable necessary to determine the design pressure under the design formula (§192.105) is unknown, one of the following pressures is to be used as design pressure:*

(i) *Eighty percent of the first test pressure that produces yield under section N5 of Appendix N of ASME B31.8 (incorporated by reference, see §192.7), reduced by the appropriate factor in paragraph (a)(2)(ii) of this section; or*

(ii) *If the pipe is 12¾ inches (324 mm) or less in outside diameter and is not tested to yield under this paragraph, 200 p.s.i. (1379 kPa) gage.*

(2) *The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:*

(i) *For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.*

(ii) *For steel pipe operated at 100 p.s.i. (689 kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table:*

Class location	Factors[1], segment— Installed before (Nov. 12, 1970)	Installed after (Nov. 11, 1970)	Converted under §192.14
1	1.1	1.1	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

Note: For offshore segments installed, or updated, or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated, or converted after July 31, 1977 that are located on an offshore platform or on a platform in inland navigable waters (including a pipe riser), the factor is 1.5

(3) *The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable*

date in the third column or the segment was uprated according to the requirements in subpart K of this part:

Pipeline segment	Pressure date	Test date
—Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006	March 15, 2006, or date line becomes subject to this part, whichever is later	5 years preceding applicable date in second column.
—Onshore transmission line that was a gathering line not subject to this part before March 15, 2006		
Offshore gathering lines	July 1, 1976	July 1, 1971.
All other pipelines	July 1, 1970	July 1, 1965.

(4) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

(b) No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with §192.195.

(c) The requirements on pressure restrictions in this section do not apply in the following instance. An operator may operate a segment of pipeline found to be in satisfactory condition, considering its operating and maintenance history, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column of the table in paragraph (a)(3) of this section. An operator must still comply with §192.611

Findings:

Based on findings from previous CNG inspections completed this year, CNG has reviewed all of its high pressure pipelines in all units looking for missing data used to confirm MAOP including this unit. CNG has formulated a program to obtain all missing data and Pipeline Safety is currently reviewing it. However, pressure test records for the 8" Attalia Line were asked for during this inspection. CNG did not have complete pressure test records (per Kathleen Chirgwin, GO).

In reviewing CNG's table of missing information submitted to the UTC as part of the above mentioned program, the 8" Attalia line was included, however, pressure testing records were not listed as missing; only "pipe grade" was listed as missing. This portion of the code is not retroactive and the 8" Attalia line was installed pre code. CNG still must confirm MAOP per 192.619, if the pressure testing documents are not complete. We will require CNG to submit its MAOP confirming documents for the 8-inch Attalia line to the UTC within 30 calendar days from the date of this letter.

2. **<u>WAC 480-93-140(1) Service regulators:</u>**

(1) *To ensure proper operation of service regulators, each gas pipeline company must install, operate, and maintain service regulators in accordance with federal and state regulations, and in accordance with the manufacturer's recommended installation and maintenance practices.*

<u>Findings:</u>

A review of the annual regulator maintenance records indicated that regulators R31 Kennewick, R37 Pasco, R39 Finley, and R64 Kennewick, had springs installed which were outside the set pressures of the regulator or relief. While not necessarily a violation of the code, CNG should have some documentation as to why this practice is being used. CNG did not provide documentation during the inspection. It should be noted, this same issue occurred in the Yakima/Sunnyside district inspection (9/27/13). At that time, CNG stated that GO Engineering establishes and approves all set points and spring ranges for regulators. CNG stated they would have justification "soon" and so it was not written into the report. As of the date of this report, CNG still has not provided justification. It should also be noted, that a regulator company Emerson (Fisher) was contacted to ask whether this situation was a safety concern. Emerson stated it was not a safety concern, but may be a reliability or accuracy issue. They recommend operators use springs (the lighter the better) with a range which encompasses the set point of the regulators/relief.

3. **<u>WAC 480-93-188(5) Gas leak surveys:</u>**

(5) *Each gas pipeline company must keep leak survey records for a minimum of five years. At a minimum, survey records must contain the following information:*
  - *(a) Description of the system and area surveyed (including maps and leak survey logs);*
  - *(b) Survey results;*
  - *(c) Survey method;*
  - *(d) Name of the person who performed the survey;*
  - *(e) Survey dates; and*
  - *(f) Instrument tracking or identification number.*

<u>Findings:</u>

CNG performs quarterly patrolling on the Columbia Mall rooftop (meter's and regulators are on the roof). During the patrol they also do leak surveys, however, they do not write down the instrument number on the patrol form—there actually is not a place on the form to write it. The same form used in Walla Walla does have place holder for this information. CNG should consider using this version of the form for all patrolling to assist field crews in writing down information

APPENDIX H

Huynh, Rhonda (UTC)

From:	Beach, Tina <Tina.Beach@cngc.com>
Sent:	Thursday, April 17, 2014 12:02 PM
To:	Huynh, Rhonda (UTC)
Cc:	Martuscelli, Eric; Ogden, Jeremy; Kessie, Steve
Subject:	FOLLOW UP: MAOP Validation - Response TriCities/Walla Walla Standard Inspection 2013
Attachments:	WUTC - 4-17-14.pdf

Dear Rhonda;

Per Dennis Ritter's original request dated October 10th, 2013 and subsequent discussions between Mr. Ogden and Mr. Lykken; please find the attached request for information related to 49CFR 192.619 Maximum Operating Pressure steel or plastic pipelines. Please forward this information to Mr. Lykken and Mr. Ritter. If you have further questions related to this data feel free to contact Mr. Ogden or myself.

Sincerely,

Tina R. Beach
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April 17, 2014

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State of Washington
UTC
Pipeline Safety Program

David D. Lykken
Pipeline Safety Director
Washington Utilities and Transportation Commission
1300 S. Evergreen Park Drive S.W.
P.O. Box 47250
Olympia, WA 98504-7250

Subject: Cascade Natural Gas – Maximum Allowable Operating Pressure (MAOP)

David:

Transmitted herewith is the data requested in the October 10, 2013 data request from the WUTC. TABLE 1 – PIPELINES WITH MISSING MAOP INFORMATION addresses DR #1 and TABLE 3 – PIPELINES ASSUMING YIELD STRENGTH OF 24,000 PSI addresses DR #2. Cascade has contracted with irth Solutions to perform a class location study on all of the high pressure (HP) pipelines and it is anticipated that the results will be available in late spring 2014. Additionally, the information requested in DR #3 is too large to be transmitted by email and will be posted in the UTC online portal, as instructed by Dennis Ritter.

As a response to DR #4, the schedule shown in TABLE 2 - SCHEDULE is based on a matrix that Cascade created to prioritize pipeline segments. This matrix took into account % SMYS of pipe and fittings, pressure rating of fittings, population density near pipeline, length of pipeline segment, and documentation available. The schedule was then prepared to address the pipelines, with higher priorities first and minor exceptions as deemed necessary.

If you have any questions or would like to discuss anything further, please feel free to contact me to discuss.

Sincerely,

Jeremy Ogden, P.E.
Director, Engineering Services
Cascade Natural Gas Corporation
jeremy.ogden@cngc.com
509-734-4509

TABLE 1 - PIPELINES WITH MISSING MAOP INFORMATION

Aberdeen District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Kitsap Line	1972	Pressure rating on Sav-A-Valves (2)	Expose and inspect Sav-A-Valves. Replace caps if necessary.	42,000	0.188	750	19.99	908	N
		2000	158 ft of pipe assumed to be Grade B	Test to verify pipe grade as X42 or greater.	52,000	0.312	1080	29.13	1,035	N
		1963	Under rated Sav-A-Valves (2) and transition fittings (2)	Expose and inspect to verify pressure rating and grade.	46,000	0.188	750	24.88	35,770	Y
3	4" McCleary HP Line	1963	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	5.13	225	N
8	4" Montesano HP Distribution System	1964	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	3.66	1,645	N
9	2" Elma Rendering Plant HP Line	1964	Pressure test documentation	MAOP based on operating history.	35,000	0.154	None	3.30	5,280	N
		1964	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	9.01	252	N
15	12" Kitsap HP Line	1995	Under rated Sav-A-Valve	Expose and inspect Sav-A-Valve. Replace if necessary.	52,000	0.312	1080	19.61	34,782	N

Bellingham District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Bellingham HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Remove sections of retired in place pipe and test for pipe grade and wall thickness.	24,000	0.188	None	36.32	15,094	N
2	Bellingham HP Distribution System	1956	Pressure test documentation and pipe grade	MAOP based on operating history. Pipelines will be removed/downrated as part of future project to remove pipelines from bridges which will be replaced.	24,000	0.188	None	14.81	16,475	N
		1956	Pressure test documentation and pipe grade		24,000	0.188	None	18.46	19,400	N
		1960	Pressure test documentation, pipe grade and wall thickness		24,000	0.156	None	9.31	1,508	N
		1964	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	5.30	2,356	N
		1965	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	7.80	988	N
		1966	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	7.80	1,577	N
		1966	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	10.16	396	N
		1967	Pressure test documentation	MAOP based on operating history.	35,000	0.154	None	3.41	2,025	N
		1972	Pipe grade and wall thickness	Pipelines will be removed/downrated as part of future project to remove pipelines from bridges which will be replaced.	24,000	0.156	225	9.31	219	N
3	8" Central Whatcom HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples from James Street and Lampman Road, and any other points that are available, for pipe grade and wall thickness.	24,000	0.188	None	36.32	57,437	N
		1993	Pipe grade on transition fittings	Expose and inspect fittings for pipe grade, either by stamp indentification or in-situ testing.	46,000	0.188	680	24.91	10,579	N
4	4" South Lynden HP Line	1961	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	15.02	35,441	N
6	4" Ferndale HP Line	1962	Under rated flange tee at V-47	Inspect during V-47 project in 2014.	25,000	0.188	500	18.19	8,120	N
8	2" Nooksack HP Distribution System	1963	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.154	None	8.03	732	N
9	8" Lake Terrell Road Transmission Line	1965	Pipe grade and wall thickness	Test samples in-situ in 2015.	24,000	0.188	569	36.32	10,314	Y
10	16" N. Whatcom Transmission Line	1971	Under rated plugs at valves	Replace plugs in 5 valves beginning in 2014.	52,000	0.25	926	36.92	143,907	Y
12	4" North Lynden HP Line	1978	Under rated Sav-A-Valve	Expose and inspect to verify pressure rating.	35,000	0.188	600	13.68	8,161	N
21	16" Squalicum HP Line	1993	Pipe grade	In situ testing in 3 locations minimum.	24,000	0.281	620	29.66	2,600	N

Bremerton District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Kitsap Line	1972	Pressure rating on Sav-A-Valves (2)	Expose and inspect Sav-A-Valves. Replace caps if necessary.	42,000	0.188	750	19.99	908	N
		2000	158 ft of pipe assumed to be Grade B	Test to verify pipe grade as X42 or greater.	52,000	0.312	1080	29.13	1,035	N
		1963	Under rated Sav-A-Valves (2) and transition fittings (2)	Expose and inspect to verify pressure rating and grade.	46,000	0.188	750	24.88	35,770	Y
2	8" Bremerton Transmission Line	1963	Pipe grade and wall thickness	Test abandoned sections to verify pipe grade and wall thickness.	24,000	0.188	750	47.69	2,843	Y
6	4" Olympic View HP Line	1973	Under rated plugs (2) in a valve	Replace plugs.	42,000	0.188	500	14.22	14,540	N
11	8" Bremerton HP Line	1964	Pressure test documentation	MAOP based on operating history.	46,000	0.188	None	7.18	5,780	N
		1971	Pressure test documentation	Validate operating pressure.	35,000	0.188	None	9.44	3,269	N
15	12" Kitsap HP Line	1995	Under rated Sav-A-Valve	Expose and inspect Sav-A-Valve. Replace if necessary.	52,000	0.312	1080	19.61	34,782	N

Kennewick District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	Attalia HP Line	1958	Pipe Grade	Test previously removed and abandoned sections to verify pipe grade.	24,000	0.188	337	28.67	78,449	N
		1968	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	19.66	49	N
		1968	Pressure test documentation	MAOP based on operating history.	35,000	0.25	None	21.86	183	N
		1968	Pressure test documentation	MAOP based on operating history.	35,000	0.375	None	14.57	42	N
		1968	Pressure test documentation	MAOP based on operating history.	35,000	0.33	None	16.56	25	N
		1968	Pressure test documentation	MAOP based on operating history.	52,000	0.25	None	14.71	111	N
3	4" East Finley HP Line	1967	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	8.55	2,498	N
4	Pasco HP Distribution System	1960	Pipe grade and wall thickness	Assume minimum pipe grade and wall thickness values.	24,000	0.156	450	18.03	10,125	N
5	4" Northwest Pasco HP Line	1966	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	10.26	2,847	N
6	4" Glade Road HP Line	1966	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	5.13	2,052	N
7	2" Burbank HP Line	1967	Pressure test documentation	MAOP based on operating history.	35,000	0.154	None	3.48	3,520	N
8	4" Finley HP Line	1959	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	12.02	12,391	N
11	4" Plymouth HP Line	1980	Under rated Sav-A-Valve	Expose and inspect Sav-A-Valve. Replace if necessary.	35,000	0.188	600	13.68	4,112	N

= ASSUMED VALUE

Longview District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Test retired in place sections and sections which have previously been removed.	24,000	0.25	400	26.56	27,350	N
		1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	15.02	4,964	N
2	4" Kalama HP Line	1976	Pressure test documentation	Validate operating pressure.	35,000	0.188	None	10.26	18,075	N
3	4" Dike Road HP Line (Longview)	1965	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	4.81	6,463	N
7	12" South Longview HP Line	1995	Assumed Grade B transition	Expose and test fittings for grade.	52,000	0.312	1080	19.61	18,373	N
8	8" Kalama HP Line	1996	Pressure test documentation	Validate operating pressure.	46,000	0.332	None	8.47	2,049	N
		1997	Pressure test documentation, pipe grade, and wall thickness	Test retired in place pipe and samples removed during replacements. Validate operating pressure on applicable sections.	24,000	0.188	None	28.67	7,132	N
		1997	Pressure test documentation and pipe grade		24,000	0.25	None	21.56	550	N
		1997	Pressure test documentation	Validate operating pressure.	46,000	0.25	None	11.25	550	N

Mt. Vernon District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Anacortes HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating pressure. Test samples from abandoned sections and those removed during replacements.	24,000	0.188	None	34.41	103,743	N
		1972	Pressure test documentation	Replace section of pipeline.	35,000	0.188	None	23.59	80	N
2	8" March Point HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ at 4 locations minimum.	24,000	0.188	None	34.41	9,233	N
3	Anacortes HP Distribution System	1956	Pressure test documentation and pipe grade	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.188	None	7.71	7,352	N
		1956	Pressure test documentation and pipe grade	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.188	None	10.04	4,675	N
		1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	6.31	349	N
4	4" Mt. Vernon HP Line	1957	Pipe grade and wall thickness	Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	15.02	29,922	N
5	3" Burlington HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	11.64	5,769	N
7	4" North Texas Road HP Line	1960	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.154	None	8.03	914	N
8	4" Arlington HP Line	1961	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	14.96	10,177	N
10	4" Sedro-Woolley HP Line	1968	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	3.42	3,633	N
11	6" Whidbey Island HP Line	1969	Pipe and valve assembly	Replace 45 ft of pipe and valve assembly.	52,000	0.188	750	13.55	27,550	N
12	6" North Oak Harbor HP Line	1972	Under rated stopper fitting	Expose and inspect stopper fitting. Replace if necessary.	42,000	0.188	675	16.78	19,048	N
14	16" Fredonia Transmission Line	1983	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.	52,000	0.281	750	27.37	64,426	Y
		1983	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.	49,000	0.312	750	26.16	563	Y
		2001	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.	52,000	0.312	800	23.89	323	Y
16	16" March Point Transmission Line	1992	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.	52,000	0.281	750	27.37	43,344	Y

Walla Walla District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Walla Walla HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.188	None	14.34	4,595	N
2	3" College Place HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.156	None	7.01	2,474	N

Wenatchee District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	6" & 8" Moses Lake HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ.	24,000	0.188	None	18.35	509	N
		1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ.	24,000	0.188	None	23.89	12,956	N
		1981	Pipe grade and wall thickness	Test samples in-situ.	24,000	0.156	375	15.02	2,041	N
2	2" Wheeler HP Line	1962	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.154	None	8.03	2,375	N
3	4" Othello Transmission Line	1971	Wall thickness	Validate wall thickness or replace 191 ft section of pipeline.	35,000	0.188	465	20.14	191	Y
6	4" South Moses Lake HP Line	1968	Pressure test documentation	MAOP based on operating history.	35,000	0.188	None	8.55	3,087	N
10	6" West Wheeler HP Line	1997	Pipe grade and wall thickness	Assume minimum pipe grade and wall thickness values.	24,000	0.188	755	18.35	205	N
12	6" Wenatchee HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade and wall thickness values.	24,000	0.188	None	16.52	31,812	N

Yakima District

Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	8" Yakima HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples from abandoned sections and in-situ.	24,000	0.188	None	19.12	3,032	N
		1956	Pressure test documentation and pipe grade	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.5	None	7.19	695	N
		1961	Pipe grade and wall thickness	Test samples from abandoned sections and in-situ.	24,000	0.188	360	19.12	4,891	N
		1978	Pressure test documentation	Validate operating pressure.	35,000	0.188	None	13.11	42	N
		1978	Pressure test documentation	Validate operating pressure.	46,000	0.25	None	7.50	1,585	N

= ASSUMED VALUE

Sunnyside District (Merged with Yakima District)										
Line #	Description	Year Installed	Critical Information	Plan of Action	Pipe Grade	Wall Thickness (in.)	Test Pressure (psig)	% SMYS	Pipe Segment Length (ft)	Transmission (Y/N)
1	3" Sunnyside HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	9.35	4,536	N
2	2" South Sunnyside HP Line	1959	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.154	None	6.43	4,018	N
3	4" Grandview HP Line	1956	Pressure test documentation, pipe grade and wall thickness	Replace pipeline in 2015.	24,000	0.156	None	15.02	4,736	N
4	3" Prosser HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	11.69	5,832	N
5	6" Toppenish-Zillah HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Sample sections removed in 2014 and abandoned sections to validate pipe grade and wall thickness.	24,000	0.188	None	29.37	32,566	N
6	3" Zillah HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	18.70	873	N
7	4" Wapato HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	9.13	33,284	N
8	3" South Toppenish HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	8.18	6,161	N
9	3" Granger HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Assume minimum pipe grade value.	24,000	0.156	None	8.18	31,347	N

= ASSUMED VALUE

TABLE 2 - SCHEDULE

2014					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Bellingham	1	8" Bellingham HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Remove sections of retired in place pipe and test for pipe grade and wall thickness.
Yakima (Sunnyside)	5	6" Toppenish-Zillah HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Sample sections removed in 2014 and abandoned sections to validate pipe grade and wall thickness.
Bellingham	6	4" Ferndale HP Line	1962	Under rated flange tee at V-47	Inspect during V-47 project in 2014.
Bellingham	10	16" N. Whatcom Transmission Line	1971	Under rated plugs at valves	Replace plugs in 5 valves beginning in 2014.
2015					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Bellingham	2	Bellingham HP Distribution System	1956	Pressure test documentation and pipe grade	MAOP based on operating history. Pipelines will be removed/downrated as part of future project to remove pipelines from bridges which will be replaced.
Mt. Vernon	14	16" Fredonia Transmission Line	1983	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.
			1983	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.
			2001	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.
Bellingham	16	16" March Point Transmission Line	1992	Unknown grade and wall thickness on fittings	Expose and perform in-situ testing.
Bellingham	9	8" Lake Terrell Road Transmission Line	1965	Pipe grade and wall thickness	Test samples in-situ in 2015.
Mt. Vernon	2	8" March Point HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ at 4 locations minimum.
Yakima (Sunnyside)	3	4" Grandview HP Line	1956	Pressure test documentation, pipe grade and wall thickness	Replace pipeline in 2015.
Bellingham	10	16" N. Whatcom Transmission Line	1971	Under rated plugs at valves	Replace plugs in 5 valves beginning in 2014.
2016					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Mt. Vernon	1	8" Anacortes HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating pressure. Test samples from abandoned sections and those removed during replacements.
Bellingham	3	8" Central Whatcom HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples from James Street and Lampman Road, and any other points that are available, for pipe grade and wall thickness.
Kennewick	1	Attalia HP Line	1958	Pipe Grade	Test previously removed and abandoned sections to verify pipe grade.
			1968	Pressure test documentation	MAOP based on operating history.
2017					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Bremerton	2	8" Bremerton Transmission Line	1963	Pipe grade and wall thickness	Test abandoned sections to verify pipe grade and wall thickness.
Longview	1	Longview-Kelso HP Distribution Line	1957	Pipe grade and wall thickness	Test retired in place sections and sections which have previously been removed.
Bremerton	6	4" Olympic View HP Line	1973	Under rated plugs (2) in a valve	Replace plugs.
2018					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Longview	8	8" Kalama HP Line	1996	Pressure test documentation	Validate operating pressure.
			1997	Pressure test documentation, pipe grade, and wall thickness	Test retired in place pipe and samples removed during replacements. Validate operating pressure on applicable sections.
			1997	Pressure test documentation and pipe grade	
			1997	Pressure test documentation	Validate operating pressure.
2019					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Bellingham	21	16" Squalicum HP Line	1993	Pipe grade	In situ testing in 3 locations minimum.
Wenatchee	1	6" & 8" Moses Lake HP Line	1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ.
			1957	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples in-situ.
			1981	Pipe grade and wall thickness	Test samples in-situ.
2020					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Yakima	1	8" Yakima HP Line	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Test samples from abandoned sections and in-situ.
			1961	Pipe grade and wall thickness	Test samples from abandoned sections and in-situ.
Bellingham	2	Bellingham HP Distribution System	1956	Pressure test documentation, pipe grade and wall thickness	MAOP based on operating history. Remove sections of retired in place pipe and test for pipe grade and wall thickness. Prepare sampling plan for further testing if necessary.
2021					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Mt. Vernon	12	6" North Oak Harbor HP Line	1972	Under rated stopper fitting	Expose and inspect stopper fitting. Replace if necessary.
Bellingham	3	8" Central Whatcom HP Line	1993	Pipe grade on transition fittings	Expose and inspect fittings for pipe grade, either by stamp indentification or in-situ testing.
Bellingham	12	4" North Lynden HP Line	1978	Under rated Sav-A-Valve	Expose and inspect to verify pressure rating.
2022					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Yakima	1	8" Yakima HP Line	1978	Pressure test documentation	Validate operating pressure.
			1978	Pressure test documentation	Validate operating pressure.
Aberdeen Bremerton	1	8" Kitsap Line	1963	Under rated Sav-A-Valves (2) and transition fittings (2)	Expose and inspect to verify pressure rating and grade.
2023					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Bremerton	11	8" Bremerton HP Line	1971	Pressure test documentation	Validate operating pressure.
Longview	7	12" South Longview HP Line	1995	Assumed Grade B transition fittings on X52 pipeline	Expose and test fittings for grade.
2024					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Longview	2	4" Kalama HP Line	1976	Pressure test documentation	Validate operating pressure.
Mt. Vernon	1	8" Anacortes HP Line	1972	Pressure test documentation	Replace section of pipeline.
2025					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Aberdeen Bremerton	1	8" Kitsap Line	2000	158 ft of pipe assumed to be Grade B	Test to verify pipe grade as X42 or greater.
Mt. Vernon	11	6" Whidbey Island HP Line	1969	Pipe and valve assembly	Replace 45 ft of pipe and valve assembly.
2026					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Aberdeen Bremerton	1	8" Kitsap Line	1972	Pressure rating on Sav-A-Valves (2)	Expose and inspect Sav-A-Valves. Replace caps if necessary.
Aberdeen	15	12" Kitsap HP Line	1995	Under rated Sav-A-Valve	Expose and inspect Sav-A-Valve. Replace if necessary.
2027					
District	**Line #**	**Description**	**Year Installed**	**Critical Information**	**Plan of Action**
Wenatchee	3	4" Othello Transmission Line	1971	Wall thickness	Validate wall thickness or replace 191 ft section of pipeline.
Kennewick	11	4" Plymouth HP Line	1980	Under rated Sav-A-Valve	Expose and inspect Sav-A-Valve. Replace if necessary.

TABLE 3 - PIPELINES ASSUMING YIELD STRENGTH OF 24,000 PSI

Aberdeen District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
9	2" Elma Rendering Plant HP Line	Route 8 Xing	252	150	24,000	0.156	9.01

Bellingham District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	8" Bellingham HP Line	From O-8 to R-18	15,094	380	24,000	0.188	36.32
2	Bellingham HP Distribution System	Original Line	16,475	155	24,000	0.188	14.81
		Original Line	19,400	155	24,000	0.188	18.46
		4" off of High St	1,508	155	24,000	0.156	9.31
		4" off of High St	219	155	24,000	0.156	9.31
3	8" Central Whatcom HP Line	Original Line	57,437	380	24,000	0.188	36.32
4	4" South Lynden HP Line	Original Line	35,441	250	24,000	0.156	15.02
8	2" Nooksack HP Distribution System	Tap line 4 south	732	250	24,000	0.154	8.03
9	8" Lake Terrell Road Transmission Line	Original Line	10,314	380	24,000	0.188	36.32
21	16" Squalicum HP Line	Original Line	2,600	250	24,000	0.281	29.66

Bremerton District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
2	8" Bremerton Transmission Line	Original Line	2,843	499	24,000	0.188	47.69

Kennewick District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	Attalia HP Line	8" Attalia HP Line	78,449	300	24,000	0.188	28.67
4	Pasco HP Distribution System	Original Line	10,125	300	24,000	0.156	18.03
8	4" Finley HP Line	Original Line	12,391	200	24,000	0.156	12.02

Longview District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	Longview-Kelso HP Distribution Line	Original Line	27,350	250	24,000	0.25	26.56
		Original Line	4,964	250	24,000	0.156	15.02
3	4" Dike Road HP Line (Longview)	Original Line	6,463	80	24,000	0.156	4.81
8	8" Kalama HP Line	Industrial Addition	7,132	300	24,000	0.188	28.67
		Industrial Addition	550	300	24,000	0.25	21.56

Mt. Vernon District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	8" Anacortes HP Line	Original Line	103,743	360	24,000	0.188	34.41
2	8" March Point HP Line	Original Line	9,233	360	24,000	0.188	34.41
3	Anacortes HP Distribution System	518 Hillcrest Dr. to R-32	7,352	105	24,000	0.188	7.71
		R-31 to 518 Hillcrest Dr.	4,675	105	24,000	0.188	10.04
		20th St HP stub	349	105	24,000	0.156	6.31
4	4" Mt. Vernon HP Line	Original Line	29,922	250	24,000	0.156	15.02
5	3" Burlington HP Line	R-18 to R-19	5,769	249	24,000	0.156	11.64
7	4" North Texas Road HP Line	North Texas Rd near R-85	914	250	24,000	0.154	8.03
8	4" Arlington HP Line	Gate to R-86	10,177	249	24,000	0.156	14.96

Walla Walla District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	8" Walla Walla HP Line	Original Line	4,595	150	24,000	0.188	14.34
2	3" College Place HP Line	Original Line	2,474	150	24,000	0.156	7.01

Wenatchee District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	6" & 8" Moses Lake HP Line	Original Line	509	250	24,000	0.188	18.35
		Original Line	12,956	250	24,000	0.188	23.89
		Sempra Main Conversion	2,041	250	24,000	0.156	15.02
2	2" Wheeler HP Line	Original Line	2,375	250	24,000	0.154	8.03
10	6" West Wheeler HP Line	1997 Addition	205	250	24,000	0.188	18.35
12	6" Wenatchee HP Line	Original Line	31,812	225	24,000	0.188	16.52

Yakima District

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	8" Yakima HP Line	Original Line	3,032	200	24,000	0.188	19.12
		Fish 8" Yakima River Crossing	695	200	24,000	0.5	7.19
		8" Terrace Heights to R-5	4,891	200	24,000	0.188	19.12

Sunnyside District (Merged with Yakima District)

Line #	Description	Segment Description	Pipe Segment Length (ft)	MAOP (psig)	Pipe Grade	Wall Thickness (in.)	% SMYS
1	3" Sunnyside HP Line	Original Line	4,536	200	24,000	0.156	9.35
2	2" South Sunnyside HP Line	North section of line	4,018	200	24,000	0.154	6.43
3	4" Grandview HP Line	Original Line	4,736	250	24,000	0.156	15.02
4	3" Prosser HP Line	O-01 to R-1	5,832	250	24,000	0.156	11.69
5	6" Toppenish-Zillah HP Line	Original Line	32,566	400	24,000	0.188	29.37
6	3" Zillah HP Line	Original Line	873	400	24,000	0.156	18.70
7	4" Wapato HP Line	Original Line	33,284	152	24,000	0.156	9.13
8	3" South Toppenish HP Line	Original Line	6,161	175	24,000	0.156	8.18
9	3" Granger HP Line	Original Line	31,347	175	24,000	0.156	8.18

= ASSUMED VALUE

APPENDIX I

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In re Commission Investigation of the Gas Pipeline System of Cascade Natural Gas Corporation	DOCKET PG-150120 STIPULATED AGREEMENT

I. NATURE OF AGREEMENT

1 This Stipulated Agreement (Agreement) is entered into between Cascade Natural Gas Corporation ("Cascade" or "Company") and Staff of the Washington Utilities and Transportation Commission ("Commission Staff" or "Staff") (collectively, "the Parties") for the purpose of resolving issues resulting from natural gas inspections conducted on the Company's high pressure pipelines located in the following areas: Longview District, Bellingham District and Kennewick District.

2 This Agreement is subject to review and disposition by the Washington Utilities and Transportation Commission ("Commission"), and it is not effective until approved by the Commission.

3 The Parties understand that the process for approval is at the discretion of the Commission. However, the Parties believe the Commission may approve this Agreement by Order consistent with the conditions stated herein by taking action at an open public meeting, if the Commission desires to do so. The Parties recommend that procedure to the Commission.

II. BACKGROUND

4 Cascade owns and operates a natural gas distribution system in Washington State. In this docket, Commission Staff conducted a series of Standard Natural Gas Pipeline Inspections of Cascade's pipeline facilities in the Longview District, Bellingham District and Kennewick District. The inspections included a review of Cascade's records, policies and procedures, and pipeline facilities. The inspections took place between the months of March through October 2013.

5 During four independent inspections conducted on March 28, 2013, May 16, 2013 and October 7, 2013, Commission Staff requested from Cascade additional documentation on four randomly selected high pressure pipelines. Staff requested this documentation in order to confirm the selected pipelines' maximum allowable operating pressure (MAOP). In all four cases, the documentation provided Staff was missing some form of essential data necessary for Staff to judge whether the MAOP of the pipelines could be validated.

6 Given the above information, Commission Staff then requested from Cascade a list of all high pressure pipelines in its Washington service territory where some form of essential data necessary to confirm the pipeline's MAOP was missing. Cascade provided such a list on September 27, 2013. Staff reviewed the newly provided information and believed that further information would be necessary to clarify the information provided.

III. AGREEMENT

7 Consistent with the above-stated facts, Commission Staff and Cascade have agreed to a systematic process designed to provide Staff certain detailed information regarding Cascade's high pressure pipeline system. Staff and Cascade seek Commission approval of

the Parties' proposed treatment of the matters set forth herein. To that end, the Parties agree and stipulate as follows:

1. Cascade will submit to the Commission a written plan that Cascade intends to implement for the purpose of determining the MAOP of all its high pressure pipelines in Washington for which there is insufficient documentation to confirm the current MAOP. The plan shall be submitted to the Commission within six months from the approval of this Agreement and should include:

   i. A summary of all high pressure systems with data currently insufficient to demonstrate and confirm the MAOP of such systems. The Parties agree that for purposes of this Agreement, high pressure shall be defined as any system greater than 60 psig.

   ii. For pre-code pipe with unknown characteristics, written documentation describing the basis or bases by which the Company has determined said pipe's current MAOP.

   iii. Any such process or processes the Company uses to validate data to calculate hoop stress for unknown pipe, including but not limited to, pipe grade, diameter and wall thickness. Such process or processes must conform to the requirements set forth in 49 CFR 192.107. Any new or innovative processes for validating pipe characteristics shall be submitted to the Commission for review.

   iv. For the high pressure pipelines identified pursuant to section i. above, the following information:

      1. Percentage of Specified Minimum Yield Strength (%SMYS);

2. Test pressure;

3. Installation year

4. Critical missing information; and,

5. An action plan for each pipeline segment set forth in a tabular format.

v. Rationale describing the prioritization of the action plan referenced in section iv, above.

vi. A process for identifying when immediate corrective actions will be required

vii. Time frames for completion of the action plan for each pipeline segment referenced in section iv, above. The Company shall also provide a justification for the established times frames for each line segment.

2. Until a pipe'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 said stringent criteria puts the line over 20% Specified Minimum Yield Strength ("SMYS"), the line shall immediately be incorporated into Cascade's transmission integrity management program. For said pipe, the Company shall perform a threat evaluation, and incorporate the pipe into its risk and pipe assessments.

3. The baseline assessment for all high pressure lines moving into transmission status shall be completed within three years from the date this Agreement is approved.

4. If at any time Cascade decides to accept the most stringent criteria as the final resolution for a particular line segment, then it must submit an amended plan reflecting this change to the Commission for approval.

5. If assumptions for unknown pipe characteristics as described in 49 CFR 192.107 & 109 result in a hoop stress of 20% SMYS or greater, that pipeline will be leak surveyed two (2) times per calendar year.

6. Pre -1970 pipe calculated at over 30% SMYS will undergo a 20% pressure reduction if the seam type is unknown.

7. Cascade will submit an annual status report on its progress in implementing the plan with appropriate updates to project summary tables.

8. If an amendment to the plan is necessary, Cascade will submit the proposed amended plan to Staff for review at least ninety (90) days prior to the time Cascade submits the amended plan to the Commission for formal approval.

IV. GENERAL PROVISIONS

8 Nothing in this Agreement affects the ability of the Commission Staff to seek a complaint for penalties or other appropriate relief, if gas pipeline safety rule violations are found in subsequent inspections by Commission Staff of the Company's gas distribution system, policies and procedures. However, so long as Cascade performs the actions set forth in Section III of this Agreement, Commission Staff does not intend to utilize the information provided by Cascade in compliance with this Agreement, including but not limited to Cascade's submission of a written action plan and Cascade's implementation of said plan, to generate enforcement actions or to recommend that the Commission take enforcement actions. Nothing in this Agreement prevents or places any conditions upon the Company from contesting any such Commission enforcement action, if any is initiated.

9 This is the entire agreement of the Parties. The Agreement supersedes all prior oral and written agreements on issues addressed herein. It may not be cited as precedent in any proceeding other than a proceeding to enforce the terms of this Agreement.

10 This Agreement is considered executed when all Parties sign the Agreement. A designated and authorized representative may sign the Agreement on a party's behalf. The Parties may execute this Agreement in counterparts. If the Agreement is executed in counterparts, all counterparts shall constitute one agreement. An Agreement signed in counterpart and sent by facsimile is as effective as an original document. A faxed signature page containing the signature of a party is acceptable as an original signature page signed by that party. Each Party shall indicate the date of its signature on the Agreement. The date of execution of the Agreement will be the latest date indicated on the signatures.

11 Upon execution, Commission Staff will make reasonable efforts to have the matter placed on the Commission's open meeting agenda within a short period following the execution of this Agreement. If this matter is not handled at a Commission open public meeting, the Parties agree to support the Agreement during the course of whatever procedures the Commission determines are appropriate.

For Commission Staff:

David Lykken
Director, Pipeline Safety
Washington Utilities and
Transportation Commission

Date signed: 2/2/15

For Cascade Natural Gas Company:

Eric Martuscelli
Vice President of Operations
Cascade Natural Gas Company

Date signed: 1-30-15

APPENDIX J

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Investigation of the Gas Pipeline System of	)	DOCKET PG-150120
	)	ORDER 01
Cascade Natural Gas Corporation	)	ORDER ACCEPTING AGREEMENT AND CLOSING DOCKET
. . . .	)	

BACKGROUND

1 The Washington Utilities and Transportation Commission (Commission) regulates the safety of gas pipelines, including those owned and operated by Cascade Natural Gas Corporation (CNG or Company). Commission Staff (Staff) conducted gas pipeline inspections in the Longview, Bellingham and Kennewick districts, in March, May, and October 2013, respectively.

2 Staff sent Inspection Reports to CNG on April 11, May 29, and November 5, 2013, alleging several violations of Commission statutes and rules and identifying areas of concern. CNG provided a written response to the reports on May 10, June 28, and December 18, 2013. CNG and staff engaged in further discussion regarding the investigation, Staff's findings, and CNG's responses, and subsequently reached an agreement to resolve the issues Staff identified.

3 On February 3, 2015, Commission Staff and CNG filed a "Stipulated Agreement to Close Docket" (the Agreement). The Agreement is attached as Exhibit A to, and incorporated into, this Order. The Agreement addresses certain issues in this docket, including compliance and specific steps CNG will take to improve its system and practices.

4 The Agreement is not effective until it is accepted by the Commission. If CNG fails to comply with the terms of the Agreement or this Order, the Commission may invoke its authority to assess penalties for violations of a Commission order.

DISCUSSION

5 The terms of the Settlement Agreement are not contrary to law or public policy and reasonably resolve all issues in this proceeding. The Settlement Agreement supports the Commission's goal of compliance by requiring the Company to take specific actions to bring its system and practices in line with regulations governing natural gas pipelines. Given these factors, we find the Settlement Agreement is consistent with the public interest and should be approved as filed.

FINDINGS AND CONCLUSIONS

6 (1) The Washington Utilities and Transportation Commission is an agency of the State of Washington vested by statute with the authority to regulate the safety of gas pipeline companies.

7 (2) CNG is a gas pipeline company operating in the state of Washington subject to Commission jurisdiction.

8 (3) Commission Staff conducted inspections of CNG's gas pipeline system in the Longview, Bellingham, and Kennewick districts in March, May, and October 2013, respectively.

9 (4) Commission Staff and CNG have entered into a Settlement Agreement, attached as Exhibit A to, and incorporated into, this Order, as an appropriate resolution of the issues raised by the inspections in March, May, and October 2013.

10 (5) After reviewing the Agreement entered into between CNG and Commission Staff, and giving due consideration, the Commission finds that the Agreement is in the public interest and represents an appropriate resolution of the issues raised by the inspections of CNG's natural gas pipelines in the Longview, Bellingham and Kennewick districts in March, May, and October 2013, respectively.

11 (6) The Settlement Agreement is effective date as of the date of this Order.

ORDER

THE COMMISSION ORDERS:

12 (1) The Settlement Agreement is approved without condition, is attached as Exhibit A to, and incorporated into, this Order, and is adopted as the final resolution of the disputed issues in this docket.

13 (2) The Commission retains jurisdiction to effectuate the terms of this Order.

DATED at Olympia, Washington, and effective February 12, 2015.

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DAVID W. DANNER, Chairman

PHILIP B. JONES, Commissioner

ANN E. RENDAHL, Commissioner

APPENDIX K

STATE OF WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
(360) 664-1160 • TTY (360) 586-8203

CERTIFIED MAIL

January 12, 2016

Eric Martuscelli
Vice President-Operations
Cascade Natural Gas Corporation
8113 W. Grandridge Blvd.
Kennewick, WA 99336

Dear Mr. Martuscelli:

RE: PG-150120 - Violation of Stipulated Agreement (Insp. No. 2655)

The Washington Utilities and Transportation Commission (Commission) and Cascade Natural Gas Corporation (CNGC) entered into the attached Stipulated Agreement (Agreement) on February 2, 2015. The Agreement laid out how CNGC would collect information, prioritize and execute steps to confirm the maximum allowable operating pressure (MAOP) for high pressure pipelines in Washington. Section III.1 of the Agreement states that CNGC will submit a written plan to the Commission within six months of approval of the Agreement. The Agreement became effective when the Commission signed the Order on Feburary 12, 2015. Therefore, CNGC had until August 12, 2015 to submit the written plan. At present, no plan has been received by the Commission. CNGC staff stated it was not submitted due to personnel issues. None the less, CNGC is in violation of a Commission Order referencing this Stipulated Agreement.

Per Section IV of the Agreement, the Commission's intentions were to not pursue any enforcement actions for these MAOP defeciences as long as CNGC performs the actions established in Section III of the Agreement. CNGC has not performed and is therefore in violation of the Order. Therefore, the Commission is obligated, in the public interest, to issue a complaint unless the performance defeciencies are immediately rectified. As such, CNGC must submit the aforementioned written plan required by Section III of the Agreement to the Commission by no later than January 29, 2016.

If you have any questions or if we may be of any assistance, please contact Dennis Ritter at (360) 664-1159. Please refer to the inspection number above in any future correspondence.

Sincerely,

Alan E. Rathbun
Pipeline Safety Director

Enclosure

cc: Steve Kessie, Director Operation Services, CNG
Jeremy Ogden, Director Engineering Services, CNG
Mike Eutsey, Manager, Standards and Compliance, CNG
Vicki Ganow, Pipeline Safety Specialist, CNG

APPENDIX L

CASCADE NATURAL GAS CORPORATION®
A Subsidiary of MDU Resources Group, Inc

8113 W. GRANDRIDGE BLVD., KENNEWICK, WASHINGTON 99336-7166
TELEPHONE 509-734-4500 FACSIMILE 509-737-7166
www.cngc.com

January 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: MAOP Determination & Validation Plan
Docket PG-150120

Dear Mr. Rathbun:

Sincerely,

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 information, prioritize, and execute steps to confirm the MAOP for high pressure pipelines in Washington.

If there are any questions regarding this update 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) pipelines in the State of Washington. The purpose of this plan is to determine and verify the MAOP of all HP 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 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

Beginning in 2013, Cascade performed a comprehensive search of records to locate information that can be used to validate MAOP on HP pipelines in the state of Washington. 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. Records searched included those in storage facilities, Cascade's District Offices and Kennewick General Office, and electronic records. This plan is based on the results of that search.

Summary of HP Systems

Table 1 lists the HP 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). Additionally, these pipeline segments will have baseline assessments completed by February 2, 2018 and will be leak surveyed two (2) times per calendar year. Table 2 lists the pipeline segments that were reclassified as transmission. The entirety of some pipelines were classified as transmission even though only segments are operating at 20% SMYS or above.

In some instances, assuming the most stringent criteria for missing information resulted in a pre-1970 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 likely 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 top priorities.
2. 8" Central Whatcom HP Line #3 – Pipeline is operating at greater than 20% below MAOP. Cascade does not plan to lower pressure further and has made this pipeline one of the top priorities.
3. 8" Lake Terrell Road Transmission Line #9 – Pipeline is connected to 8" Central Whatcom HP Line, is operating at greater 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 top 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 likely 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 top 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 or below. For these reasons Cascade does not feel that it is prudent to lower the operating pressure and has made this pipeline one of the top 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.

Determination of MAOP

Tables 3-7 list the basis of determination for Cascade's pipeline segments which are missing critical information. Table 3 lists the pipelines that Cascade considers low-risk due to knowing wall thickness and pipe grade, operating below 20% SMYS, with the pressure test as the only missing information. Cascade has been safely operating these pipelines for approximately 50 years and requests an allowance to continue operating these pipelines at the currently established operating pressure and MAOP.

Table 4 lists the pipelines that Cascade considers low-risk due to operating below 20% SMYS with the most stringent criteria for missing critical information applied. These pipelines do not have pressure test records. Cascade has been safely operating these pipelines for approximately 50 years and requests an allowance to accept the most stringent criteria as final and continue operating these pipelines at the currently established operating pressure and MAOP.

Table 5 lists the pre-code pipelines for which Cascade has a pressure test, but the pressure test is not sufficient for the current MAOP. The wall thickness and pipe grade are known for these pipelines. Cascade has been safely operating these pipelines for approximately 50 years and requests an allowance to continue operating these pipelines at the currently established operating pressure and MAOP until an uprate can be completed.

Table 6 lists the pipelines which will undergo pressure testing, in situ testing, replacement, or other verification method. Cascade requests an allowance to continue operating all but one of these pipelines at the currently established operating pressure and MAOP until validation efforts are complete. The lone exception is the previously-mentioned 8" March Point HP Line #2, which will undergo a pressure reduction.

Table 7 lists the pipelines which have the MAOP determined by pressure testing. Validation efforts will be performed on some of these pipelines, and on some pipelines the most stringent criteria will be applied as final.

In all but three instances where Cascade requests an allowance to operate at the currently established operating pressure and MAOP, the MAOP is less than the most conservative design pressure calculated as prescribed in 49 CFR 192.105. In the three exceptions, the assumed yield strength results in a design pressure lower than the MAOP. However, all three pipelines have pressure test records and test results or as-built records 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 verifying data from pipelines in service. Methods that will be employed include:

1. Measuring pipe wall thickness with Ultrasonic Thickness (UT) gauge
2. Verifying 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. Verifying 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 verify pressure rating

As information is collected the records will be stored on Cascade's SharePoint site. Any process used to validate data not listed above will be submitted to the UTC for review.

Cascade has contracted 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 and local districts 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 is completed in 2016.

Cascade has also contacted 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.

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 8. 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 pipeline with missing critical information. Components of the priority matrix, in descending order of weighting, are: urgent need, % SMYS of pipe and fittings, pressure rating of fittings, population density near pipeline, length of pipeline segment, and presence of as-built and pressure test records. The matrix produced a total prioritization score for each segment of pipeline and a prioritization score per length of pipeline. These scores were then combined with Subject Manner Expert (SME) knowledge of pipelines to finalize priorities. In general, pipeline segments operating at greater than 30% SMYS which were constructed prior to 1970 were the highest priorities, with subsequent priorities following the descending order of % SMYS.

Process for Corrective Actions and Update to Plan

Cascade will continue to evaluate all current and future HP 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. 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, 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 March 15 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 8 below provides the schedule for the action plans for each HP pipeline segment with missing critical information. In situ testing, replacement, pressure testing, and fitting exposure have been scheduled commensurate with the availability of resources. The number of in situ tests that are scheduled to be completed each year are based on Cascade's prior experience with ECDA and ICDA digs as part of Cascade's TIMP.

TABLES

Table 1

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Action Plan
Bellingham District										
1	8" Bellingham H.P. Line	380	Line 1-1	1956	8.625	0.188	24,000		36.3%	Request allowance to continue operating pipeline at pressure currently established, preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established.
2	Bellingham H.P. Distribution System	155	fish-1	1956	8.625	0.188	24,000		14.8%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.
			fish-2	1956	10.75	0.188	24,000		18.5%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.
			10c3298	1960	4.5	0.156	24,000		9.3%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			10c8241	1964	4.5	0.188	35,000		5.3%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			10c9683	1965	6.625	0.188	35,000		7.8%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			11480-1	1966	6.625	0.188	35,000		7.8%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			11480-2	1966	8.625	0.188	35,000		10.2%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			13150	1967	2.375	0.154	35,000	100	3.4%	Converted to Intermediate Pressure.
			20564	1972	4.5	0.156	24,000	225	9.3%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
3	8" Central Whatcom H.P. Line	380	Line 3-1	1957	8.625	0.188	24,000		36.3%	Preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established (20% below MAOP).
			40855 (Transition fittings)	1993	8.625	0.188	24,000	680	36.3%	Third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established (20% below MAOP).
4	4" South Lynden H.P. Line	250	Line 4-1	1961	4.5	0.156	24,000		15.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
8	2" Nooksack H.P. Distribution System	250	16C7000	1963	2.375	0.154	24,000		8.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
9	8" Lake Terrell Rd Transmission Line	380	18734-1	1965	8.625	0.188	24,000	569	36.3%	Third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established (20% below MAOP).
10	16" N. Whatcom Transmission Line	600	18794	1971	16	0.25	52000	900	N/A	Expose and verify part # for elbow at V-175 and 4 plugs at V-38.
12	4" North Lynden H.P. Line	400	25773	1978	4.5	0.188	35000	600	N/A	Verify that Sav-A-Valve has sufficient pressure rating or is located on IP section.
21	12",16" & 4" Squalicum H.P. Line	250	41508	1993	16	0.281	24,000	620	29.7%	Third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness.
Aberdeen District										
1*	8" Kitsap Line	366	19261	1972	8.625	0.188	42000	750	N/A	Expose Sav-A-Valves and verify pressure rating.
3	4" McCleary H.P. Line	150	79C6323	1963	4.5	0.154	24,000		9.1%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.
8	4" Montesano H.P. Distribution System	135	77C6321	1964	4.5	0.188	35000		4.6%	Request allowance to continue operating low-risk pipeline at pressure currently established.
9	2" Elma Rendering Plant H.P. Line	150	78C7902-1	1964	2.375	0.156	35000		3.3%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			78C7902-2	1964	4.5	0.154	24000		9.1%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
15*	12" Kitsap H.P. Line	499	44000	1995	12.75	0.312	52000	1080	N/A	Expose Sav-A-Valves and verify pressure rating.
Bremerton District										
2	8" & 12" Bremerton Transmission Line	499	BremertonL2-1	1963	8.625	0.188	24,000	750	47.7%	Preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade.
6	4" Olympic View H.P. Line	499	20387	1973	4.5	0.188	42000	500	N/A	Verify that plugs have sufficient pressure rating.
11	8" Bremerton H.P. Line	144	20C6316	1964	8.625	0.188	46000		7.2%	Request allowance to continue operating low-risk pipeline at pressure currently established.
			18522	1971	8.625	0.188	35000		9.4%	Pressure test or replace, request allowance to continue operating pipeline at pressure currently established.
Mount Vernon District										
1	8" Anacortes H.P. Line	360	MTVL1-1	1957	8.625	0.188	24,000		34.4%	Preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established, validate pressure rating of line stopper fittings at V-3/V-4.
			18191	1972	8.625	0.188	35,000		23.6%	Replace, request allowance to continue operating pipeline at pressure currently established.
2	8" March Point H.P. Line	360	11C1144	1957	8.625	0.188	24,000		34.4%	Lower pressure to 20% below MAOP, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, upon completion of testing request allowance to continue operating pipeline at pressure currently established.
			11C1144	1957	8.625	0.25	24,000		25.9%	Lower pressure to 20% below MAOP, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, upon completion of testing request allowance to continue operating pipeline at pressure currently established.
			11C5628	1963	8.625	0.188	24,000		34.4%	Lower pressure by 20% and replace, request allowance to continue operating pipeline at pressure currently established until replacement.
3	Anacortes H.P. Distribution System	105	MTVL3-1	1956	6.625	0.188	24,000		7.7%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.
			MTVL3-2	1956	8.625	0.188	24,000		10.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.
4	4" Mount Vernon H.P. Line	250	MTVL4-1	1957	4.5	0.156	24,000	400	15.0%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
5	3" Burlington H.P. Line	249	211220	1957	3.5	0.156	24,000		11.6%	Request allowance to continue operating low-risk pipeline at pressure currently established until replacement in 2016.
7	4" North Texas Rd H.P. Line	250	11C2775	1960	2.375	0.154	24,000		8.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
8	4" Arlington H.P. Line	249	Fish 18C4272	1961	4.5	0.156	24,000		15.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
10	4" Sedro-Woolley H.P. Line	100	14788	1968	4.5	0.188	35000	100	3.4%	Conduct uprate to validate MAOP.
12	6" North Oak Harbor H.P. Line	400	17206	1972	6.625	0.188	42000	675	N/A	Validate pressure rating of line stopper fitting, elbow at V-193, and Sav-A-Valve and service tee at V-104.
14	16" Fredonia Transmission Line	500	30636 (Transition fittings)	1983	16	0.281	24,000	750	59.3%	Third party to perform statistical analysis to determine the number of test points and identify their locations. In situ testing to verify pipe grade and wall thickness.
			30636 (Elbows)	1983	16	0.375	35,000	750	30.5%	Third party to perform statistical analysis to determine the number of test points and identify their locations. In situ testing to verify pipe grade and wall thickness.
16	16" March Point Transmission Line	500	40000 (Transition fittings)	1992	16	0.281	24,000	750	59.3%	Third party to perform statistical analysis to determine the number of test points and identify their locations. In situ testing to verify pipe grade and wall thickness.
			40000 (Elbows)	1992	16	0.375	35,000	750	30.5%	Third party to perform statistical analysis to determine the number of test points and identify their locations. In situ testing to verify pipe grade and wall thickness.

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Action Plan
Longview District										
1	Longview-Kelso H.P. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	0.25	24,000	400	26.6%	Conduct study to determine replacement options and projects, test existing samples.
			Pre-CNGC-L1-2	1957	4.5	0.156	24,000		15.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			28621	1980	12.75	0.25	52,000		12.3%	Pressure test or replace, request allowance to continue operating pipeline at pressure currently established.
2	4" Kalama H.P. Line	300	24676	1976	4.5	0.188	35,000		10.3%	Pressure test or replace, request allowance to continue operating pipeline at pressure currently established.
3	4" Dike Road H.P. Line (Longview)	80	82C8335	1965	4.5	0.156	24,000		4.8%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final for wall thickness and pipe grade, test samples as they become available.
8	8" Kalama H.P. Line	300	51820 (1)	1996	8.625	0.332	46,000		8.5%	Pressure test and request allowance to continue operating pipeline at pressure currently established or replace.
			51820 (2)	1997	8.625	0.188	24,000		28.7%	Pressure test and request allowance to continue operating pipeline at pressure currently established or replace.
			51820 (3)	1997	8.625	0.25	24,000		21.6%	Pressure test and request allowance to continue operating pipeline at pressure currently established or replace.
			51820 (4)	1997	8.625	0.25	46,000		11.3%	Pressure test and request allowance to continue operating pipeline at pressure currently established or replace.
7	12" South Longview H.P. Line	499	43600 (Transition fittings)	1995	12.75	0.312	24,000	1080	42.5%	Third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness.
Yakima District (Sunnyside)										
1	3" Sunnyside H.P. Line	200	Fish-L1-1	1956	3.5	0.156	24,000		9.3%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
2	2" South Sunnyside H.P. Line	200	42C2530	1959	2.375	0.154	24,000		6.4%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
3	4" Grandview H.P. Line	250	Fish-L2-1	1956	4.5	0.156	24,000		15.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
4	3" Prosser H.P. Line	250	YakimaL4-1	1956	3.5	0.156	24,000		11.7%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
5	6" Toppenish-Zillah H.P. Line	400	YakimaL5-1	1956	6.625	0.188	24,000		29.4%	Preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to operate pipeline at pressure currently established.
6	3" Zillah H.P. Line	400	fish-L6-1	1956	3.5	0.156	24,000		18.7%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
7	4" Wapato H.P. Line	152	fish-L7-1	1956	4.5	0.156	24,000		9.1%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
8	3" South Toppenish H.P. Line	175	fish-L8-1	1956	3.5	0.156	24,000		8.2%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
9	3" Granger H.P. Line	175	fish-L9-1	1956	3.5	0.156	24,000		8.2%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
Yakima District										
1	8" Yakima H.P. Line	200	Fish_968	1956	8.625	0.188	24,000		19.1%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			FISH_968_Lat_26	1956	8.625	0.5	24,000		7.2%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			40C4357	1961	8.625	0.188	24,000	352	19.1%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			20375	1978	8.625	0.25	46,000		7.5%	Pressure test or replace, request allowance to continue operating pipeline at pressure currently established.
Wenatchee District										
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	1957	6.625	0.188	24,000		18.4%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
			WenL1-2	1957	8.625	0.188	24,000		23.9%	Preliminary testing to be performed on available samples, third party to perform statistical analysis to determine the number of test points and identify their locations, in situ testing to verify pipe grade and wall thickness, request allowance to continue operating pipeline at pressure currently established.
			60390	1981	4.5	0.156	24,000	375	15.0%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
2	2" Wheeler H.P. Line	250	WenL2-2	1962	2.375	0.154	24,000		8.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available, verify pressure rating of block valve at R-53.
3	4" Othello Transmission Line	400	18998	1971	6.625	0.188	35,000	531	20.1%	Request allowance to continue operating pipeline at pressure currently established until replacement.
6	4" South Moses Lake H.P. Line	250	14455	1968	4.5	0.188	35000		8.5%	Request allowance to continue operating low-risk pipeline at pressure currently established.
10	6" West Wheeler H.P. Line	250	54006	1997	6.625	0.188	24,000	740	18.4%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
12	6" Wenatchee H.P. Line	225	2912 fish	1956	6.625	0.188	24,000		16.5%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available, validate pressure rating of stopper at odorizer.
Kennewick										
1	8"Attalia H.P. Line	300	01C4776	1958	8.625	0.188	24,000		28.7%	Request allowance to continue operating pipeline at pressure currently established, preliminary testing to be performed on available samples, conduct study to determine replacement options and projects, third party to perform statistical analysis to determine number of test points, operate with assumptions until replacement or in situ testing is performed.
			14375 (1)	1968	8.625	0.188	35,000		19.7%	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options, verify pressure rating of Sav-A-Valve.
			14375 (2)	1968	12.75	0.25	35,000		21.9%	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options, verify pressure rating of 1" bypass valve.
			14375 (3)	1968	12.75	0.375	35,000		14.6%	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options.
			14375 (4)	1968	12.75	0.33	35,000		16.6%	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options.
			14375 (5)	1968	12.75	0.25	52,000		14.7%	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options.
3	4" East Finley H.P. Line	250	12614	1967	4.5	0.188	35000	120	8.5%	Conduct uprate to validate MAOP.
4	Pasco H.P. Distribution System	300	KennL4-1	1960	4.5	0.156	24,000	450	18.0%	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
5	4" Northwest Pasco H.P. Line	300	11097 (1)	1966	4.5	0.188	35000		10.3%	Request allowance to continue operating low-risk pipeline at pressure currently established.
6	4" Glade Road H.P. Line	150	11097 (2)	1966	4.5	0.188	35000		5.1%	Request allowance to continue operating low-risk pipeline at pressure currently established.
7	2" Burbank H.P. Line	158	12301	1967	2.375	0.154	35000	100	3.5%	Conduct uprate to validate MAOP.
8	4" Finley H.P. Line	200	53C2527	1959	4.5	0.156	24,000		12.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
Walla Walla										
1	8" Walla Walla H.P. Line	150	WWL1-1	1956	8.625	0.188	24,000		14.3%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.
2	3" College Place H.P. Line	150	WWL2-1	1956	3.5	0.156	24,000		7.0%	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.

Critical Missing Information | Post-Code Missing Pressure Test

Table 2

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 H.P. Line	380	Line 1-1	1956	8.625	0.188	24000	36.3%
3	8" Central Whatcom H.P. Line	380	Line 3-1	1957	8.625	0.188	24000	36.3%
			40855 (Transition fittings)	1993	8.625	0.188	24000	36.3%
21	12",16" & 4" Squalicum H.P. Line	250	41508	1993	16	0.281	24000	29.7%
Mount Vernon District								
1	8" Anacortes H.P. Line	360	MTVL1-1	1957	8.625	0.188	24000	34.4%
			18191	1972	8.625	0.188	35000	23.6%
2	8" March Point H.P. Line	360	11C1144	1957	8.625	0.188	24000	34.4%
			11C1144	1957	8.625	0.25	24000	25.9%
			11C5628	1963	8.625	0.188	24000	34.4%
Longview District								
1	Longview-Kelso H.P. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	0.25	24000	26.6%
8	8" Kalama H.P. Line	300	51820 (1)	1996	8.625	0.332	46000	8.5%
			51820 (2)	1997	8.625	0.188	24000	28.7%
			51820 (3)	1997	8.625	0.25	24000	21.6%
			51820 (4)	1997	8.625	0.25	46000	11.3%
Yakima District (Sunnyside)								
5	6" Toppenish-Zillah H.P. Line	400	YakimaL5-1	1956	6.625	0.188	24000	29.4%
Wenatchee District								
1	0	0	WenL1-1	1957	6.625	0.188	24000	18.4%
			WenL1-2	1957	8.625	0.188	24000	23.9%
			60390	1981	4.5	0.156	24000	15.0%
3	4" Othello Transmission Line	400	18998	1971	6.625	0.188	35000	20.1%
Kennewick								
0	0	0	01C4776	1958	8.625	0.188	24000	28.7%
			14375 (1)	1968	8.625	0.188	35000	19.7%
			14375 (2)	1968	12.75	0.25	35000	21.9%
			14375 (3)	1968	12.75	0.375	35000	14.6%
			14375 (4)	1968	12.75	0.33	35000	16.6%
			14375 (5)	1968	12.75	0.25	52000	14.7%

Table 3									
HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	% SMYS	Design Pressure (psig)
Bellingham District									
2	Bellingham H.P. Distribution System	155	10c8241	1964	4.5	0.188	35,000	5.3%	877
			10c9683	1965	6.625	0.188	35,000	7.8%	795
			11480-1	1966	6.625	0.188	35,000	7.8%	795
			11480-2	1966	8.625	0.188	35,000	10.2%	610
			13150	1967	2.375	0.154	35,000	3.4%	1,362
Aberdeen District									
8	4" Montesano H.P. Distribution System	135	77C6321	1964	4.5	0.188	35000	4.6%	877
9	2" Elma Rendering Plant H.P. Line	150	78C7902-1	1964	2.375	0.156	35000	3.3%	1,379
Bremerton District									
11	8" Bremerton H.P. Line	144	20C6316	1964	8.625	0.188	46000	7.2%	802
Wenatchee District									
6	4" South Moses Lake H.P. Line	250	14455	1968	4.5	0.188	35000	8.5%	877
Kennewick									
1	8"Attalia H.P. Line	300	14375 (1)	1968	8.625	0.188	35,000	19.7%	610
			14375 (3)	1968	12.75	0.375	35,000	14.6%	824
			14375 (4)	1968	12.75	0.33	35,000	16.6%	725
			14375 (5)	1968	12.75	0.25	52,000	14.7%	816
5	4" Northwest Pasco H.P. Line	300	11097 (1)	1966	4.5	0.188	35000	10.3%	877
6	4" Glade Road H.P. Line	150	11097 (2)	1966	4.5	0.188	35000	5.1%	877

Table 4

HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	% SMYS	Design Pressure (psig)
Bellingham District									
2	Bellingham H.P. Distribution System	155	fish-1	1956	8.625	0.188	24,000	14.8%	419
			fish-2	1956	10.75	0.188	24,000	18.5%	336
			10c3298	1960	4.5	0.156	24,000	9.3%	499
4	4" South Lynden H.P. Line	250	Line 4-1	1961	4.5	0.156	24,000	15.0%	499
8	2" Nooksack H.P. Distribution System	250	16C7000	1963	2.375	0.154	24,000	8.0%	934
Aberdeen District									
3	4" McCleary H.P. Line	150	79C6323	1963	4.5	0.154	24,000	9.1%	493
9	2" Elma Rendering Plant H.P. Line	150	78C7902-2	1964	4.5	0.154	24000	9.1%	493
Mount Vernon District									
3	Anacortes H.P. Distribution System	105	MTVL3-1	1956	6.625	0.188	24,000	7.7%	545
			MTVL3-2	1956	8.625	0.188	24,000	10.0%	419
5	3" Burlington H.P. Line	249	211220	1957	3.5	0.156	24,000	11.6%	642
7	4" North Texas Rd H.P. Line	250	11C2775	1960	2.375	0.154	24,000	8.0%	934
8	4" Arlington H.P. Line	249	Fish 18C4272	1961	4.5	0.156	24,000	15.0%	499
Longview District									
1	Longview-Kelso H.P. Distribution Line	250	Pre-CNGC-L1-2	1957	4.5	0.156	24,000	15.0%	499
3	4" Dike Road H.P. Line (Longview)	80	82C8335	1965	4.5	0.156	24,000	4.8%	499
Yakima District (Sunnyside)									
1	3" Sunnyside H.P. Line	200	Fish-L1-1	1956	3.5	0.156	24,000	9.3%	642
2	2" South Sunnyside H.P. Line	200	42C2530	1959	2.375	0.154	24,000	6.4%	934
3	4" Grandview H.P. Line	250	Fish-L2-1	1956	4.5	0.156	24,000	15.0%	499
4	3" Prosser H.P. Line	250	YakimaL4-1	1956	3.5	0.156	24,000	11.7%	642
6	3" Zillah H.P. Line	400	fish-L6-1	1956	3.5	0.156	24,000	18.7%	642
7	4" Wapato H.P. Line	152	fish-L7-1	1956	4.5	0.156	24,000	9.1%	499
8	3" South Toppenish H.P. Line	175	fish-L8-1	1956	3.5	0.156	24,000	8.2%	642
9	3" Granger H.P. Line	175	fish-L9-1	1956	3.5	0.156	24,000	8.2%	642
Yakima District									
1	8" Yakima H.P. Line	200	Fish_968	1956	8.625	0.188	24,000	19.1%	419
			FISH_968_Lat_26	1956	8.625	0.5	24,000	7.2%	1,113
Wenatchee District									
1	6" & 8" Moses Lake H.P. Line	250	WenL1-1	1957	6.625	0.188	24,000	18.4%	545
2	2" Wheeler H.P. Line	250	WenL2-2	1962	2.375	0.154	24,000	8.0%	934
10	6" West Wheeler H.P. Line	250	54006	1997	6.625	0.188	24,000	18.4%	545
12	6" Wenatchee H.P. Line	225	2912 fish	1956	6.625	0.188	24,000	16.5%	545
Kennewick									
8	4" Finley H.P. Line	200	53C2527	1959	4.5	0.156	24,000	12.0%	499
Walla Walla									
1	8" Walla Walla H.P. Line	150	WWL1-1	1956	8.625	0.188	24,000	14.3%	419
2	3" College Place H.P. Line	150	WWL2-1	1956	3.5	0.156	24,000	7.0%	642

Table 5										
HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Design Pressure (psig)
Mount Vernon District										
10	4" Sedro-Woolley H.P. Line	100	14788	1968	4.5	0.188	35000	100	3.4%	877
Kennewick										
3	4" East Finley H.P. Line	250	12614	1967	4.5	0.188	35000	120	8.5%	877
7	2" Burbank H.P. Line	158	12301	1967	2.375	0.154	35000	100	3.5%	1,362

Table 6									
HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	% SMYS	Design Pressure (psig)
Bellingham District									
1	8" Bellingham H.P. Line	380	Line 1-1	1956	8.625	0.188	24,000	36.3%	419
3	8" Central Whatcom H.P. Line	380	Line 3-1	1957	8.625	0.188	24,000	36.3%	419
Bremerton District									
2	8" & 12" Bremerton Transmission Line	499	BremertonL2-1	1963	8.625	0.188	24,000	47.7%	419
11	8" Bremerton H.P. Line	144	18522	1971	8.625	0.188	35000	9.4%	610
Mount Vernon District									
1	8" Anacortes H.P. Line	360	MTVL1-1	1957	8.625	0.188	24,000	34.4%	419
			18191	1972	8.625	0.188	35,000	23.6%	610
2	8" March Point H.P. Line	360	11C1144	1957	8.625	0.188	24,000	34.4%	419
			11C1144	1957	8.625	0.25	24,000	25.9%	557
			11C5628	1963	8.625	0.188	24,000	34.4%	419
Longview District									
1	Longview-Kelso H.P. Distribution Line	250	28621	1980	12.75	0.25	52,000	12.3%	816
2	4" Kalama H.P. Line	300	24676	1976	4.5	0.188	35,000	10.3%	877
8	8" Kalama H.P. Line	300	51820 (1)	1996	8.625	0.332	46,000	8.5%	1,417
			51820 (2)	1997	8.625	0.188	24,000	28.7%	419
			51820 (3)	1997	8.625	0.25	24,000	21.6%	557
			51820 (4)	1997	8.625	0.25	46,000	11.3%	1,067
Yakima District (Sunnyside)									
5	6" Toppenish-Zillah H.P. Line	400	YakimaL5-1	1956	6.625	0.188	24,000	29.4%	545
Yakima District									
1	8" Yakima H.P. Line	200	20375	1978	8.625	0.25	46,000	7.5%	1,067
Wenatchee District									
1	6" & 8" Moses Lake H.P. Line	250	WenL1-2	1957	8.625	0.188	24,000	23.9%	419
3	4" Othello Transmission Line	400	18998	1971	6.625	0.188	35,000	20.1%	795
Kennewick									
1	8"Attalia H.P. Line	300	01C4776	1958	8.625	0.188	24,000	28.7%	419
			14375 (2)	1968	12.75	0.25	35,000	21.9%	549

Table 7										
HP Line #	HP Line Name	MAOP (psig)	HP Line Segment/WO Number	Year Installed	Diameter (in.)	Wall Thickness (in.)	Yield Strength (psi)	Test Pressure (psig)	% SMYS	Design Pressure (psig)
Bellingham District										
2	Bellingham H.P. Distribution System	155	20564	1972	4.5	0.156	24,000	225	9.3%	499
3	8" Central Whatcom H.P. Line	380	40855 (Transition fittings)	1993	8.625	0.188	24,000	680	36.3%	419
9	8" Lake Terrell Rd Transmission Line	380	18734-1	1965	8.625	0.188	24,000	569	36.3%	419
10	16" N. Whatcom Transmission Line	600	18794	1971	16	0.25	52000	900	N/A	650
12	4" North Lynden H.P. Line	400	25773	1978	4.5	0.188	35000	600	N/A	877
21	12",16" & 4" Squalicum H.P. Line	250	41508	1993	16	0.281	24,000	620	29.7%	337
Aberdeen District										
1*	8" Kitsap Line	366	19261	1972	8.625	0.188	42000	750	N/A	732
15*	12" Kitsap H.P. Line	499	44000	1995	12.75	0.312	52000	1080	N/A	1,018
Bremerton District										
6	4" Olympic View H.P. Line	499	20387	1973	4.5	0.188	42000	500	N/A	1,053
Mount Vernon District										
4	4" Mount Vernon H.P. Line	250	MTVL4-1	1957	4.5	0.156	24,000	400	15.0%	499
12	6" North Oak Harbor H.P. Line	400	17206	1972	6.625	0.188	42000	675	N/A	953
14	16" Fredonia Transmission Line	500	30636 (Transition fittings)	1983	16	0.281	24,000	750	59.3%	337
			30636 (Elbows)	1983	16	0.375	35,000	750	30.5%	656
16	16" March Point Transmission Line	500	40000 (Transition fittings)	1992	16	0.281	24,000	750	59.3%	337
			40000 (Elbows)	1992	16	0.375	35,000	750	30.5%	656
Longview District										
1	Longview-Kelso H.P. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	0.25	24,000	400	26.6%	376
7	12" South Longview H.P. Line	499	43600 (Transition fittings)	1995	12.75	0.312	24,000	1080	42.5%	470
Yakima District										
1	8" Yakima H.P. Line	200	40C4357	1961	8.625	0.188	24,000	352	19.1%	419
Wenatchee District										
1	6" & 8" Moses Lake H.P. Line	250	60390	1981	4.5	0.156	24,000	375	15.0%	499
Kennewick										
4	Pasco H.P. Distribution System	300	KennL4-1	1960	4.5	0.156	24,000	450	18.0%	499

Table 8

HP Line #	HP Line Name	HP Line Segment/WO Number	2016 Action	2017 Action	2018 Action	2019 Action	2020 Action	2021 Action	2022 Action
Bellingham District									
1	8" Bellingham H.P. Line	Line 1-1	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis, replace section at Squalicum Creek crossing and test samples from that project	In situ testing at 35 locations					
2	Bellingham H.P. Distribution System	fish-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.						
		fish-2	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.						
		10c3298	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		10c8241	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		10c9683	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		11480-1	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		11480-2	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		13150	Converted to Intermediate Pressure.						
		20564	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
3	8" Central Whatcom H.P. Line	Line 3-1	Operate at 20% below MAOP, perform statistical analysis	In situ testing at 70 locations	In situ testing at 65 locations				
		40855 (Transition fittings)	Operate at 20% below MAOP, perform statistical analysis	In situ testing at 10 locations					
4	4" South Lynden H.P. Line	Line 4-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
8	2" Nooksack H.P. Distribution System	16C7000	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
9	8" Lake Terrell Rd Transmission Line	18734-1	Request allowance to operate at 20% below MAOP, perform statistical analysis			In situ testing at 26 locations			
10	16" N. Whatcom Transmission Line	18794	Expose and verify part # for elbow at V-175 and 4 plugs at V-38.						
12	4" North Lynden H.P. Line	25773	Verify that Sav-A-Valve has sufficient pressure rating or is located on IP section.						
21	12",16" & 4" Squalicum H.P. Line	41508	Perform statistical analysis		In situ testing at 13 locations				
Aberdeen District									
1*	8" Kitsap Line	19261	Expose Sav-A-Valves and verify pressure rating.						
3	4" McCleary H.P. Line	79C6323	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.						
8	4" Montesano H.P. Distribution System	77C6321	Request allowance to continue operating low-risk pipeline at pressure currently established.						
9	2" Elma Rendering Plant H.P. Line	78C7902-1	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		78C7902-2	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
15*	12" Kitsap H.P. Line	44000	Expose Sav-A-Valves and verify pressure rating.						
Bremerton District									
2	8" & 12" Bremerton Transmission Line	BremertonL2-1	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis	In situ testing at approximately 15 locations					
6	4" Olympic View H.P. Line	20387	Verify that plugs have sufficient pressure rating.						

11	8" Bremerton H.P. Line	20C6316	Request allowance to continue operating low-risk pipeline at pressure currently established.						
		18522	Request allowance to continue operating pipeline at pressure currently established.		Pressure test or replace.				
Mount Vernon District									
1	8" Anacortes H.P. Line	MTVL1-1	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis	Approximately 9 miles to be retired and replaced	In situ testing at approximately 65 locations	In situ testing at approximately 65 locations			
		18191	Request allowance to continue uperating pipeline at pressure currently established until replacement	Replace					
2	8" March Point H.P. Line	11C1144	Lower operating pressure to be 20% below MAOP, perform statistical analysis, and in situ testing at 21 locations						
		11C1144	Lower operating pressure by 20%, perform statistical analysis	In situ testing at 10 locations					
		11C5628	Lower operating pressure by 20%	Replacement					
3	Anacortes H.P. Distribution System	MTVL3-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.						
		MTVL3-2	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final pipe grade, test samples as they become available.						
4	4" Mount Vernon H.P. Line	MTVL4-1	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
5	3" Burlington H.P. Line	211220	Request allowance to continue operating low-risk pipeline at pressure currently established until replacement in 2016.						
7	4" North Texas Rd H.P. Line	11C2775	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
8	4" Arlington H.P. Line	Fish 18C4272	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
10	4" Sedro-Woolley H.P. Line	14788	Request allowance to continue operating low-risk pipeline at pressure currently established until uprate is completed	Conduct uprate to validate MAOP					
12	6" North Oak Harbor H.P. Line	17206	Validate pressure rating of line stopper fitting, elbow at V-193, and Sav-A-Valve and service tee at V-104						
14	16" Fredonia Transmission Line	30636 (Transition fittings)	Perform statistical analysis			In situ testing at 15 locations			
		30636 (Elbows)	Perform statistical analysis			In situ testing at 10 locations			
16	16" March Point Transmission Line	40000 (Transition fittings)	Perform statistical analysis			In situ testing at 2 locations			
		40000 (Elbows)	Perform statistical analysis			In situ testing at 10 locations			
Longview District									
1	Longview-Kelso H.P. Distribution Line	Pre-CNGC-L1-1	Conduct study to determine replacement options and projects, test existing samples	Replace Phase I	Replace Phase II	Prepace Phase III	Preplace Phase IV		
		Pre-CNGC-L1-2	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		28621	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	
2	4" Kalama H.P. Line	24676	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	Pressure test or replace
3	4" Dike Road H.P. Line (Longview)	82C8335	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final for wall thickness and pipe grade, test samples as they become available.						
		51820 (1)	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	Pressure test or replace

8	8" Kalama H.P. Line	51820 (2)	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	Pressure test or replace
		51820 (3)	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	Pressure test or replace
		51820 (4)	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.					Pressure test or replace	Pressure test or replace
7	12" South Longview H.P. Line	43600 (Transition fittings)	Perform statistical analysis			In situ testing at approximately 10 locations			
Yakima District (Sunnyside)									
1	3" Sunnyside H.P. Line	Fish-L1-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
2	2" South Sunnyside H.P. Line	42C2530	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
3	4" Grandview H.P. Line	Fish-L2-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
4	3" Prosser H.P. Line	YakimaL4-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
5	6" Toppenish-Zillah H.P. Line	YakimaL5-1	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis and test available samples	Replace section on Fraley Road and test samples			In situ testing at approximately 82 locations		
6	3" Zillah H.P. Line	fish-L6-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
7	4" Wapato H.P. Line	fish-L7-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
8	3" South Toppenish H.P. Line	fish-L8-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
9	3" Granger H.P. Line	fish-L9-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
Yakima District									
1	8" Yakima H.P. Line	Fish_968	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		FISH_968_Lat_26	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		40C4357	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		20375	Request allowance to continue operating pipeline at pressure currently established until pressure test or replacement is complete.		Pressure test or replace				

Wenatchee District									
1	6" & 8" Moses Lake H.P. Line	WenL1-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
		WenL1-2	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis				In situ testing at approximately 33 locations		
		60390	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
2	2" Wheeler H.P. Line	WenL2-2	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available, verify pressure rating of block valve at R-53						
3	4" Othello Transmission Line	18998	Request allowance to continue operating pipeline at pressure currently established until replacement is complete.	Replace 191 ft section at Booker Road Bridge					
6	4" South Moses Lake H.P. Line	14455	Request allowance to continue operating low-risk pipeline at pressure currently established.						
10	6" West Wheeler H.P. Line	54006	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
12	6" Wenatchee H.P. Line	2912 fish	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.	Validate pressure rating of stopper at odorizer.					
Kennewick District									
1	8"Attalia H.P. Line	01C4776	Request allowance to continue operating pipeline at pressure currently established, perform statistical analysis and replacement study				In situ testing at approximately 40 locations	In situ testing at approximately 156 locations	
		14375 (1)	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options, verify pressure rating of Sav-A-Valve.						
		14375 (2)	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options						
		14375 (3)	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options						Replacement or testing
		14375 (4)	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options						
		14375 (5)	Request allowance to continue operating pipeline at pressure currently established, conduct study to determine replacement and testing options						
3	4" East Finley H.P. Line	12614	Request allowance to continue operating low-risk pipeline at pressure currently established until uprate is completed	Conduct uprate to validate MAOP					
4	Pasco H.P. Distribution System	KennL4-1	Accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
5	4" Northwest Pasco H.P. Line	11097 (1)	Request allowance to continue operating low-risk pipeline at pressure currently established.						
6	4" Glade Road H.P. Line	11097 (2)	Request allowance to continue operating low-risk pipeline at pressure currently established.						
7	2" Burbank H.P. Line	12301	Request allowance to continue operating low-risk pipeline at pressure currently established until uprate is completed	Conduct uprate to validate MAOP					
8	4" Finley H.P. Line	53C2527	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
Walla Walla District									
1	8" Walla Walla H.P. Line	WWL1-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						
2	3" College Place H.P. Line	WWL2-1	Request allowance to continue operating low-risk pipeline at pressure currently established, accept most stringent criteria as final wall thickness and pipe grade, test samples as they become available.						

APPENDIX M

CASCADE NATURAL GAS CORPORATION®
A Subsidiary of MDU Resources Group, Inc.

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April 29, 2016

RECEIVED
MAY 0 2 2016
State of Washington
UTC
Pipeline Safety Program

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.

<u>Determination of MAOP</u>

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
			28621	1980	12.75	990	0.250	52,000	No Test	12.26%	N/A	Isolate and pressure test
2	4" Kalama H.P. Line	300	24676	1976	4.5	8,234	0.188	35,000	No Test	10.26%	N/A	Replacement
3	4" Dike Road H.P. Line (Longview)	80	82C8335	1965	4.5	6,463	0.156	24,000	No Test	4.81%	N/A	Replacement
7	12" South Longview H.P. Line	499	43600 (1) (Transition Fittings)	1995	12.75	18,373	0.312	24,000	1080	42.50%	N/A	In situ test
8	8" Kalama Transmission Line	300	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	YakimaL4-1	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	YakimaL5-1	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	01C4776	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	01C4776	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. Distribution Line	250	Pre-CNGC-L1-1	1957	12.75	23,205	0.250	24,000	400	26.56%	301
			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	01C4776	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	YakimaL4-1	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

APPENDIX N

From: Ogden, Jeremy [mailto:Jeremy.Ogden@cngc.com]
Sent: Monday, June 06, 2016 11:36 AM
To: Ritter, Dennis (UTC) <dritter@utc.wa.gov>; Eutsey, Mike <Mike.Eutsey@cngc.com>
Cc: Sorensen, Renie <Renie.Sorensen@cngc.com>; Subsits, Joe (UTC) <jsubsits@utc.wa.gov>
Subject: RE: MAOP Validation HP Washington Pipelines-Data Request

Dennis:

Following is a table showing per district the total unvalidated mileage and total mileage of all pipelines operating at over 60 psig.

District	Total Unvalidated Mileage	Total Mileage
Aberdeen	15.01	85.14
Bellingham	62.73	105.51
Bremerton	4.69	65.58
Kennewick	22.12	53.34
Longview	13.75	24.67
Mt. Vernon	55.24	103.87
Walla Walla	1.34	2.28
Wenatchee	22.43	68.76
Yakima	25.37	50.52
Total	222.68	559.67

In the Bellingham, Longview, and Mt. Vernon districts, we are including the entire length of some pipelines, even though only a small portion (≈ 100 ft) needs to be tested at fittings. Please let me know if you need anything else.

Jeremy

Jeremy Ogden, P.E. | Director, Engineering Services

Cascade Natural Gas Corporation
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APPENDIX O

49 C.F.R. § 192.619 – Maximum allowable operating pressure: Steel or plastic pipelines.

(Available at http://www.ecfr.gov/cgi-bin/text-idx?SID=83b75887d4585650101d7f09b0a91bfa&mc=true&node=se49.3.192_1619&rgn=div8)

(a) No person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:

(1) The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part. However, for steel pipe in pipelines being converted under §192.14 or uprated under subpart K of this part, if any variable necessary to determine the design pressure under the design formula (§192.105) is unknown, one of the following pressures is to be used as design pressure:

(i) Eighty percent of the first test pressure that produces yield under section N5 of Appendix N of ASME B31.8 (incorporated by reference, *see* §192.7), reduced by the appropriate factor in paragraph (a)(2)(ii) of this section; or

(ii) If the pipe is 12¾ inches (324 mm) or less in outside diameter and is not tested to yield under this paragraph, 200 p.s.i. (1379 kPa).

(2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:

(i) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.

(ii) For steel pipe operated at 100 p.s.i. (689 kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table:

Class location	Factors[1], segment—		
	Installed before (Nov. 12, 1970)	**Installed after (Nov. 11, 1970)**	**Converted under §192.14**
1	1.1	1.1	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

[1]For offshore segments installed, uprated or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated or converted after July 31, 1977, that are located on an offshore platform or on a platform in inland navigable waters, including a pipe riser, the factor is 1.5.

(3) The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable date in the third column or the segment was uprated according to the requirements in subpart K of this part:

Pipeline segment	Pressure date	Test date

—Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006	March 15, 2006, or date line becomes subject to this part, whichever is later	5 years preceding applicable date in second column.
—Onshore transmission line that was a gathering line not subject to this part before March 15, 2006		
Offshore gathering lines	July 1, 1976	July 1, 1971.
All other pipelines	July 1, 1970	July 1, 1965.

(4) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

(b) No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless over-pressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with §192.195.

(c) The requirements on pressure restrictions in this section do not apply in the following instance. An operator may operate a segment of pipeline found to be in satisfactory condition, considering its operating and maintenance history, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column of the table in paragraph (a)(3) of this section. An operator must still comply with §192.611.

(d) The operator of a pipeline segment of steel pipeline meeting the conditions prescribed in §192.620(b) may elect to operate the segment at a maximum allowable operating pressure determined under §192.620(a).

[35 FR 13257, Aug. 19, 1970]