Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation

Environmental Assessment
Safety of Hazardous Liquid Pipelines (49 CFR Part 195)
Final Rule

September 2019
Executive Summary

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is promulgating a final rule that amends the hazardous liquid pipeline safety regulations in part 195 of Title 49 of the Code of the Federal Regulations (CFR): Transportation of Hazardous Liquids by Pipeline.

The amendments, covering eight principal areas, discussed in more detail in the preamble that accompanies the final rule, will:

1. Extend reporting requirements to gravity lines that do not meet certain exceptions;
2. Extend reporting requirements to all rural hazardous liquid gathering lines not currently regulated by PHMSA;\(^1\)
3. Require inspections of pipelines in areas affected by extreme weather, natural disasters, and other similar events within 72 hours after cessation of the event;
4. Require assessments of onshore pipelines not already covered by the Integrity Management (IM) Program requirements (i.e., pipelines located outside high consequence areas (HCAs)\(^2\)) using inline inspection (ILI), or other technology if appropriate, at least once every 10 years. This requirement applies to transmission lines that are capable of accommodating ILI tools.
5. Continue existing IM repair criteria;
6. Expand the use of leak detection systems (LDS) to pipelines located outside HCAs to mitigate the effects of failures occurring on those lines (excluding onshore regulated gathering and offshore gathering);
7. Increase the use of ILI tools by requiring that any pipeline that could affect an HCA become capable of accommodating these devices within 20 years, unless its basic construction will not permit that accommodation; and
8. Resolve inconsistent deadlines, clarify requirements for information integration, clarify the definition of covered pipeline facilities, and specify a timeframe for rechecking HCA status for the IM Plan.

The final rule also incorporates two self-implementing provisions of Sections 14 and 25 of the Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016 (PIPES Act) to require responsible parties to provide material safety data sheets to first responders, and to require ILI and

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\(^1\) PHMSA is currently statutorily limited to regulating rural gathering lines, defined in § 195.11 to mean onshore gathering lines in a rural area that meets certain criteria (i.e., has a nominal diameter from 6-5/8 in. (168 mm) to 8-5/8 in. (219.1 mm), is located in or within ¼ mile of an unusually sensitive area as defined in § 195.6, and operates at a maximum pressure established under § 195.406).

\(^2\) For hazardous liquid pipelines, HCAs include populated areas, drinking water sources, and unusually sensitive ecological areas. 49 FR §195.452 requires hazardous liquid pipeline operators to conduct an initial risk assessment to determine if an accidental release from any segment of their pipeline could reach an HCA. Operators are required to meet more stringent regulatory requirements known as IM for segments of their pipeline from which a release could reach an HCA. Any pipeline from which a release “could affect” an HCA is subject to the IM Rule. In this document, we use HCA and “could affect HCA” interchangeably. For more information, please see PHMSA. (2011). “Fact Sheet: High Consequence Areas.” U.S. Department of Transportation. (Accessed March 4, 2016: http://primis.phmsa.dot.gov/comm/FactSheets/FSHCA.htm).
surveys or other technologies to ensure the integrity of certain underwater hazardous pipelines located in HCAs.

This report details PHMSA’s assessment of the environmental effects of the final rule for the eight principal requirement areas listed above, as well as the two self-implementing provisions of the PIPES Act of 2016. The assessment of environmental effects meets the requirements set in 40 CFR part 1502, Environmental Impact Statement.3

The final rule aims to prevent and mitigate the risk from hazardous liquid releases. This document expands on the discussion of the benefits contained in the Regulatory Impact Analysis (RIA) for this final action (PHMSA 2019) by describing the environmental effects of the final rule.

As described in Section 3, the final rule will require additional testing, inspection, and in some cases, repairs or retrofit of pipelines to address safety conditions. The actions taken by operators in response to the results of tests and inspections may require additional excavation or change the timing of maintenance activities that operators would have otherwise performed at a later date (or following a release). In accordance with existing regulations, operators must take precautions and implement best management practices to minimize or mitigate environmental damage during excavation and other maintenance activities, such as minimizing erosion, sediment runoff to waterbodies or impacts to other resources. Further, PHMSA expects any impacts of these activities to be temporary and limited to the immediate area of the pipeline, i.e., within the existing right-of-way (ROW). Overall, these activities will have small effects relative to the much more significant damages resulting from hazardous liquid releases that may continue to occur under a “no action” alternative.

Operator-reported data show 3,209 incidents between 2010 and 2017 involving the release of hazardous liquids into the environment. Over 1,700 of these incidents contaminated soil and over 270 incidents affected water. Details on individual incidents highlight the often significant adverse environmental and other consequences of hazardous liquid releases, including but not limited to water and soil contamination, damages to ecosystems, closures of recreational areas, resident evacuations, injuries and fatalities, economic impacts to the communities in proximity of the pipelines. As discussed in the RIA and in this report, the final rule will provide benefits through avoiding damages from hazardous pipeline incidents that may be prevented through earlier detection of threats to pipeline integrity from corrosion or following extreme weather events, and through enhancing the ability of PHMSA and pipeline operators to evaluate risks. Accordingly, PHMSA expects this rule to have positive environmental impacts.

The information in this EA report supports a Finding of No Significant Impact (FONSI) for this action.

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3 In accordance with 40 CFR part 1508, the environmental assessment: (a) Means a concise public document for which a Federal agency is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact, (2) Aid an agency's compliance with the Act when no environmental impact statement is necessary, and (3) Facilitate preparation of a statement when one is necessary; (b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.
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1 Introduction

In recent years, there have been several hazardous liquid pipeline accidents. In response to accident investigation findings, incident report data and trends, and stakeholder input on a proposed rulemaking, PHMSA is finalizing amendments to the hazardous liquid pipeline safety regulations to improve protection of the public, property, and the environment by closing regulatory gaps where appropriate. This regulatory action will ensure that operators are increasing the detection and remediation of unsafe conditions and mitigate the adverse effects of pipeline failures. The preamble that accompanies the publication of this final rule in the Federal Register provides more details on the context for the rulemaking, including stakeholder input, and the rationale for the requirements.

This report details PHMSA’s assessment of the environmental effects of the final rule, as required by 40 CFR part 1502, Environmental Impact Statement.

The remainder of this introduction summarizes the background for the final rule. Section 2 then provides the purpose and need for the action while Section 3 summarizes the final rule and alternatives PHMSA considered for each major rule provision. PHMSA discusses the affected environment and environmental effects in Section 4, concluding in Section 5 with a determination that the information supports a Finding of No Significant Impact (FONSI) for this action. Finally, sections 6 through 8 provide additional information about the public’s involvement in the development of the action, preparers and reviewers of this environmental assessment (EA), and cited references, respectively.

1.1 Pipeline Safety, Regulatory Certainty and Job Creation Act of 2011, Accident Investigation Report, and Recommendations

Congress enacted the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 (Public Law 112-90) (the Act), which included mandates for PHMSA to complete studies on existing Federal and State regulations for gathering lines, existing exemptions, and the application of existing regulations to lines not presently regulated; on automatic shutdown and remote control valves; and on the leak detection systems used by hazardous liquid operators. PHMSA completed these studies and submitted the gathering line study to Congress on May 8, 2015 (ORNL, 2013), and submitted the valve study and leak detection study to Congress on December 27, 2012 (Kiefner and Associates, 2012).

Shortly after the Act was passed, the National Transportation Safety Board (NTSB) issued its accident investigation report on the Marshall, Michigan, accident. In the report, the NTSB made additional recommendations regarding the need to revise and update hazardous liquid pipeline regulations. Specifically, the NTSB issued recommendations P-12-03 and P-12-04, which addressed the detection of pipeline cracks and “discovery of condition,” respectively. The “discovery of condition” recommendation requires, in cases where a determination about pipeline threats has not been obtained within 180 days following the date of inspection, that pipeline operators notify PHMSA and provide an expected date when adequate information will become available.

The Government Accountability Office (GAO) also issued a recommendation in 2012 concerning hazardous liquid and gas gathering pipelines. Recommendation GAO-12-388, dated March 22, 2012, states “To enhance the safety of unregulated onshore hazardous liquid and gas gathering pipelines,
the Secretary of Transportation should direct the PHMSA Administrator to collect data from operators of federally unregulated onshore hazardous liquid and gas gathering pipelines, subsequent to an analysis of the benefits and industry burdens associated with such data collection.”

In response to the Act and the NTSB and GAO recommendations, PHMSA is issuing this rule.

1.2 Previous Actions

In relation to this rulemaking, PHMSA published an Advanced Notice of Proposed Rulemaking (ANPRM) in 2010 as well as a Notice of Proposed Rulemaking (NPRM) in 2015.

1.2.1 Advance Notice of Proposed Rulemaking

On October 18, 2010 (75 FR 63774), PHMSA published an ANPRM soliciting input and comments from stakeholders and the public on several potential changes to 49 CFR part 195. The ANPRM sought input in six areas: (1) Scope of Part 195 and Existing Regulatory Exceptions; (2) Criteria for Designation of HCAs; (3) Leak Detection and Emergency Flow Restricting Devices; (4) Valve Spacing; (5) Repair Criteria Outside of HCAs; and (6) Stress Corrosion Cracking.

1.2.2 Notice of Proposed Rulemaking

In response to mandates, recommendations, lessons learned, and public input on the ANPRM, PHMSA published a proposed rule on October 13, 2015 (80 FR 61609). The proposed changes aimed to improve protection of the public, property, and the environment by closing regulatory gaps where appropriate, ensuring that operators are increasing the detection and remediation of unsafe conditions, and mitigating the adverse effects of hazardous liquid pipeline failures. Specifically, the proposal included changes in eight primary areas:

1. Extend reporting requirements to gravity lines.
2. Extend reporting requirements to all hazardous liquid gathering lines.
3. Require inspections within 72 hours of pipelines in areas affected by extreme weather, natural disasters, and other similar events.
4. Require assessments of onshore pipelines not already covered under the Integrity Management (IM) Program requirements using an inline inspection (ILI) tool at least once every 10 years.
5. Modify the repair criteria.
6. Require the use of leak detection systems (LDS) on hazardous liquid pipelines located outside of HCAs.
7. Require that all pipelines subject to the IM requirements be capable of accommodating ILI tools within 20 years, unless the basic construction of a pipeline cannot be modified to permit that accommodation.
8. Clarify certain regulatory provisions to improve certainty and compliance.
1.3 Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016

Between the publication of the NPRM and this final rule, the President signed the “Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016” (PIPES Act), Public Law No. 114-183, on June 22, 2016. While the PIPES Act contained several mandates that must be addressed through rulemaking, a couple of the provisions are self-executing standards that PHMSA is incorporating into this rulemaking:

- Section 14 of the PIPES Act requires owners and operators of hazardous liquid pipeline facilities, following accidents involving pipeline facilities that result in hazardous liquid spills and within 6 hours of a telephonic or electronic notice of the accident to the National Response Center, to provide safety data sheets on any spilled hazardous liquid to the designated Federal On-Scene Coordinator and appropriate State and local emergency responders.

- Section 25 of the PIPES Act applies to operators of any underwater hazardous liquid pipeline facility located in an HCA that is not an offshore pipeline facility and any portion of which is located at depths greater than 150 feet under the surface of the water. Operators of these facilities, notwithstanding any pipeline integrity management program or integrity assessment schedule otherwise required by the Secretary, must ensure that pipeline integrity assessments using internal inspection technology appropriate for the pipeline’s integrity threats are completed not less often than once every 12 months; and using pipeline route surveys, depth of cover surveys, pressure tests, ECDA, or other technology that the operator demonstrates can further the understanding of the condition of the pipeline facility, ensure that pipeline integrity assessments are completed on a schedule based on the risk that the pipeline facility poses to the HCA in which the pipeline facility is located.

1.4 Final Rule

PHMSA received comments from 70 organizations or individuals on the NPRM. After considering these comments and advice from the Liquid Pipeline Advisory Committee (LPAC),\(^4\) PHMSA is finalizing the rule requirements in the eight areas listed above, but without any change to the repair criteria (requirement area 5). The Federal Register notice for this final action summarizes the comments PHMSA received on the NPRM and the rationale for the final rule provisions described in the next section, including modification to the requirements relative to the proposed rule.

Section 3 of this report describes the rule requirements in more detail. Exhibit 1-1 summarizes the types of pipelines affected by provisions addressed in the eight principal requirement areas listed above and indicates cases where the final rule extends requirements applicable on some pipelines in the existing regulation to other pipelines.

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\(^4\) LPAC is a statutorily mandated advisory committee that advises PHMSA on proposed safety standards, risk assessments and safety policies for natural gas pipelines and hazardous liquid pipelines. The committee consists of 15 members, with membership divided among the Federal and State agencies, the regulated industry, and the public. The LPACs advise PHMSA on the technical feasibility, practicability, and cost-effectiveness of proposed liquid pipeline safety standard. The LPAC met on February 1, 2016, to discuss this rulemaking and provide its recommendations to PHMSA.
Exhibit 1-1: Rule applicability to hazardous liquid pipelines, by pipeline characteristics

<table>
<thead>
<tr>
<th>Final Rule Requirement Area</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Extend certain reporting requirements to hazardous liquid gravity lines.</td>
<td>Onshore gravity lines(^1)</td>
</tr>
<tr>
<td>2. Extend certain reporting requirements to all hazardous liquid gathering lines.</td>
<td>Unregulated gathering lines except those exempt in accordance with §195.15(c)</td>
</tr>
<tr>
<td>3. Require inspections of pipelines in areas affected by extreme weather or natural disaster.</td>
<td>All regulated pipelines</td>
</tr>
<tr>
<td>4. Require assessments of certain pipelines located outside HCAs using an ILI tool at least once every 10 years.</td>
<td>Onshore pipelines outside HCAs that can accommodate ILI tools</td>
</tr>
<tr>
<td>5. No change to the IM repair criteria.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>6. Require use of LDSs on hazardous liquid pipelines located outside HCAs.</td>
<td>All pipelines outside HCAs</td>
</tr>
<tr>
<td>7. Increase the use of ILI tools.</td>
<td>All regulated onshore pipelines in HCAs; offshore HCA pipelines greater than 10-inch in diameter</td>
</tr>
<tr>
<td>8. Clarify and resolve inconsistencies regarding deadlines and information analyses for IM plans.</td>
<td>All regulated pipelines in HCAs</td>
</tr>
</tbody>
</table>

\(^1\) The final rule exempts certain gravity pipelines from the reporting requirements, namely gravity lines that meet the definition of a low-stress pipeline, travel no farther than 1 mile from a facility boundary, and do not cross any waterways used for commercial navigation.

HCA = high consequence area; ILI = in-line inspection; IM = integrity management; LDS = leak detection system

PHMSA expects that the changes will protect the public, property, and the environment by increasing the detection and remediation of unsafe conditions and mitigating the adverse effects of pipeline failures. These improvements are in addition to safety improvements resulting from other hazardous liquid pipelines regulations PHMSA promulgated in the past ten years under part 195 (see RIA; PHMSA, 2018a), reflected in the baseline for this analysis and the “no action” alternatives discussed in Section 3.
2 Purpose and Need for Action

The statement of purpose and need explains the need for PHMSA action and reflects the goals to be achieved through this action.

Congress established the current framework for regulating the safety of hazardous liquid pipelines in the Hazardous Liquid Pipeline Safety Act (HLPSA) of 1979 (Public Law 96-129). Like its predecessor, the Natural Gas Pipeline Safety Act (NGPSA) of 1968 (Public Law 90-481), the HLPSA provides the Secretary of Transportation (Secretary) with the authority to prescribe minimum Federal safety standards for hazardous liquid pipeline facilities. That authority, as amended in subsequent reauthorizations, is currently codified in the Pipeline Safety Laws (49 U.S.C. 60101 et seq.).

PHMSA has issued comprehensive safety standards for the design, construction, testing, operation, and maintenance of hazardous liquid pipelines. Those standards are codified in the Hazardous Liquid Pipeline Safety Regulations (49 CFR part 195). Part 195 applies broadly to the transportation of hazardous liquids by pipeline. A combination of prescriptive and performance-based safety standards are used (i.e., a particular objective is specified, but the method of achieving that objective is not). Risk management principles play a key role in the IM requirements.

The significant and expected growth in the nation’s production and use of oil is placing unprecedented demands on the nation’s pipeline system, underscoring the importance of moving this energy product safely and efficiently. With changing spatial patterns of oil production and use and an aging pipeline network, improved data collection and systemic risk management are increasingly necessary for the industry to make reasoned safety choices and for preserving public confidence in its ability to do so.

Congress recognized these needs when it enacted the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 (P.L. 112-90), calling for an examination of a broad range of issues pertaining to the safety of the nation’s pipeline network, including a thorough application of the risk-based integrity assessment, repair, and validation system known as “integrity management.” Specifically, the law mandated that PHMSA complete studies on existing Federal and State regulations for gathering lines, existing exemptions, and the application of existing regulations to lines not presently regulated; on IM; on automatic shutdown and remote control valves; and on the leak detection systems used by hazardous liquid operators. If the studies supported the need for new standards and the implementation of those standards were practicable, the Secretary of Transportation was given authority to issue regulations.

2.1 Purpose

This final rule advances the goals established by Congress in the 2011 Act, which are consistent with the emerging needs of the nation’s hazardous liquid pipeline system. This rule strengthens protocols for IM, including protocols for inspections and repairs, and improves and streamlines information collection to help drive risk-based identification of the areas with the greatest safety deficiencies. Further, this rule establishes requirements to periodically assess and extend aspects of IM to pipeline segments in locations where the surrounding population is expected to be at
potential risk from an incident. This change would facilitate prompt identification and remediation of potentially hazardous defects and anomalies while still allowing operators to make risk-based decisions on where to allocate their maintenance and repair resources.

### 2.2 PHMSA Strategic Objectives

PHMSA’s mission is “to protect people and the environment from the risks of hazardous materials transportation.” PHMSA is committed to reducing the risk of harm to people and the environment resulting from the transportation of hazardous materials by pipelines.

Pipeline accidents can affect surrounding populations, property, and the environment, imposing societal costs in the form of injuries, fatalities, and property and environmental damage. The final rule is needed to carry out PHMSA’s goals, in accordance with the legal mandates established in the Pipeline Safety, Regulatory Certainty, and Job Creation Act (Public Law 112-90). These goals include:

- **Improving public health and safety by reducing transportation-related deaths and injuries.** In addition to their negative impact on the environment and the economy, pipeline accidents, depending on their mode and severity, can affect human health in a variety of ways, including toxicity (e.g., dizziness, asphyxiation, irritation) and physical harm (e.g., burns).

- **Advancing environmentally sustainable policies and investments that reduce carbon and other harmful emissions from transportation sources.** Ground and waterway releases can cause environmental damage, impact wildlife, and contaminate drinking water supplies. Some areas, such as those containing certain imperiled, threatened, or endangered species or where migratory waterbirds concentrate, are unusually sensitive to the impacts of hazardous liquid releases and may take decades to recover from a spill, if ever.

- **Advancing a transportation system to serve the Nation’s long-term social, economic, security, and environmental needs.** Accidents place a demand on community resources, including services from first responders and firefighters to control fires, police and other law enforcement personnel to control traffic and to assist in possible evacuations, and engineers or other public workers to deal with utility and infrastructure problems. Releases can cause business interruptions or the loss of fuel supplies such as gasoline and home heating oil. Although the potential for releases to displace populations is remote, the need for permanent or temporary shelter can further strain community resources. Combined effects on businesses, infrastructure, community services, and other economic resources can exacerbate the effects of incident response and recovery.

### 2.3 Need for Action

Since the implementation of the IM regulations more than ten years ago, many factors have changed. Most importantly, there have been sweeping changes in the oil industry, and the nation’s relatively safe but aging pipeline network faces increased pressures from these changes. Long-identified pipeline safety issues, some of which IM set out to address, remain problems. Infrequent but severe accidents indicate that some pipelines continue to be vulnerable to failures.
stemming from outdated construction methods or materials. Some severe pipeline accidents have occurred in areas outside HCAs where the application of IM principles is not required. Extreme weather events were contributing factors in several of these or other incidents.

Over the 8-year period of 2010 through 2017, pipeline operators reported a total of 3,209 incidents involving hazardous liquid pipelines. Exhibit 2-1 summarizes some of the reported impacts of these incidents. The data reflect the reporting criteria\(^5\) that were in effect at the time of each incident. Other reported environmental impacts from these incidents that are not reflected in the table include soil contamination, impacts to water, impacts to wildlife, impacts to fish and aquatic receptors, closure of drinking water intakes, etc.

**Exhibit 2-1: National hazardous liquid pipeline incidents summary statistics, 2010 to 2017\(^6\)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidents</th>
<th>Fatalities</th>
<th>Injuries</th>
<th>Evacuations(^1)</th>
<th>Barrels Lost</th>
<th>Property Damage(^2) (Millions; 2017$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outside HCA</td>
<td>Inside HCA</td>
<td>Outside HCA</td>
<td>Inside HCA</td>
<td>Outside HCA</td>
<td>Inside HCA</td>
</tr>
<tr>
<td>2010(^4)</td>
<td>208 142</td>
<td>1 0 1 2</td>
<td>108 578</td>
<td>61,061 39,498</td>
<td>$90.2 $1,113.1</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>215 129</td>
<td>0 0 1 0</td>
<td>95 106</td>
<td>71,062 18,048</td>
<td>$88.9 $212.1</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>216 150</td>
<td>1 2 1 3</td>
<td>15 220</td>
<td>33,352 12,532</td>
<td>$69.0 $88.2</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>246 155</td>
<td>1 0 6 0</td>
<td>753 105</td>
<td>106,669 10,798</td>
<td>$115.2 $175.4</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>257 198</td>
<td>0 0 0 0</td>
<td>28 6</td>
<td>33,220 15,163</td>
<td>$77.1 $63.9</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>275 185</td>
<td>1 0 0 0</td>
<td>58 80</td>
<td>90,033 12,193</td>
<td>$48.6 $216.4</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>256 164</td>
<td>1 2 5 4</td>
<td>71 33</td>
<td>59,802 26,333</td>
<td>$84.7 $124.6</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>245 168</td>
<td>0 1 0 1</td>
<td>38 20</td>
<td>57,538 35,075</td>
<td>$76.9 $54.5</td>
<td></td>
</tr>
<tr>
<td>Average Annual</td>
<td>240 161</td>
<td>1 1 2 1</td>
<td>146 144</td>
<td>64,092 21,205</td>
<td>$81.3 $256.0</td>
<td></td>
</tr>
</tbody>
</table>

\(^5\) Under 49 CFR 195.50, hazardous liquid pipeline operators are required to fill out an accident report for any accidental release of an hazardous liquid that results in one or more of the following:

1. Unintentional fire or explosion.
2. Fatality or injury requiring hospitalization.
3. Releases of greater than 5 gallons (with some exceptions).
4. Estimated property damage greater than $50,000.

\(^6\) Exhibit 2-1 was compiled from PHMSA’s “Pipeline Incident Flagged Files.” These files contain all of the detailed data from the operator-submitted accident reports with several additional “flag” variables added by PHMSA to identify trends despite changing reporting requirements. These files can be downloaded from [http://www.phmsa.dot.gov/pipeline/library/datastatistics/flagged-data-files](http://www.phmsa.dot.gov/pipeline/library/datastatistics/flagged-data-files) (last accessed 5/31/2018).
Environmental Assessment: Hazardous Liquid Pipelines

2. Purpose and Need for Action

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidents</th>
<th>Fatalities</th>
<th>Injuries</th>
<th>Evacuations&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Barrels Lost</th>
<th>Property Damage&lt;sup&gt;2&lt;/sup&gt; (Millions; 2017$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outside HCA</td>
<td>Inside HCA&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Outside HCA</td>
<td>Inside HCA&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Outside HCA</td>
<td>Inside HCA&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

HCA = high consequence area

1. Evacuations represent the estimated number of people evacuated, based on operator knowledge, or police, fire department, or other emergency responder reports (PHMSA, 2015c).

2. Property damage includes 1) operator estimated cost of public and non-operator private property damage; 2) commodity lost; 3) operator’s property damage and repairs; 4) operator’s emergency response; 5) operator’s environmental remediation; and 6) other costs. “Other costs” are any and all costs not included in categories 1 through 5, except that operators are instructed to omit costs incurred for facility repair, replacement, or change that are not related to the accident and which are typically done solely for convenience (e.g., work done solely on non-leaking facilities unearthed because of the accident), and to omit litigation and other legal expenses related to the accident. Review of other costs reported for incidents in 2010-2017 shows that this category often includes costs associated with the cleanup, environmental investigation and testing, waste disposal, repairs, and public relations. For 6 incidents, operators reported legal fees (total: $4.1 million), whereas five incidents included relocation costs. PHMSA subtracted these other costs from the total.

3. In the Pipeline Incident Flagged Files, incidents are assigned to pipelines inside and outside of HCAs based on whether they are labeled as both “could be HCA” and spill “reached HCA.”

4. The 2010 data include the Enbridge pipeline rupture incident in Marshall, Michigan which released approximately 20,000 barrels in the Kalamazoo River and caused owner-reported damages of approximately $900 million.

Source: PHMSA’s Hazardous Liquid Pipeline Systems Accident Report flagged file (as of May 31, 2018).

Crude oil releases accounted for the largest number of incidents reported between 2010 and 2017 (1,604 incidents out of 3,209 incidents) whereas incidents involving highly volatile liquids (HVL) accounted for the largest quantity spilled (284,500 barrels), followed by those involving crude oil (270,800 barrels).

Risk factors for pipeline safety issues stem from many sources, including manufacturing issues, external weather and environmental factors, increased use, activity near the pipeline, other operational issues, and age-related integrity issues. According to PHMSA data, damage caused by material/weld/equipment failure was the most frequent cause of incidents reported for hazardous liquid pipelines since 1996. Integrity assessment methods such as ILI are meant to detect material/weld/equipment defects and corrosion damage that may result in a failure and subsequent release. Improvements in the predictive performance of these assessments or an increase in their frequency, as provided by requirement areas 4 and 7 in the final rule, are meant to help prevent such future releases.

Extreme events, such as flooding, can cause scouring that make pipelines along or beneath riverbeds vulnerable to damages. For example, the crude oil spill into the Yellowstone River in 2011 near Laurel, MT, was caused by channel migration and river bottom scour, leaving a large span of the pipeline exposed to prolonged current forces and debris washing downstream in the river. Those external forces damaged the exposed pipeline. Natural force damage incidents along pipeline ROWs can be among the largest and most damaging. The 2011 accident in Laurel, Montana, is the second worst property damage loss from all causes in the last 10 years.

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7 Pipelines that cross riverbeds or lie below the seabed may be damaged due to abrasion from the ebb and flow of the water, thereby washing away the sand/clay/earth covering the pipeline. Excessive scouring causes spanning. If allowed to go uncorrected, the pipeline welds crack or the pipe ruptures from its unsupported weight.
Exhibit 2-2 lists the significant incidents that occurred on pipeline right-of-ways (ROWs) due to weather-related conditions between 2010 and 2017. As Exhibit 2-2 shows, according to PHMSA accident report data, there were 21 natural force incidents along hazardous liquid pipeline ROWs during the 8-year period. On average, these incidents resulted in $26.03 million in property damage annually or $9.9 million per incident.

Extreme weather events may be a contributing factor in other incidents even when not specifically identified in the report submitted to PHMSA. For example, on January 17, 2015, a breach in the Bridger Pipeline Company’s Poplar system resulted in a spill of an estimated 28,434 gallons into the Yellowstone River near the town of Glendive, MT, and affected local water supplies. Preliminary information indicates that over 100 feet of pipeline was exposed on the river bottom, and the release point was near a girth weld. While a depth of cover survey indicated sufficient cover in late 2011, PHMSA understands the area experienced localized flooding in early 2014.

Exhibit 2-2: Natural force significant incidents on pipeline ROWs, 2010–2017

<table>
<thead>
<tr>
<th>Accident Date</th>
<th>Location, State</th>
<th>Accident Sub-Cause</th>
<th>Commodity</th>
<th>Property Damage (Millions; 2017$)</th>
<th>Gross Loss (Gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/11/2010</td>
<td>Lake Charles, LA</td>
<td>Temperature</td>
<td>HVLs</td>
<td>$0.19</td>
<td>93,954</td>
</tr>
<tr>
<td>3/30/2010</td>
<td>Salisbury, MO</td>
<td>Earth Movement</td>
<td>HVLs</td>
<td>$0.12</td>
<td>27,552</td>
</tr>
<tr>
<td>7/1/2011</td>
<td>Laurel, MT</td>
<td>Heavy Rains/Floods</td>
<td>Crude Oil</td>
<td>$148.69</td>
<td>63,378</td>
</tr>
<tr>
<td>7/16/2011</td>
<td>Tekema, NE</td>
<td>Heavy Rains/Floods</td>
<td>HVLs</td>
<td>$1.05</td>
<td>4,200</td>
</tr>
<tr>
<td>8/13/2011</td>
<td>Onawa, IA</td>
<td>Heavy Rains/Floods</td>
<td>HVLs</td>
<td>$8.45</td>
<td>28,350</td>
</tr>
<tr>
<td>7/21/2012</td>
<td>Port Arthur, TX</td>
<td>Lightning</td>
<td>HVLs</td>
<td>$1.26</td>
<td>130,914</td>
</tr>
<tr>
<td>7/29/2013</td>
<td>Tioga, ND</td>
<td>Lightning</td>
<td>Crude Oil</td>
<td>$18.07</td>
<td>865,200</td>
</tr>
<tr>
<td>8/13/2013</td>
<td>Littleton, WV</td>
<td>Heavy Rains/Floods</td>
<td>HVLs</td>
<td>$5.23</td>
<td>479,010</td>
</tr>
<tr>
<td>9/12/2013</td>
<td>Pinon, NM</td>
<td>Heavy Rains/Floods</td>
<td>HVLs</td>
<td>$0.63</td>
<td>104,622</td>
</tr>
<tr>
<td>1/17/2015</td>
<td>Dawson County, MT</td>
<td>Other Natural Force</td>
<td>Crude Oil</td>
<td>$8.33</td>
<td>31,836</td>
</tr>
<tr>
<td>2/9/2014</td>
<td>Munger, MI</td>
<td>Temperature</td>
<td>Refined Petroleum</td>
<td>$0.02</td>
<td>755</td>
</tr>
<tr>
<td>2/12/2014</td>
<td>Cleveland, OH</td>
<td>Earth Movement</td>
<td>Refined Petroleum</td>
<td>$0.21</td>
<td>300</td>
</tr>
<tr>
<td>8/7/2014</td>
<td>Yoder, WY</td>
<td>Lightning</td>
<td>Crude Oil</td>
<td>$0.70</td>
<td>84</td>
</tr>
<tr>
<td>7/13/2015</td>
<td>Wabash County, IL</td>
<td>Heavy Rains/Floods</td>
<td>Crude Oil</td>
<td>$1.70</td>
<td>2,163</td>
</tr>
<tr>
<td>8/19/2015</td>
<td>Lone Star, TX</td>
<td>Lightning</td>
<td>HVLs</td>
<td>$0.01</td>
<td>4</td>
</tr>
<tr>
<td>2/16/2016</td>
<td>Magee, MS</td>
<td>Other Natural Force</td>
<td>Crude Oil</td>
<td>$1.86</td>
<td>13,860</td>
</tr>
<tr>
<td>4/16/2016</td>
<td>Crawleyville, IN</td>
<td>Heavy Rains/Floods</td>
<td>Refined Petroleum</td>
<td>$9.67</td>
<td>35,868</td>
</tr>
<tr>
<td>6/25/2017</td>
<td>Westport, SD</td>
<td>Lightning</td>
<td>Refined Petroleum</td>
<td>$0.04</td>
<td>84</td>
</tr>
<tr>
<td>8/8/2017</td>
<td>Cushing, OK</td>
<td>Temperature</td>
<td>Crude Oil</td>
<td>$0.90</td>
<td>1</td>
</tr>
<tr>
<td>8/8/2017</td>
<td>Cleveland, OK</td>
<td>Temperature</td>
<td>Crude Oil</td>
<td>$0.90</td>
<td>1</td>
</tr>
<tr>
<td>8/27/2017</td>
<td>Texas County, OK</td>
<td>Lightning</td>
<td>HVLs</td>
<td>$0.23</td>
<td>3,116</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>NA</strong></td>
<td><strong>NA</strong></td>
<td><strong>NA</strong></td>
<td><strong>$208.26</strong></td>
<td><strong>1,885,252</strong></td>
</tr>
</tbody>
</table>
The ability to quickly detect safety conditions and respond to a release — if not prevent it in the first place — is key to mitigating the impacts. The rule requirements, described in Section 3, are designed to reduce risk by reducing the probability of an incident occurring and reducing the consequences of an incident, should it happen.
3 Final Action and Alternatives Considered

The sections below discuss the final rule requirements and alternatives considered by PHMSA for each of eight principal rule areas (in Sections 3.1 through 0), and for the self-implementing provisions of the PIPES Act of 2016 (in Section 3.9).

3.1 Requirement Area #1 – Extend Reporting Requirements to All Hazardous Liquid Gravity Lines

Gravity lines, pipelines that carry product by means of gravity, are currently exempt from PHMSA regulations. Many gravity lines are short and within tank farms or other pipeline facilities; however, some gravity lines are longer and can build up large amounts of pressure. PHMSA is aware of gravity lines that traverse long distances with significant elevation changes, which could have significant consequences in the event of a release.

In order for PHMSA to effectively analyze safety performance and pipeline risk of gravity lines, PHMSA needs basic data about those pipelines.

3.1.1 Final Rule Requirements

Through the final rule, PHMSA is requiring operators of hazardous liquid gravity lines to submit annual, safety-related condition and accident reports. PHMSA will require operators of gravity lines to submit annual reports, accident reports, and safety-related reports described in 49 CFR 195, subpart B. The collection of such information is authorized under the Pipeline Safety Laws, and the resulting data will assist in understanding the risks gravity lines pose to people and the environment and determining whether the existing Federal and State regulations for these lines are adequate.

The final rule provides exemptions for gravity lines that meet the definition of a low-stress pipeline, travel no farther than 1 mile from a facility boundary, and do not cross any waterways used for commercial navigation.

In response to comments received on the NPRM, PHMSA streamlined the data collection requirements to focus on key elements that gravity line operators will need to provide. PHMSA also revised its burden estimate for providing these data, including the one-time cost for certain operators to register with PHMSA, which had been omitted from the NPRM analysis.

3.1.2 Alternatives Considered

Comments submitted by the public in response to the NPRM were generally supportive of the proposal. PHMSA, therefore, did not analyze alternatives beyond those considered at the proposal stage (PHMSA, 2015a) described below. See the preamble for the final action for a summary of the comments PHMSA received on extending reporting to gravity lines and PHMSA’s rationale for the final rule requirements.

Alternative 1: No Action (Baseline—Maintains the Status Quo)

In the absence of this final rule, PHMSA would be unable to gather the information required to evaluate the risk posed by gravity lines. This information is not available from other sources. The
collected risk information will allow PHMSA to assess the need for regulation of gravity lines and devise appropriate regulatory policies if warranted.

**Alternative 2: Regulate Gravity Flow Pipelines Carrying Ethanol**

PHMSA originally considered regulating gravity flow pipelines because transportation of ethanol by pipelines can be problematic due to the high oxygen content, which makes it more corrosive. Ethanol is also flammable, does not produce visible smoke, and has a hard-to-see blue/orange flame when ignited. Ethanol and some ethanol blends can conduct electricity, whereas gasoline does not. In reality, ethanol is not transported by pipeline frequently.⁸

Commenters to the ANPRM stated that the existing exception for gravity flow pipelines was appropriate but expressed the view that this exception should not apply to pipelines that transport ethanol. PHMSA rejected this option as being substantially different from requiring operators to report on gravity lines. PHMSA will evaluate the data it receives to assess the risk posed by gravity lines carrying ethanol and other hazardous liquids.

**Alternative 3: Apply All Part 195 Requirements to Gravity Flow Pipelines Carrying Hazardous Liquid**

PHMSA considered applying all part 195 requirements to gravity flow hazardous liquid pipelines because transportation of any hazardous liquid can pose a risk due to corrosion that could then result in leakage or rupture of the pipeline and flammability. However, PHMSA does not currently have evidence that hazardous liquid gravity pipelines present the same risks. Therefore, PHMSA rejected the alternative to remove all current exemptions in part 195 for gravity flow lines.

**3.2 Requirement Area #2 – Extend Reporting Requirements to All Hazardous Liquid Gathering Lines**

Gathering pipelines transport a commodity from its source to a facility for processing or to a transmission line. These pipelines are typically smaller diameter (no more than 8 5/8 inches in diameter) and were previously left out of the requirements applicable to regulated rural gathering lines.

PHMSA needs basic data about those pipelines to effectively analyze safety performance and risk.

**3.2.1 Final Rule Requirements**

PHMSA is finalizing the requirements at 49 CFR § 195.1(a)(5) for operators of all gathering lines to submit annual, safety-related condition, and accident reports. The collection of such information is authorized under the Pipeline Safety Laws, and the resulting data will assist in determining whether the existing Federal and State regulations for these lines are adequate. In finalizing the rule, PHMSA addressed public comments by streamlining the reporting requirements for these lines.

**3.2.2 Alternatives Considered**

Comments submitted by the public in response to the NPRM were generally supportive of the proposal. PHMSA therefore did not analyze alternatives beyond those considered at the proposal

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⁸ For more information, see PHMSA (2018).
stage (PHMSA, 2015) described below. See the preamble for the final action for a summary of the comments PHMSA received on reporting for gathering lines and the rationale for the final requirements.

**Alternative 1: No Action (Baseline—Maintains the Status Quo)**

Under this option, PHMSA would maintain existing requirements and forego obtaining the information required to evaluate the risk posed by unregulated gathering lines. This information is not available from other sources. The collected risk information will allow PHMSA to assess the need for regulation of unregulated gathering lines and devise appropriate regulatory policies if warranted.

**Alternative 2: Require Different Reporting for Some Operators**

PHMSA considered establishing different requirements for the large and small businesses that may be among those affected by extending the reporting requirement to unregulated gathering lines. PHMSA is aware that some regulations, rules, and government policies place a disproportionate burden on small firms. Consequently, government agencies have sometimes granted small businesses preferential regulatory treatment, such as exemptions from requirements or extended deadlines for compliance.

However, the estimated costs of the reporting requirements are small, and PHMSA determined that the potential impact on small businesses was not sufficient to recommend differentiated reporting requirements based on business size. Further, allowing disparate reporting would not meet the need for information to assess risk.

**Alternative 3: Extend Certain Reporting Requirements to All Hazardous Liquid Gathering Lines**

Since the estimated annual reporting costs for this requirement are low on average per operator, PHMSA considered allowing voluntary reporting by operators under the assumption that operators may offer the information because of the low costs involved. PHMSA determined that this approach was impracticable since it cannot guarantee that it will have the data needed to assess risk and make decisions.

### 3.3 Requirement Area #3 – Require Inspections of Pipelines in Areas Affected by Extreme Weather, Natural Disasters, and Other Similar Events

Extreme weather events, natural disasters and other similar events can be contributing factors in hazardous liquid releases. Timely detection of safety conditions that may follow extreme events is critical to preventing or mitigating the impacts of releases.

#### 3.3.1 Final Rule Requirements

With this final rule, PHMSA is requiring that operators perform an inspection within 72 hours after the cessation of weather, natural disaster, and other similar events,\(^9\) where the cessation of the event is defined as the time when the affected area can be safely accessed by personnel and equipment.

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\(^9\) These do not include man-made events.
Based on these requirements, the operator must consider the nature of the event and the physical characteristics, operating conditions, location, and prior history of the affected pipeline in determining the appropriate method for performing the inspection. Operators will also be required to take appropriate remedial measures based on the results of those inspections. These measures may include:

- Reducing the operating pressure or shutting down the pipeline;
- Modifying, repairing, or replacing any damaged pipeline facilities;
- Preventing, mitigating, or eliminating any unsafe conditions in the ROWs;
- Performing additional patrols, surveys, tests, or inspections;
- Implementing emergency response activities with Federal, State, or local personnel; and
- Notifying affected communities of the steps that can be taken to ensure public safety.

As described below, under § 195.452, PHMSA guidance documents, and industry recommended practices, hazardous liquid pipeline operators must already perform inspections of hazardous liquid pipeline ROWs regularly under normal operating conditions and in the aftermath of natural disasters. PHMSA understands that pipeline operators already conduct such inspections, but not necessarily within the 72-hour timeframe specified in the final rule. The final rule requirements therefore provide more specificity on already existing duties. The definition of the start of the 72-hour timeframe and additional specificity on the actions that must be taken to comply with this requirement address the comments PHMSA received on the NPRM.

### 3.3.2 Alternatives Considered

Comments submitted by the public in response to the NPRM were generally supportive of the proposal but requested additional clarification on the scope of PHMSA’s final rule requirements. For this final rule, PHMSA therefore did not analyze alternatives beyond those considered at the proposal stage (PHMSA, 2015a) described below. See the preamble for the final action for a summary of the comments PHMSA received and the rationale for the final requirements.

**Alternative 1: No Action (Baseline—Maintains the Status Quo)**

By not taking action, there would continue to be regulatory uncertainty in the measures pipeline operators must take following an extreme weather event. As noted above, PHMSA expects that operators generally already abide by guidance and recommended practices, but there is value in setting clear expectations through binding, enforceable regulations.

**Alternative 2: Inspect All Pipelines Subject to This Requirement by Hydro Pressure Testing**

PHMSA considered requiring hydrostatic testing because high test pressures will reveal defects, thus ensuring that a proper safety margin is maintained. PHMSA rejected this alternative because it is much more expensive than the other ROW inspection methods (such as patrols and inspections by divers) and would not provide any information regarding potential hazards outside of the pipeline.

**Alternative 3: Provide Guidance for Adoption by States**

Providing guidance for States to adopt may prove infeasible. PHMSA’s experience with State-administered programs shows an uneven adoption of recommended approaches, leaving open the
potential for varying requirements over the pipeline network, which would not accomplish the desired outcome of setting clear expectations on appropriate actions following extreme events.

3.4 Requirement Area #4 – Require Periodic Assessment of Hazardous Liquid Pipeline Outside of HCAs

Assessments provide critical information about pipeline conditions, including the existence of internal and external corrosion and deformation anomalies.

Under the IM program, operators must currently perform periodic integrity assessments (i.e., continual integrity evaluation and assessment) on line segments that could affect HCAs at intervals not to exceed 5 years. Operators determine the best method(s) of assessing the structural integrity of their pipelines using one or more of the following three approaches: ILI, hydrostatic testing, or direct assessment.

Line segments outside of HCAs are not subject to this requirement even though incidents also occur on those lines and cause environmental and other damages.

3.4.1 Final Rule Requirements

The final rule will require that operators perform periodic assessments of certain pipelines that are not already covered under the IM program requirements in § 195.452. Specifically, § 195.416 will require operators to assess onshore pipelines outside of HCAs (excluding gathering lines) using ILI tools at least once every 10 years, provided that the lines are capable of accommodating these tools. Operators must perform the assessment using ILI tool(s) capable of detecting corrosion and deformation anomalies and account for uncertainties in reported results. Operators can elect to perform the assessment by using other technology (subject to prior notification) that can provide an equivalent understanding of the pipe’s condition. Operators must use a method capable of assessing seam integrity and corrosion and deformation anomalies when assessing LF-ERW pipe, lap-welded pipe, or pipe with a seam factor of less than 1.0.

An individual qualified by knowledge, training, and experience must analyze the data obtained from an assessment to determine if any conditions have been identified that could adversely affect the safe operation of the pipeline. Uncertainties in the reported results, including tool tolerances, are required to be part of that analysis. Such determinations will have to be made promptly but no later than 180 days after an inspection, unless the operator demonstrates that the 180-day deadline is impracticable. Operators are required to comply with § 195.422 and perform any required remedial actions. This rule applies to all lines not subject to IM requirements in § 195.452.

Existing IM regulations require operators to assess pipelines within HCAs every 5 years with tools capable of detecting corrosion and deformation anomalies. However, PHMSA is setting a 10-year interval for pipelines outside HCAs to allow operators to continue to prioritize assessments in HCAs over assessments outside HCAs.

These changes address comments PHMSA received on the relative stringency of the requirements for lines outside of HCAs and those in HCAs and the need to provide the same flexibility for the assessment of lines.
3.4.2 Alternatives Considered

Comments submitted by the public in response to the NPRM were generally supportive of the proposal but requested greater flexibility on the type of assessment methods operators could use, similar to flexibility afforded for HCA pipelines. Some commenters noted the very high costs associated with assessing offshore pipelines. For this final rule, PHMSA analyzed the rule requirements as they were proposed (i.e., applicable to all pipelines outside of HCAs), in addition to the alternatives identified at the proposal stage (PHMSA, 2015a). We describe the set of alternatives below. See the preamble for the final action for a summary of the comments PHMSA received on this requirement and the rationale for the final requirements.

**Alternative 1: No Action (Baseline—Status Quo)**

To the extent that assessments are not already conducted on these lines or are conducted less frequently than will be required by the final rule, retaining the status quo means that safety or integrity issues on pipelines outside of HCAs may go unaddressed, risking hazardous liquid releases and resulting environmental damages, injuries, and loss of product.

**Alternative 2: Require Assessments of all Pipelines Outside HCAs**

In the final rule, PHMSA is limiting the requirement to assess the pipelines outside of HCAs to onshore transmission lines already piggable. Operators are not required to assess offshore transmission lines, regulated gathering lines, and lines outside HCAs that are not already piggable. PHMSA based its decision to limit the scope of the requirement on the higher costs of conducting assessment offshore or of assessing lines such as lines not able to accommodate ILI tools using methods other than ILI, relative to the incremental risk reduction benefits to be achieved from those assessments. Specifically, PHMSA considered requiring assessments of pipelines not capable of accommodating an ILI tool using other assessment methods such as pressure testing, ECDA, or other assessment technology, but this requirement would have significantly increased the costs (by a factor of about six), while providing little incremental benefits. For example, a review of historical incident data show an average of 3.8 incidents each year from regulated gathering lines outside of HCAs (totaling approximately 2,600 miles in 2016) that involved conditions that could be detected through integrity assessments.10

**Alternative 3: Apply All IM Program Requirements That Are Currently in Place in HCAs to Pipelines Outside HCAs**

PHMSA rejected an alternative to apply all IM requirements applicable to pipelines in HCAs to pipelines outside HCAs because of the relatively lower risk posed by pipelines outside of HCAs, which makes differential focus between pipelines inside and outside HCAs appropriate.

**Alternative 4: Limit Expansion of IM Program Requirement to Certain Sites outside of HCAs**

PHMSA considered limiting the expansion of certain IM requirements to those pipelines where a spill could affect a building, occupied site (such as a playground), or highway. Under this alternative, pipeline where a spill could not affect a building, occupied site, or highway would not be subject to

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10 Incident data for 2010-2017 show a total of 30 incidents during that period involving regulated gathering lines located outside of HCAs and could have been detected by ILI assessments, i.e., item involved was either pipe or weld, and cause was either construction-, installation-, or fabrication-related; environmental cracking-related; external corrosion; internal corrosion; original manufacturing-related (not girth weld or other welds formed in the field); or previous damage due to excavation activity.
these new requirements. However, this alternative would offer less protection to the natural environment, including sensitive and protected habitats and species.

**Alternative 5: Implement Alternative Assessment Intervals**

PHMSA considered alternative assessment intervals to the 10-year interval, such as a 15- or 20-year interval. However, substantial changes to pipeline integrity can occur in a short timeframe. PHMSA decided against these alternatives because while the assessment costs would be lower on an annualized basis, they would also provide fewer benefits than the approach PHMSA is finalizing in the rule. More specifically, longer intervals between assessments would prevent fewer incidents and increase the risks of integrity-related failure as compared to the final rule.

**3.5 Requirement Area #5 – Modify the Repair Requirements for HCA and Non-HCA Pipeline**

The repairs carried out since the inception of the hazardous liquid IM rule include the three types of prioritized repairs occurring inside of HCAs as well as any additional repairs that may have been done by operators on their own volition. Currently, there are three types of prioritized repairs: (1) those that must be addressed immediately, (2) those that must be addressed within 60 days, and (3) those that must be addressed within 180 days. As described in the RIA (PHMSA, 2017), about 18 percent of repairs reported between 2004 and 2014 fall in the “immediate” category whereas about two-thirds fall in the 180-day category. The existing regulation does not specify anomaly types or repair time frames for repair criteria outside HCAs (currently “immediate” or at a “reasonable time”).

**3.5.1 Final Rule Requirements**

The final rule does not amend §195.452.

**3.5.2 Alternatives Considered**

Comments submitted by the public in response to the NPRM were generally supportive of the proposal but requested clarifications on specific conditions that determine the applicable repair criteria. Commenters also expressed concerns about PHMSA’s proposal to prescribe timelines for repairs outside of HCAs. See the preamble for the final action for a summary of the comments PHMSA received on this requirement area and the rationale for the final requirements.

For the final rule, PHMSA considered the action proposed as well as other alternatives considered at proposal.

**Alternative 1: Refine the Repair Schedule by Adding More Risk-Based Categories for Specific Anomalous Conditions Discovered Inside and Outside of HCAs**

Although the goal of this approach would be to more precisely target repair efforts according to risk, this approach could have unintended consequences. Many of the factors that determine risk interact with and are specific to the circumstances of the particular pipe segment in need of repair. Too many repair categories would limit the ability of the operator to prioritize repairs based on the combinations of risk factors unique to the operator’s situation.
In addition, regarding the proposed criteria for non-IM repairs, following a 12866 meeting between the Office of Management and Budget’s Office of Information and Regulatory Affairs (OIRA) and API on December 12, 2016, PHMSA could not provide detailed cost-benefit information sufficient to support promulgating the proposed changes at this time and is retaining the existing non-IM repair language at § 195.401(b)(1).

**Alternative 2: Apply IM Repair Criteria to Anomalous Conditions Discovered Outside of HCAs**

In response to the NPRM, API and AOPL recommended that PHMSA “apply requirements for immediate repair of certain conditions on HCA segments to the same conditions on segments outside of HCAs, when identified as the result of an integrity assessment” (AOPL and API, 2016). PHMSA also considered consolidating the 60-day and 180-day repair categories into a single 270-day category and adding the following two conditions to the Immediate Repair Category:

- Bottom-side dents with stress risers
- Defects for which the calculated burst pressure is less than 1.1 maximum operating pressure (MOP)

After considering comments submitted by API and AOPL, PHMSA decided not to finalize these changes.

**3.6 Requirement Area #6 – Require LDS for All Hazardous Liquid Pipelines**

The pipeline accident in Marshall, Michigan demonstrated the importance of having a means for promptly detecting leaks. The findings from that accident indicate that the operator failed to detect the rupture in its pipeline for nearly 18 hours, resulting in the release of approximately 819,000 gallons of crude oil into the Talmadge Creek and Kalamazoo River (NTSB, 2012).

The existing regulation at part 195 contains mandatory leak detection requirements for hazardous liquid pipelines that could affect an HCA. With some exceptions, pipelines outside of HCAs are not currently required to implement a LDS.11

**3.6.1 Final Rule Requirements**

PHMSA is amending § 195.134 to require that all hazardous liquid pipelines, except for regulated gathering pipelines, be designed to include LDS, including pipelines located outside of HCAs.

The requirements at § 195.134 apply to each hazardous liquid pipeline transporting liquid in single phase (without gas in the liquid) and essentially extends current LDS requirements to onshore and offshore transmission lines outside of HCAs.

The required system must be effective for detecting leaks. In determining the effectiveness of the system, an operator must evaluate the capability of its leak detection system to protect the public, property, and the environment, considering factors that include “length and size of the pipeline, type

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11 Alaska regulations promulgated in 1997 require an LDS with the ability to detect leaks as small as 1 percent of flow in all hazardous liquid pipelines wherever the 1-percent sensitivity requirement is technologically feasible. Additionally, some pipelines that cross the Canadian border into the United States are subject to Canadian regulations requiring an LDS (PHMSA, 2012a).
of product carried, the swiftness of leak detection, location of nearest response personnel, and leak history.” (§ 195.444)

3.6.2 Alternatives Considered

Comments submitted by the public in response to the NPRM were generally supportive of the proposal. For this final rule, PHMSA therefore did not analyze alternatives beyond those considered at the proposal stage (PHMSA, 2015) described below. See the preamble for the final action for a summary of the comments PHMSA received on this requirement area and the rationale for the final requirements.

Alternative 1: No Action (Baseline—Status Quo)

By not taking action on leak detection, the Agency would be unresponsive to congressional mandates, and there would likely be inefficiencies and gaps in pipeline safety. Although taking no action would eliminate any potential incremental compliance costs (which, as discussed above, PHMSA assumed to be minimal), it would also eliminate any incremental benefits.

Alternative 2: Provide Prescriptive Federal Regulation

PHMSA considered amending § 195.444 to require that operators have a means for detecting leaks on all portions of a hazardous liquid pipeline system and to require that an evaluation be performed to determine what kinds of systems must be installed to adequately protect the public, property, and the environment. The factors that had to be considered in performing that evaluation would include the characteristics and history of the affected pipeline, the capabilities of the available LDS, and the location of emergency response personnel. An amendment to §195.11 would have extended these new leak detection requirements to all regulated onshore gathering lines, regardless of whether they were existing or new.

PHMSA deemed that issuing prescriptive regulations would be too inflexible. PHMSA convened a group to study a similar action for gas distribution integrity management program (DIMP). The study group reasoned that a highly detailed prescriptive regulation would eliminate the flexibility needed to address the unique circumstances of individual States and operators. In addition, some operators need flexibility to more effectively address the issues relevant to their particular pipelines and available technologies.

3.7 Requirement Area #7 – Increase the Use of ILI Tools in HCAs

ILI tools provide a relatively complete examination of the entire length of a pipeline, including information about threats that other assessment methods cannot always identify. ILI tools also provide superior information about incipient flaws (i.e., flaws that are not yet a threat to pipeline integrity, but that could become so in the future), thereby allowing these conditions to be monitored over consecutive inspections and remediated before a pipeline failure occurs.

Beginning in the 1950s, new pipeline was constructed to accommodate operational pigging. The first smart pigs were introduced in the 1960s, and by the 1970s most new pipeline construction accommodated smart pigs. As detailed in the RIA (PHMSA, 2017), as of 2014 about half of all pipeline miles were installed before 1970.
The existing requirements for the passage of ILI devices in hazardous liquid pipelines are contained in § 195.120, which since 1994 has required that new pipeline and line sections where pipe, valves, fittings or other components are replaced be designed to accommodate ILI tools. The piggability requirement for new construction applies whether the new or replaced segment of pipeline could affect an HCA or not. There are exceptions for certain short sections of pipe or other lines with a basic configuration that is incompatible with ILI tools.

While PHMSA does not have detailed data on the pipeline segments capable of accommodating passage of ILI tools, assessment data provide evidence that a large fraction of existing mileage is currently assessed using ILI and therefore is already capable of accommodating ILI tools. PHMSA estimated that a preponderance of lines for which ILI is applicable are already able to accommodate ILI tools (PHMSA, 2017).

3.7.1 Final Rule Requirements
The final rule requires that all hazardous liquid pipelines in areas that could affect an HCA be made capable of accommodating ILI tools (also called smart pigs\textsuperscript{12}) within 20 years. The rule provides an exemption, subject to PHMSA approval, if the basic construction of a pipeline will not accommodate the passage of such a device or if the operator determines it will abandon the pipeline as a result of the cost of complying with the amendment. Operators may file a petition for a determination that sections of pipe such as manifolds, station piping, tank farm piping, smaller lines, low-pressure lines, telescoping lines, sharp bends, and main-line valves that are not full opening—cannot be modified to allow the passage of an ILI tool or in cases where the operator determines it would abandon or shut-down a pipeline as a result of the cost to comply with the requirement of this section. Such sections of pipe are then exempted from modification to accommodate ILI tools.

In the final rule, PHMSA is also requiring that hazardous liquid pipelines that could affect a newly identified HCA be made piggable within 5 years of the HCA designation. As with new pipelines, operators can petition the Administrator for a finding that the basic construction of a pipeline or an emergency will not permit the accommodation of a smart pig. PHMSA is also removing the size limitation referenced in § 195.120(b)(5) to encompass the use of non-metallic piping and the potential development of ILI tools that could be used to perform integrity assessments of such piping in the future.

Implementation of this requirement will result in the upgrade of unpiggable segments remaining in 20 years to accommodate ILI tools, except where exemptions apply. Expanding the ability of operators to use smart pigs in performing integrity assessments will enhance public safety and environmental protection in high-risk areas.

3.7.2 Alternatives Considered
Comments submitted by the public in response to the NPRM were generally supportive of the proposal but requested clarifications on available exemptions or broadening the requirements to

\textsuperscript{12} Smart pigs are devices that move inside a pipeline propelled by product flow and travel throughout the length of a pipeline. They are used during inspections, primarily to detect wall thinning caused by ordinary corrosion. Smart pigs provide information on the condition of the line, as well as the extent and location of any problems.
pipelines outside of HCAs. For this final rule, PHMSA considered alternatives that included not proceeding with finalizing the requirement and shorter compliance deadlines.

**Alternative 1: No Action (Baseline —Status Quo)**

While PHMSA estimates that the vast majority of pipelines for which ILI is practicable have largely been addressed in the baseline, codification of this standard in binding, enforceable Federal regulations will further enhance hazardous liquid pipeline safety by creating certainty in the inspection methods applied to pipelines in HCAs.

**Alternative 2: Shorter Implementation Timelines**

PHMSA considered setting shorter deadlines of 10 years or 15 years for the implementation of this requirement. Given evidence that pipelines can already accommodate ILI tools where practicable, a shorter timeline has no effect on either the costs or benefits and therefore would not provide material advantages over the proposed deadline. The preamble for the final rule discusses the rationale for retaining 20 years as the compliance timeline for this requirement.

**3.8 Requirement Area #8 – Clarify IM Requirements**

PHMSA created the hazardous liquid pipeline IM program to ensure pipeline integrity in HCAs and areas that could affect HCAs, promote a more rigorous and systematic management of pipeline integrity and risk by operators, maintain oversight of pipeline operator integrity plans and programs, and increase public confidence in the safe operation of the pipeline network. Liquid IM regulations at §§ 195.450 and 195.452 require operators to analyze risks and focus increased attention on safety, especially in the portions of their pipeline that pose the highest risk. This increased attention must include physical inspection (assessment) of the pipe, remediation of anomalous conditions following the assessment; continual evaluation of the pipeline, application of additional preventive and mitigative measures, and development of performance measures.

Current regulations allow pipeline operators to determine the best method(s) of assessing the structural integrity of their pipeline inside HCAs, whether that method is ILI, hydrostatic testing, or direct assessment. PHMSA also allows operators to employ alternative assessment methods if operators can show they are effective.

**3.8.1 Final Rule Requirements**

The final rule clarifies existing requirements in five areas:

1. **Correct inconsistency in IM plan deadlines for new pipelines.** PHMSA is resolving an inconsistency between the deadline for drafting an IM plan for new pipelines and other deadlines in the IM rule. Specifically, §195.452(b)(1) requires that operators complete an IM plan for new pipeline segments that could affect an HCA before beginning operations. Under the current regulation, operators of these pipelines are required to complete an IM plan no later than 1 year after operations begin. However, operators of new pipelines are also currently required to identify HCA segments and complete a baseline assessment on these segments before the

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13 The new pipelines affected by this final rule are referred to as Category 3 pipelines in the tables with deadlines in the IM rule, §195.452. The definition of Category 3 pipelines in the IM rule includes pipelines constructed after May 29, 2001.
pipeline is operational. Because plans to identify HCA segments and conduct a baseline integrity assessment are required to be in the IM plan, the current regulation is inconsistent. The final rule corrects the inconsistency.

2. **Increase specificity of the information analysis requirement in the IM plan.** PHMSA is adding specificity to paragraph (g) by establishing a number of pipeline attributes that must be included in these analyses and to require explicitly that operators integrate analyzed information. Information integration is used in identifying interactions between threats or conditions affecting the pipeline and in setting priorities for dealing with identified issues. To ensure that operators integrate spatial data into the information analysis, PHMSA is clarifying that operators must consider explicitly any spatial relationships among anomalous information.

3. **Require annual verification of HCA identification.** The final rule sets explicit requirements that operators verify their segment identification annually by determining whether factors considered in their analysis have changed. Section 195.452(b) currently requires that operators identify each segment of their pipeline that could affect an HCA in the event of a release, but there is no explicit requirement that operators assure that their identification of covered segments remains current. The final rule will not require that operators re-perform their segment analyses. Rather, it will require operators to identify the factors considered in their original analyses, determine whether those factors have changed, and consider whether any such change would be likely to affect the results of the original segment identification. Only then would the operator be required to perform a new analysis to validate or change the endpoints of the segments affected. We discuss the implications of this requirement below.

4. **Clarify that IM requirement also applies to components of pipeline other than pipe.** The final rule clarifies that the IM requirements apply to portions of “pipelines” other than line pipe. Unlike integrity assessments for line pipe, § 195.452 does not include explicit deadlines for completing the analyses of other facilities within the definition of “pipeline” or for implementing actions in response to those analyses. Through IM inspections, PHMSA has learned that some operators have not completed analyses of their non-pipe facilities and have not implemented appropriate protective and mitigative measures.

5. **Make explicit the requirement that IM plans include earthquake risk in the information analysis and implementation of preventive and corrective measures.** Section 29 of the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 states that “[i]n identifying and evaluating all potential threats to each pipeline segment pursuant to parts 192 and 195 of title 49, Code of Federal Regulations, an operator of a pipeline facility shall consider the seismicity of the area.” While seismicity is already mentioned at several points in the IM program guidance provided in Appendix C of part 195, the final rule implements Congress’s directive by including an explicit reference to seismicity in the list of risk factors that must be considered in establishing assessment schedules (§ 195.452(e)), performing information analyses (§ 195.452(g)), and implementing preventive and mitigative measures (§ 195.452(i)) under the IM requirements.

Changes in the final rule will clarify important aspects of the IM program. PHMSA expects that these clarifications will improve protection of the public, property, and the environment by closing regulatory gaps where appropriate and ensuring that operators are increasing the detection and remediation of unsafe conditions and mitigating the adverse effects of pipeline failures.
3.8.2 Alternatives Considered

Comments submitted by the public in response to the NPRM were generally supportive of the proposal but requested clarifications on the nature of the additional analyses that would be required. For this final rule, PHMSA therefore did not analyze alternatives beyond those considered at the proposal stage (PHMSA, 2015a) described below. See the preamble for the final action for a summary of the comments PHMSA received on this requirement area and the rationale for the final requirements.

**Alternative 1: No Action (Baseline — Status Quo)**

A decade’s worth of IM inspection experience has shown that many operators are performing inadequate information analyses (e.g., they are collecting information but not affording it sufficient consideration). Integration is one of the most important aspects of the IM program because it is used in identifying interactions between threats or conditions affecting the pipeline and in setting priorities for dealing with identified issues. For example, evidence of potential corrosion in an area with foreign line crossings and recent aerial patrol indications of excavation activity could indicate a priority need for further investigation. Consideration of each of these factors individually would not reveal any need for priority attention. PHMSA is concerned that, under the status quo, a major benefit to pipeline safety intended in the Liquid IM Rule is not being realized because of inadequate information analyses.

Under the status quo, there is no explicit requirement that operators ensure that their identification of segments that could affect an HCA remains current. As time goes by, the likelihood increases that factors considered in the original identification of covered segments may have changed, and new HCAs may be identified. For example, construction activities or erosion near the pipeline could change local topography in a way that could cause product released in an accident to travel further than initially analyzed. Changes in the landscape could also affect an operator’s analysis of the distance released product could be expected to travel. Changes in the deployment of emergency response personnel could increase the time required to respond to a release and result in a larger area being affected by a potential release if the original segment identification relied on emergency response to limit the transport of released product. Operators should periodically revisit their initial analyses to determine whether they need updating.

Facilities other than pipe are already subject to IM plans, and not specifying compliance dates allows operators who have not fully complied with the original IM rule to continue to delay doing so. With respect to validation, no action could mean that areas that should be afforded additional protection (i.e., that meet criteria as an HCA) do not receive it. The risks associated with this alternative are the continuance of incidents that could have been avoided with more thorough IM plans.

**Alternative 2: Specify Data Elements for Integration**

PHMSA considered an alternative to list the data elements that operators must integrate and considered dictating how operators would have to integrate those listed data elements. PHMSA rejected this alternative because it might interfere with some management decisions (such as how companies choose to manage their spatial data). For example, this alternative would have specified that all information be included on a single drawing of specified size and scale (among other requirements), which would have required companies using electronic records such as a GIS to keep information on a hard-copy drawing solely to meet a regulatory requirement.
Alternative 3: Subject All Segments to IM Requirements

Applying IM requirements to all segments would require revising all current IM plans and increasing the cost of updating these plans annually. PHMSA notes that requirements for HCAs would not change, but subjecting all segments to IM requirements could result in operators that have pipelines inside and outside HCAs reassigning resources from segments that pose the greatest risk to relatively lower-risk segments.

3.9 Self-Implementing Provisions of the PIPES Act of 2016

On June 22, 2016, the President signed the PIPES Act, Public Law No. 114-183, containing Sections 14 and 25, “Safety Data Sheets” and “Requirements for Certain Hazardous Liquid Pipeline Facilities,” respectively. The language in both Section 14 and Section 25 is self-executing, with Section 25 specifically amending the Pipeline Safety Act at 49 U.S.C. § 60109 by adding new paragraphs (g) through (g)(4). PHMSA incorporated the two provisions into this final rule.

In enacting the PIPES Act, Congress specified the exact requirements pertaining to the two provisions and PHMSA does not have discretion in the applicability, scope, or details of the requirements. However, given that the two provisions are part of this final rule, this section describes their expected effects.

3.9.1 Material Safety Data Sheets

Section 14 of the PIPES Act requires owners and operators of hazardous liquid pipeline facilities, following accidents involving pipeline facilities that result in hazardous liquid spills and within 6 hours of a telephonic or electronic notice of the accident to the National Response Center, to provide safety data sheets (MSDS) on any spilled hazardous liquid to the designated Federal On-Scene Coordinator (OSC) and appropriate State and local emergency responders. PHMSA has incorporated this requirement in a new § 195.65 under the reporting requirements of Subpart B.

MSDS provide critical information on the properties of hazardous substances to protect first responders and the public and allow for more effective response actions. MSDS are common documents and standard elements of spill response plans in the chemical and oil and gas industries. An average of 401 incidents were reported annually involving hazardous liquid releases from regulated pipelines in 2010 through 2017. PHMSA did not find data on the share of these incidents for which MSDS were not provided in a timely manner to the OSC and to first responders. To the extent that MSDS are not already and immediately provided as part of standard practice, having MSDS available in the early stages of a response will help ensure the safety of responders and the public, and increase the effectiveness of response actions.

3.9.2 Underwater Hazardous Liquid Pipeline Inspections and Surveys

Section 25 of the PIPES Act applies to operators of any underwater hazardous liquid pipeline facility located in an HCA that is not an offshore pipeline facility and any portion of which is located at depths greater than 150 feet under the surface of the water. Operators of these facilities, notwithstanding any pipeline integrity management program or integrity assessment schedule otherwise required by the Secretary, must ensure that pipeline integrity assessments using internal inspection technology appropriate for the pipeline’s integrity threats are completed not less often than
once every 12 months; and using pipeline route surveys, depth of cover surveys, pressure tests, ECDA, or other technology that the operator demonstrates can further the understanding of the condition of the pipeline facility, ensure that pipeline integrity assessments are completed on a schedule based on the risk that the pipeline facility poses to the HCA in which the pipeline facility is located. PHMSA has incorporated these requirements in a new § 195.454 as an addition to the pipeline integrity management requirements under Subpart F.

PHMSA determined that one pipeline, Enbridge Line 5 at Mackinaw, Michigan, meets the applicability requirements for this provision. This line consists of two 20-inch pipelines where it crosses the Straits of Mackinsaw, over a distance of approximately 5 miles. This means that approximately 10 miles of lines will be subject to ILI annually, instead of their current inspection interval. To the extent that Enbridge is inspecting this line less frequently in the baseline, this requirement may enhance environmental protection by helping detect conditions that could result in a release.
4 Affected Environment and Environmental Consequences

PHMSA is responsible for regulating the safety of hazardous liquid pipelines located throughout the United States. These pipelines traverse a variety of environments — from highly populated urban sites to remote, unpopulated rural areas. Several requirements in the final rule specifically aim to prevent or mitigate environmental harm from hazardous liquid releases. For example, requiring assessments of pipelines not already covered by the IM program, specifically onshore transmission lines located outside of HCAs (Requirement Area #4), will extend safety and environmental protection to additional geographic areas by enabling the identification of conditions that could lead to a release. Similarly, expanding the use of LDS for hazardous liquid transmission pipelines outside of HCAs (Requirement Area #6) will enhance operators’ ability to detect releases and mount a timely response to mitigate the consequences of the releases in areas not currently covered by an LDS. Clarifying IM program requirements (Requirement Area #8) will strengthen the types of risk analyses conducted as part of operator IM programs. Finally, other rule requirements improve the type of information available for evaluating the risk posed by hazardous liquid pipelines or clarify expectations on measures to address the risk (e.g., inspections following disasters). The compliance actions do not entail significant construction activity; in general, physical activities involving any equipment will be contained within the pipeline right-of-way.

For ease of presentation, the EA discusses the environmental consequences to each of the affected environments. Since this action does not involve significant construction activity and aims to prevent the adverse consequences of hazardous liquid releases, the discussion focuses on the consequences of releases occurring in the baseline and which could continue under the no action alternative in absence of the final rule.

This EA focuses only on those resource categories that are potentially affected by the alternatives, those that are of interest to the public, and/or important to the decision, specifically: physical environment, public health and safety, socioeconomic issues, and hazardous materials transportation.

4.1 Physical Environment

Because the pipelines subject to the final rule contain hazardous materials, these resources within the physical affected environment, as well as public health and safety, may be affected by hazardous liquid pipeline accidents such as spills and leaks. Accidents on pipelines can result in fires and explosions, with resulting damage to the local environment. The physical environment potentially affected by the final rule includes water resources (e.g., oceans, streams, lakes), cultural and historical resources (e.g., properties listed on the National Register of Historic Places), biological and ecological resources (e.g., coastal zones, wetlands, plant and animal species and their habitat, forests, grasslands, offshore marine ecosystems), and special ecological resources (e.g., threatened and endangered plant and animal species and their habitat, national and state parklands, biological reserves, Wild and Scenic Rivers) that exist directly adjacent to and within the vicinity of pipelines.

Exhibit 4-1 shows the location of major hazardous liquid pipelines carrying crude oil and hydrocarbon gas liquids, based on data from the Energy Information Administration (EIA). While
this map shows only a subset of the pipelines subject to the final rule, it nevertheless highlights the geographical scope and extent of the pipeline network and potential breadth of affected environment.

**Exhibit 4-1: Geographical distribution of major crude oil and hydrocarbon gas liquids pipelines**

![Map of major crude oil and hydrocarbon gas liquids pipelines in the United States](image)

Sources: EIA (2016).

This final rule applies to hazardous liquid pipelines generally, with some of the provisions applicable to only certain lines based on:

- Location (e.g., onshore or offshore; inside HCAs or outside HCAs),
- Product transported (e.g., some requirements do not apply to carbon dioxide (CO₂) lines),
- Type of pipeline (e.g., gravity lines are subject to reporting requirements only, the requirement to assess lines outside of HCAs applies to onshore transmission lines), and
- Length (e.g., pipeline segments less than one mile long are exempt from some requirements).

The diameter and operating pressure of a line may also make it more or less likely to be subject to certain requirements. For example, assessments using ILI tools are likely to be determined impracticable for lines with diameters less than 6 inches and the requirement to assess onshore transmission lines outside of HCAs applies only to lines capable of accommodating ILI tools. Exhibit

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14 The map shows interstate trunk lines and selected intrastate lines only and excludes offshore lines, gathering lines, gravity lines, and lines carrying other hazardous liquid substances that are covered by 49 CFR part 195.
4-2 summarizes PHMSA’s estimate of the hazardous liquid pipeline miles that may be affected by the final rule.

**Exhibit 4-2: Total miles of pipeline and operators within the scope of the rule**

<table>
<thead>
<tr>
<th>Final Rule Requirement Area</th>
<th>Operators</th>
<th>Universe of Pipeline Miles</th>
<th>Affected Pipeline Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Extend certain reporting requirements to all hazardous liquid gravity lines that do not meet the exceptions.</td>
<td>3-5&lt;sup&gt;1&lt;/sup&gt;</td>
<td>17-28&lt;sup&gt;2&lt;/sup&gt;</td>
<td>17-28</td>
</tr>
<tr>
<td>2. Extend certain reporting requirements to rural hazardous liquid gathering lines.</td>
<td>76</td>
<td>26,000-36,000&lt;sup&gt;4&lt;/sup&gt;</td>
<td>26,000-36,000</td>
</tr>
<tr>
<td>3. Require inspections of pipelines in areas affected by extreme weather or natural disaster and remediate as appropriate if a condition that could adversely affect the safe operation of a pipeline is discovered.</td>
<td>502</td>
<td>212,628 (all pipelines whether onshore or offshore, rural gathering line or transmission mile, within or outside of HCAs)</td>
<td>Unknown (affected mileage will depend on the magnitude and extent of extreme events)</td>
</tr>
<tr>
<td>4. Require periodic assessments of pipelines that are not already covered under the IM program requirements.</td>
<td>372</td>
<td>121,495 (pipelines outside of HCAs; onshore only)</td>
<td>8,399 (based on 8.5% of mileage not assessed in the baseline and 81% of lines assumed piggable; see Section 3.4.2)</td>
</tr>
<tr>
<td>5. No change to IM repair criteria in final rule.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Require use of LDSs on hazardous liquid pipelines located outside HCAs to mitigate the effects of failures that occur outside of HCAs.</td>
<td>386</td>
<td>126,185 (outside of HCAs)</td>
<td>4,359 (based on operators with lines outside HCAs only; see Section 3.6.2)</td>
</tr>
<tr>
<td>7. Increase the use of ILI tools by requiring that any pipeline that could affect an HCA be capable of accommodating these devices within 20 years, unless its basic construction will not permit that accommodation.</td>
<td>372</td>
<td>86,005 (onshore; inside HCAs)</td>
<td>0 (applicable lines likely to be piggable by the time the requirement is effective or be eligible for design-based exemption; see Section 3.7.2)</td>
</tr>
<tr>
<td>8. Clarify and resolve inconsistencies regarding deadlines and information analyses for IM plans.</td>
<td>502</td>
<td>86,443 (inside of HCAs)</td>
<td>Unknown (see Section 3.8)</td>
</tr>
</tbody>
</table>

Source: Unless otherwise noted, the number of operators and miles is derived from data reported in 2016 Hazardous Liquid Annual Forms

<sup>1</sup> Source: API and AOPL comments in response to ANPRM (Docket No. PHMSA-2010-0229)

<sup>2</sup> Source: API and AOPL comments in response to ANPRM (Docket No. PHMSA-2010-0229) and PHMSA best professional judgement (see Section 3.1 for details)

<sup>3</sup> Source: API and AOPL comments in response to ANPRM (Docket No. PHMSA-2010-0229)

<sup>4</sup> Source: PHMSA best professional judgement (see Section 3.2 for details)
Due to data limitations, it is not possible to quantify the extent and magnitude of the environmental effects that may result from the final rule requirements. While PHMSA estimated the mileage of pipelines that may be subject to the final rule requirements, the location and exact compliance actions that operators may need to take on specific lines is uncertain.

As described in Section 3, the final rule will require additional testing, inspection, and in some cases, repairs or retrofit of pipelines to address safety conditions. The actions taken by operators in response to the results of tests and inspections may require additional excavation or change the timing of maintenance activities that operators would have otherwise performed at a later date (or following a release). In accordance with existing regulations, operators must take precautions and implement best management practices to minimize or mitigate environmental damage during excavation and other maintenance activities, such as minimizing erosion, sediment runoff to waterbodies or impacts to other resources. Further, PHMSA expects any impacts of these activities to be temporary and limited to the immediate area of the pipeline, i.e., within the existing ROW. Overall, these activities will have small environmental effects relative to the much more significant damages resulting from hazardous liquid releases.

The following sections therefore provide a qualitative discussion of the environmental effects of the final rule focusing on the impacts of hazardous liquid releases in the baseline for this action and which PHMSA expects to continue under the no action alternatives.

4.1.1 Endangered Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §1531) requires all Federal departments and agencies to seek to conserve endangered species and threatened species. The U.S. Fish and Wildlife Service (FWS) identifies the extent of habitats considered critical for the conservation of species listed as endangered or threatened under the ESA. Critical habitat for an endangered or a threatened species is defined as specific areas that contain the physical or biological features essential to conservation of the species and that might require special management considerations or protection.

Hazardous liquid pipelines often overlap with or are located in proximity to areas determined to be critical habitats for endangered or threatened species. Exhibit 4-3 illustrates an example of the overlap between a petroleum product pipeline and critical habitats of the Canada lynx (Lynx canadensis) and bull trout (Salvelinus confluentus).
A review of incidents reported between 2005 and 2015 shows 38 crude oil incidents that occurred within 800 meters of critical habitats, of which 22 incidents were within 300 meters of such habitats. One of these incidents was the Refugio Beach spill of May 19, 2015, which harmed 265 birds and over 162 mammals, the majority of which died as a result of the oil exposure (California Department of Fish and Wildlife, 2015).

PHMSA does not expect this rulemaking to adversely affect endangered species. In fact, by preventing or mitigating hazardous liquid releases, the final rule will prevent harm to threatened and endangered species whose habitats lay in proximity to the pipeline ROWs.

### 4.1.2 Wetlands and Water

Executive Order 11990 (42 FR 26961, 1977) entitled, “Protection of Wetlands,” requires Federal agencies to provide leadership on and work toward minimizing the destruction, loss, and degradation of wetlands. The Order also requires agencies to preserve and enhance the natural and beneficial

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15 Based on a spatial analysis of crude oil incidents reported to PHMSA for the period of 2005-2015 for which the latitude and longitude coordinates were available; includes only incidents occurring inland.
values of wetlands while discharging their responsibilities for acquiring, managing, using, and disposing of Federal lands.

The potential risk to wetland ecosystems from hazardous liquid releases from pipelines is evident from the proximity of major pipeline routes to wetlands and from past incident history. A vivid example of the impacts of hazardous liquid releases on wetland resources is the 2010 release of crude oil from an Enbridge pipeline in Marshall, Michigan, shown in Exhibit 4-4. According to the NTSB incident report, the spilled oil saturated the wetland surrounding the pipeline before contaminating the Talmadge Creek and the Kalamazoo River (NTSB, 2012). A review of the location of incidents reported between 2005 and 2015 shows that 102 incidents involving crude oil releases occurred within 800-meter of a waterbody or wetland, and 84 incidents occurred within 300 meters.

PHMSA does not expect this rulemaking to adversely affect wetlands. In fact, by preventing or mitigating hazardous liquid releases, the final rule will prevent damage to such resources located near the pipeline ROWs.

Exhibit 4-4: Cleanup efforts in an oil-soaked wetland near the rupture site of the Enbridge pipeline spill in Marshall, Michigan

Source: NTSB (2012).
4.1.3 Archaeological, Cultural, and Historic Resources
The National Historic Preservation Act (16 U.S.C. §§ 470f and 470h-2(a)) establishes a national policy to preserve, restore, and maintain historic and cultural resources. The Act establishes the National Register of Historic Places as the mechanism to designate public or privately owned properties for protection. Section 106 (36 CFR 800) of the Act requires Federal agencies to “take into account” the effect of a project on any property included in or eligible for inclusion in the National Register. Section 106 prescribes the following for consideration of historic properties under NEPA: early coordination, inclusion of historic preservation issues, and actions categorically excluded under NEPA.

PHMSA does not expect this rulemaking to adversely affect any archaeological, cultural, or historic resources. In fact, by preventing or mitigating hazardous liquid releases, the final rule will prevent damage to such resources located near the pipeline ROWs.

4.1.4 Parks and Recreation Lands
Section 4(f) of the DOT Act (49 U.S.C. 303) requires agencies within DOT to make a special effort to preserve the natural beauty of historic sites, public parks, and recreation lands. If a transportation program, project, or activity requires the use of public land in a public park, it must include all possible planning to minimize harm to the park or historic area.

PHMSA does not expect 4(f) properties to be affected by the final rule and consequently, no 4(f) statement needs to be prepared for this rulemaking.

4.2 Public Health and Safety
Evidence of reported impacts to public health and safety of past incidents provide an indication of the potential beneficial effects of the final rule in this area. Between 2004 and 2017, 11,800 people had to be evacuated from the vicinity of pipelines due to safety concerns, and hazardous liquid releases resulted in 60 reported injuries and 25 fatalities. Injuries and fatalities potentially represent only a subset of the health impacts from pipeline incidents, however. There is a great deal of scientific uncertainty regarding the long-term effects of exposure to carcinogenic substances such as benzene in the aftermath of a spill (EPA, 2002; 2003).

PHMSA does not expect the final rule to adversely affect public health and safety. In fact, by preventing or mitigating hazardous liquid releases, the final rule will enhance the safety of populations in proximity to the pipelines.

4.3 Socioeconomic Issues
PHMSA does not expect this rulemaking to have adverse effects on communities or economies. PHMSA estimated the compliance costs of the rule requirements to be $20.8 million to $21.6 million annually (using a 3 percent and 7 percent discount rate, respectively; see PHMSA, 2018a) and concluded that these costs would have minimal impacts on the supply, distribution, or use of energy. PHMSA similarly concluded no significant impacts on small businesses or on employment.
Instead, to the extent that the final rule will prevent or mitigate the impacts of hazardous liquid releases, PHMSA expects the socioeconomic effects to be positive. Pipeline accidents can be highly disruptive to a community. In addition to the health and safety concerns described in the previous section, hazardous liquid releases may require closure of roads and other services, suspend drinking water supply, and otherwise disrupt resident or business activities. Closure of areas for hunting, fishing, birdwatching or other recreational activities can affect tourism and associated economic activity. Releases can also affect housing prices.16

4.4 Hazardous Materials Transportation

As previously stated, PHMSA expects the final operation and maintenance requirements to produce beneficial impacts by reducing the number of accidents related to the transportation of hazardous liquids. In addition to a potential reduction in accidents, PHMSA also expects the final rule to increase pipeline efficiency, reduce remediation, and increase environmental safety because there will be fewer releases of hazardous liquids into the physical environment. Together, these consequences have beneficial impacts on hazardous materials transportation.

4.5 Other Unaffected Areas

PHMSA does not expect the following areas to be affected under any of the alternatives considered in the final rule.

Environmental Justice: PHMSA assessed the environmental effects of this rule in accordance with Executive Order 12898 and preliminarily determined that there are no environmental justice issues associated with the regulatory provisions nor any collective environmental impacts that could result from its implementation. Environmental justice issues would be raised if there were “disproportionate” and “high and adverse impact” on minority or low-income populations. The Agency determined that none of the alternatives analyzed in the EA, discussed under NEPA, would result in disproportionate or high and adverse environmental impacts. In fact, to the extent that the final rule helps to reduce or mitigate hazardous liquid releases in areas with relatively greater proportions of minority and low-income populations, it could have a beneficial effect on addressing environmental justice concerns.

Noise: The PHMSA does not expect any significant impact on noise levels from this rulemaking.

Clean Air Act Requirements: In addition to the NEPA requirements to examine impacts on air quality, we have also analyzed this rule under the Clean Air Act, as amended by section 176(c), (42 U.S.C. 7401 et seq.), and implementing regulations promulgated by the Environmental Protection

16 (The literature also shows impacts on the price of houses located in proximity to pipelines involved in high-profile incidents. For example, Simons et al. (2001) and Hansen et al. (nd) conducted hedonic analyses in communities affected by pipeline releases,16 and found that the value of homes in close proximity to pipelines involved in a high-profile incident were significantly and adversely affected following the release, at least in the short-term. Simons et al. (2001) found that the release of oil to a river that affected community shorelines for 10 miles reduced the value of properties with ownership rights to the waterfront by over 10 percent in the six months after the incident, and reduced the sales volume in the area during the same time period. Hansen et al. (nd) conducted a hedonic analysis of home sales in Bellingham, Washington including 5 years of data before and after a high-profile pipeline release in 1999. Before the incident, there was no significant relationship between distance to the pipeline and home price, while after the incident, homes closer to the pipeline had a statistically significant lower value (with the effect diminishing over time)
Agency. Approval of this action is exempt from the CAA general conformity requirement since it would not result in any potential increase in emissions that are above the de minimis emission threshold levels (40 CFR 93.153(c)(2)). In fact, by preventing or mitigating hazardous liquid releases, PHMSA expects the final rule to prevent associated emissions of air pollutants.
5 Determination of the Degree of Environmental Impact

PHMSA determined that the final rule requirements will not have a significant detrimental impact on the environment. In fact, to the extent that the final rule reduces the occurrence, magnitude or consequences of hazardous liquid releases, it will improve environmental conditions.

The information in this EA report supports a Finding of No Significant Impact (FONSI) for this action.
6 Persons Consulted

Public involvement is a critical aspect of the NEPA process. As such, PHMSA must consider any comments received from the public and any comments and recommendations of the Liquid Pipeline Advisory Committee (LPAC) and other relevant stakeholders.

On October 13, 2015, PHMSA published an NPRM (80 FR 61609) proposing several amendments to 49 CFR part 195. PHMSA solicited public comments on the NPRM, including a prior version of this EA. Seventy organizations and individuals submitted comments in response to the NPRM. The commenters included pipeline operators or trade associations, state or local governments, citizens’ groups, and private citizens. PHMSA considered these comments in developing the final rule.

The LPAC is a statutorily mandated advisory committee that advises PHMSA on proposed safety standards, risk assessments, and safety policies for natural gas pipelines and hazardous liquid pipelines. The Pipeline Advisory Committees (PAC) were established under the Federal Advisory Committee Act (Pub. L. 92-463, 5 U.S.C. App. 1-16) and the Federal Pipeline Safety Statutes (49 U.S.C. Chap. 601). Each committee consists of 15 members, with membership divided among the Federal and State agencies, the regulated industry, and the public. The PACs advise PHMSA on the technical feasibility, practicability, and cost-effectiveness of each proposed pipeline safety standard.

As described in the preamble for this action, on February 1, 2016, the LPAC met at the Hilton Arlington in Arlington, VA, to discuss this rulemaking. During the meeting, the LPAC considered the specific regulatory proposals of the NPRM and discussed various comments and edits to the NPRM proposed by the pipeline industry, public interest groups, and government entities. To assist the LPAC in their deliberations, PHMSA presented a description and summary of the eight major issues in the NPRM and the comments received on those issues, as well as some sample regulatory text changes to foster discussion. During the meeting, eight votes were taken: one vote on each major topic of the rule. For each major topic of the rule, the LPAC came to a consensus decision that the provisions of the proposed rule would be technically feasible, reasonable, cost-effective, and practicable, provided PHMSA made certain changes. In this final rule, PHMSA considered the recommendations of the LPAC and adopted them as PHMSA deemed appropriate.
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8 References


Association of Oil Pipelines (AOPL) and American Petroleum Institute (API). (2016). “Comment on NPRM.” PHMSA-2010-0029-0099


