



**AFTER THE MARSHALL SPILL:**



**OIL PIPELINES**

**IN THE GREAT LAKES REGION**



**A LEGAL ANALYSIS BY THE NATIONAL WILDLIFE FEDERATION**



# AFTER THE MARSHALL SPILL: OIL PIPELINES IN THE GREAT LAKES REGION

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## CONTENTS

- 3 THE REGULATORY FRAMEWORK
  - 3 Regulatory Authority
  - 4 Constraints on Federal Regulatory Authority
  - 4 Enforcement
- 5 ROUTING AND CONSTRUCTION
- 7 OPERATION AND MAINTENANCE
  - 7 General Requirements
  - 8 Integrity Management: High Consequence Areas
  - 9 Integrity Management: The Process
- 10 SPILL RESPONSE PLANNING AND REPORTING
  - 10 Contingency Planning
  - 12 Planning in The Great Lakes Region
  - 13 Spill Reporting
- 13 CONCLUSION
- 14 POLICY RECOMMENDATIONS
  - 14 General
  - 15 Routing and Construction
  - 15 Operation and Maintenance
  - 15 Spill Response Planning and Reporting
- 16 ENDNOTES

Cover photo: Oil in the Kalamazoo River after the July 2010 Enbridge spill. Photo by the Michigan Department of Environmental Quality.



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On July 25, 2010, Line 6B of Enbridge Energy Partners ruptured near Marshall, Michigan, causing one of the largest oil spills in Midwest history. The complex cleanup is still ongoing. Approximately one million gallons of diluted bitumen, a heavy crude oil, spilled into a wetland that feeds Talmadge Creek, and from there into the Kalamazoo River.<sup>1</sup> The spill affected wetlands, farmlands, residential areas, and businesses, raising health concerns and leading to evacuations and warnings about swimming, fishing, and drinking water. By August 5th, the spill had contaminated 30 miles of the Kalamazoo River but had stopped well short of Lake Michigan. The cause of the rupture is still unknown. County, state, and federal agencies have been involved in cleanup efforts. In 2011, Enbridge estimated that the cleanup costs would be at least \$725 million.<sup>2</sup>



Pipeline rupture in Enbridge's Line 6B.  
Photo by the National Transportation  
Safety Board.

The impacts of the pipeline rupture continue to be felt. Many impacted residents are concerned about the health effects from direct or long-term exposure. Crude oil contains compounds such as benzene (a known carcinogen), toluene, and hydrogen sulfide, and the evaporation or dissolution of these and other chemicals into the air and water can cause respiratory illnesses, nausea, and headaches. Up to fifty residents near the spill site were urged to evacuate following the detection of elevated levels of benzene in the air.<sup>3</sup> Another major concern is contaminated ground water, since

Talmadge Creek and the Kalamazoo river supply the area's drinking water.<sup>4</sup> Municipal officials noted that drinking water wells were located as close as 200 feet to the contaminated river.<sup>5</sup>

The spill has also had a detrimental effect on nearby ecosystems. The Kalamazoo watershed is a vital habitat for a variety of species, and the Michigan Department of Environmental Quality (Michigan DEQ) has classified the main stem of the Kalamazoo River as high quality fish habitat.<sup>6</sup> Forty-four species of amphibians and reptiles, over 218 bird species, and over forty mammal species



Oil in the Kalamazoo River near Ceresco, MI, after the Enbridge spill.  
Photo by Michigan Department of Environmental Quality.

are found in the Kalamazoo watershed.<sup>7</sup> The exposure to crude oil, whether directly or indirectly through the dissolved components in the water, may lead to mortality, deformities, and lower growth rates in animals.

Line 6B is part of Enbridge's sixty-year-old, 4,700-mile-long Lakehead System, one of the largest petroleum pipelines in the world.<sup>8</sup> Up to 283,000 barrels of crude oil flow through Line 6B each day. The incident on July 25th was not the first time Enbridge had experienced problems along its pipeline. The Pipeline and Hazardous Materials Safety Administration (PHMSA), the federal agency charged with regulating pipeline safety, had raised concerns in January about Enbridge discontinuing its use of monitoring systems for corrosion inside Line 6B.<sup>9</sup>

While the Marshall spill demonstrates the devastating effects of a pipeline rupture, another segment of the same pipeline system—Enbridge's Line 5—brings into focus the role that initial planning decisions can play in creating or mitigating environmental risk. Line 5, which has a capacity of nearly 500,000 barrels per day,<sup>10</sup> runs from Superior, Wisconsin, through Michigan's Upper Peninsula and across Lower Michigan before reaching Sarnia, Ontario.<sup>11</sup> Along the way it crosses the Straits of Mackinac, where it splits into two pipelines resting on the lakebed.<sup>12</sup> Although it is nearly sixty years old, no sections of the part of Line 5 across the straits

have been replaced.<sup>13</sup> In 2010, Enbridge applied for a Submerged Lands Permit from the Michigan DEQ to drill the lake bottom and install supports to prevent the line from flexing in the current.<sup>14</sup> Enbridge also planned to conduct a visual inspection of the line's condition and cover.<sup>15</sup> A coalition of environmental groups submitted comments urging the state to closely scrutinize Enbridge's repair and emergency plans, as well as to require shutting down and flushing the line to test its integrity.<sup>16</sup> However, the state approved the permit and did not require flushing the line.<sup>17</sup> A year later, Enbridge announced plans to invest \$100 million in expanding Line 5 capacity by 50,000 barrels per day.<sup>18</sup>

The Enbridge spill in Marshall and the location of Line 5 across the Straits of Mackinac raise a number of significant questions about pipeline regulation. The safety of transporting diluted bitumen through pipelines and the oil's effects on the environment are important issues to address.<sup>19</sup> But this report takes a broader view and asks: Who makes oil pipeline routing decisions, and are environmental risks considered? What requirements govern the construction, inspection, operation, and maintenance of pipelines in highly sensitive environmental areas? How do pipeline operators plan for spills and report them when they happen? What role can states play, if any, in regulating such lines?

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## THE REGULATORY FRAMEWORK

### Regulatory Authority

The Pipeline Safety Act (PSA) grants the U.S. Department of Transportation (DOT) regulatory authority over the safety of hazardous liquid pipelines, including those pipelines that transport petroleum and petroleum products.<sup>20</sup> Within DOT, PHMSA administers the department's program through its Office of Pipeline Safety.<sup>21</sup> Not all hazardous liquid pipelines are regulated by PHMSA. Generally, transportation pipelines that are "downstream" from production facilities and are inland from the U.S. coast are subject to regulation, with a few exceptions.<sup>22</sup>

Although regulatory authority rests primarily with the federal government, states can play a significant role as well. The PSA distinguishes between interstate



pipelines, defined as those that transport hazardous liquids in interstate or foreign commerce, and intrastate pipelines.<sup>23</sup> Only PHMSA may prescribe safety standards for interstate pipelines using the authority granted to it by the PSA.<sup>24</sup> However, states may impose additional or more stringent safety standards for intrastate pipelines if the standards are compatible with federal requirements and PHMSA certifies the state program.<sup>25</sup> States with certified intrastate programs may also enter into an agreement with PHMSA to participate in oversight of interstate pipelines.<sup>26</sup> Finally, states may assist PHMSA by developing a program for record maintenance, reporting, and inspection.<sup>27</sup> The federal government can pay the states up to 80% of the costs of personnel, equipment, and activities needed for intrastate regulation and interstate oversight, although actual reimbursement has yet to reach that level.<sup>28</sup>

As of 2011, Alabama, Arizona, California, Indiana, Louisiana, Maryland, Minnesota, Mississippi, New York, New Mexico, Oklahoma, Texas, Virginia, Washington, and West Virginia had been certified to regulate intrastate hazardous liquid pipelines.<sup>29</sup> Of the states within the Great Lakes Basin, only Indiana, Minnesota, and New York have been certified to regulate intrastate hazardous liquid pipelines. Minnesota and New York also participate in the oversight of interstate hazardous liquid pipelines.<sup>30</sup> A recent study from the National Association of Pipeline Safety Representatives shows that only a few of the states certified by PHMSA to regulate intrastate hazardous liquid pipelines have developed safety standards that are more stringent than the federal ones.<sup>31</sup> None of the certified Great Lakes states imposes more stringent requirements on intrastate hazardous liquid pipelines.

## Constraints on Federal Regulatory Authority

The purpose of the PSA is “to provide adequate protection against risks to life and property posed by pipeline transportation and pipeline facilities.”<sup>32</sup> In addition to giving specific directives, the PSA grants general authority to PHMSA to prescribe and enforce minimum safety standards for pipelines and associated facilities.<sup>33</sup> Standards must be practicable and designed to meet the need for the safe transportation of hazardous liquids and for protection of the environment.<sup>34</sup> PHMSA’s authority to regulate pipeline safety is broad but not unlimited. The PSA lists the areas that PHMSA may regulate:

pipeline design, installation, inspection, emergency plans and procedures, testing, construction, extension, operation, replacement, and maintenance.<sup>35</sup> However, the PSA expressly denies PHMSA the power to prescribe the location or routing of a pipeline.<sup>36</sup>

PHMSA’s rulemaking authority is further limited by the requirement that it may “not propose or issue a standard unless it has made a reasoned determination that the benefits of the intended standard justify its costs.”<sup>37</sup> This determination is based on an extensive decision-making process, notable for the level of detail that the PSA mandates. With few exceptions, the agency must prepare a risk assessment for each proposed standard identifying the regulatory and non-regulatory options considered, the costs and benefits of the standard, and the data upon which the assessment is based.<sup>38</sup> The risk assessment must explain why the proposed standard was chosen and, for each alternative, give a brief explanation of why the other options were rejected.<sup>39</sup> An advisory technical committee, composed of representatives from government, industry, and the public, must review the risk assessment to evaluate “the merit of the data and methods used.”<sup>40</sup> Not only must PHMSA consider the findings and recommendations of the committee, it must also provide a written response to the committee’s report.<sup>41</sup> In addition, the assessment must be made available to the public.<sup>42</sup> Before the agency may prescribe the safety standard, PHMSA is directed to consider the relevant available pipeline safety and environmental information, the standard’s reasonableness and its appropriateness for the type of pipeline concerned, and comments and information from the public.<sup>43</sup>

## Enforcement

The PSA authorizes several means of enforcing federal pipeline safety requirements: administrative orders by PHMSA, civil and criminal actions in court, and citizen suits.<sup>44</sup>

Violations pursued through administrative actions or civil suits can result in monetary penalties of up to \$200,000 per violation per day, with no limit in civil suits and a cap of \$2 million in administrative actions.<sup>45</sup> In determining the appropriate amount, PHMSA and the courts must consider the character of the violation, including its seriousness and its adverse impact on the environment, and the character of the violator, including culpability and history, ability to continue doing business, and efforts to comply.<sup>46</sup> In criminal actions, knowing and willful violations can result in imprisonment of up to 5 years.<sup>47</sup>

Enforcement of pipeline safety standards has come

under consistent scrutiny in the last decade.<sup>48</sup> In a 2011 report on the San Bruno natural gas pipeline rupture, the National Transportation Safety Board found that PHMSA's enforcement program and monitoring of state programs were "weak and have resulted in lack of effective Federal oversight and state oversight."<sup>49</sup> The report recommended that the DOT review PHMSA's enforcement policies and procedures. Annual administrative penalties—proposed, assessed and collected, for hazardous liquids and natural gas violations combined—rose significantly in the wake of the passage of the 2002 pipeline safety amendments, which increased the maximum penalties.<sup>50</sup> Between 2009 and 2010, however, proposed and assessed penalties dropped by nearly two-thirds, and 2011 penalties remained near the 2010 levels.<sup>51</sup> It is unclear whether this drop is due to better compliance by operators or weak enforcement.

Although citizen suits cannot seek penalties,<sup>52</sup> they can ensure operators comply with the law when PHMSA has failed to act. They can also hold PHMSA to its statutory obligations. However, citizen suits under the PSA are hampered by the difficulty of obtaining the necessary data and standards. Many of the standards incorporated in the regulations are generated by the industry and must be purchased, sometimes at significant cost.<sup>53</sup> In 2012, Congress prohibited PHMSA from incorporating industry standards unless these are freely

and publicly available on a website.<sup>54</sup> That provision, however, expressly applies only to future guidance and regulations; it remains unclear whether standards in existing regulations will become freely available as well. Specific operator data can also be very difficult for the public to obtain. Operators are required by law to carry out an inspection and maintenance plan, but not to file that plan with the federal government.<sup>55</sup> While operators must file safety-related condition reports, PHMSA only makes available summary information about the reports, not the reports themselves, on its website.<sup>56</sup>

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## ROUTING AND CONSTRUCTION

From the perspective of environmental protection, an aging oil pipeline sitting on the bottom of the Great Lakes prompts the obvious question: why was it put there and not somewhere else? Granting the differences in how environmental risks factored into such decisions sixty years ago, it is still worth asking who, if anyone, is now considering such risks in pipeline routing decisions.



Crews work to replace Line 6B after the Enbridge spill. Photo by EPA.



While federal safety requirements encompass minimum design, materials, and construction standards, Congress has made clear that PHMSA's authority over pipeline safety does not extend to the location or routing of pipelines.<sup>57</sup> The Federal Energy Regulatory Commission (FERC) determines the routes of interstate natural gas pipelines; as part of that process it analyzes the long-term environmental impact of pipelines through Environmental Assessments or Environmental Impact Statements, as required by the National Environmental Policy Act.<sup>58</sup> FERC also issues guidance containing detailed requirements for environmental protection and mitigation during interstate pipeline construction.<sup>59</sup> By contrast, neither PHMSA nor any other federal agency has authority over hazardous liquid pipeline routing. The result is that, unlike the routing decisions for natural gas lines, there is no federal process that guarantees consideration of the long-term environmental impact of oil pipeline routing decisions. Rather, the emphasis is on an engineering approach to environmental protection: instead of considering risks during the location phase, the federal process focuses only on reducing risk once a given pipeline is already in an environmentally vulnerable area.

In the absence of a federal siting role, states thus have a critical opportunity to minimize a pipeline's long-term environmental impact before its construction by exercising authority over the selection of pipeline routes. Only three Great Lakes Basin states—Michigan, Minnesota, and Illinois—require permits specifically for new oil pipeline construction. Routing determinations factor into these permits, but the process by which those determinations are made differs among the states. Michigan's process is comparatively minimal: applicants propose a pipeline route, which is typically approved if "reasonable," and pipeline companies must "make a good-faith effort to minimize the physical impact and economic damage that result from the construction and repair of a pipeline."<sup>60</sup> By contrast, Minnesota regulations provide for broad input, including from the public, on route selection.<sup>61</sup> The Minnesota Public Utilities Commission then accepts a limited number of the routes proposed, from which it ultimately selects the approved route.<sup>62</sup> Minnesota regulations prescribe detailed criteria to be considered in route selection, including, for example, the location of population centers, environmental impact, and the impact on property values.<sup>63</sup>

Although PHMSA lacks authority to regulate location and routing of planned pipelines, it does have



Enbridge prepares to replace a section of Line 6B in Marshall, MI. Photo by EPA.

authority under the PSA to prescribe design, installation, construction, inspection, and testing standards. PHMSA regulations govern the materials that can be used in building pipelines, specify the temperatures and pressures that the pipelines must be able to withstand, and prescribe design standards for pipe, valves, fittings, leak detection systems, and other components.<sup>64</sup> The regulations governing construction mainly cover welding standards, but also include requirements for minimum cover over pipes and space between pipes and other underground structures, valve location, and pressure venting of pumping stations and tanks.<sup>65</sup> Pressure testing is required of any pipeline before it can be operated.<sup>66</sup> New pipelines also must have an external coating and use cathodic protection, an electrical current that mitigates external corrosion.<sup>67</sup>

Overall, the federal standards that apply during the pipeline construction phase are not directly concerned with environmental impact, but instead with the material integrity of the pipeline. The enforcement of those standards through rigorous inspection and review of construction records, however, is lacking.<sup>68</sup> As currently written, the regulations allow operators themselves to conduct the required construction inspections to ensure compliance with the relevant standards.<sup>69</sup> PHMSA has proposed changing the rule to prohibit construction inspections by someone who participated in the pipeline construction.<sup>70</sup>

Even states that do not exercise routing authority to minimize long-term environmental risk do typically guard against the short-term environmental impacts of pipeline construction through general environmental permitting requirements. These can be extensive, and potentially offer multiple opportunities for agency

analysis of environmental impact and for public comment. For example, Enbridge's permit to perform the brace installation and inspection work on Line 5 required permits from the Michigan DEQ for work in or on inland lakes and streams, submerged lands, wetlands, shorelands, and sand dunes, as well as permits for discharges to water and for dredge and fill.<sup>71</sup>

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## OPERATION AND MAINTENANCE

Historically, PHMSA regulations have consisted of prescriptive measures that pipeline operators must follow. No permits are required unless the operator wishes to obtain a waiver from compliance with these measures.<sup>72</sup> The regulations seek to prevent the leading causes of pipeline failure, such as corrosion, excavation damage, and equipment failure. In 1996 Congress created the Hazardous Liquid Pipeline Integrity Management (IM) Program as a fundamentally different approach to pipeline safety.<sup>73</sup> Unlike the prescriptive requirements, this program directs operators to create comprehensive assessment plans for pipelines that could affect high priority areas, and identify and address risks unique to each pipeline segment. The pipeline segment of Line 6B that ruptured in Marshall was subject to the IM program. This raises the question: how well do the general requirements and the IM program protect against pipeline risk?

### General Requirements

All operators of hazardous liquid pipelines must comply with certain requirements concerning corrosion, a particularly important issue. Operators must also inspect valves, right-of-ways, and water crossings. Finally, operators must develop operation and maintenance procedures, maintain records, and submit reports.

Operators must monitor external corrosion on a schedule depending on whether the pipes have corrosion protection.<sup>74</sup> If operators conduct a direct assessment of their lines, they must follow certain industry practices that require pre-assessment, indirect examination, direct examination, and post-assessment plans.<sup>75</sup> To combat atmospheric corrosion, operators must clean, coat, and

then inspect each pipeline or portion of pipeline that is exposed to the atmosphere.<sup>76</sup> Internal effects of corrosion must be investigated and “adequate steps must be taken to mitigate internal corrosion.”<sup>77</sup>

Valves that are necessary to the safe operation of the pipeline are to be inspected at least twice a year.<sup>78</sup> Pressure control devices, such as relief valves and pressure regulators intended to prevent pipeline overpressure, are also to be inspected and tested at least once a year and twice a year if the pipelines carry highly volatile liquids.<sup>79</sup> Liquid pipeline rights-of-way are patrolled at least 26 times each year; this is chiefly meant to guard against third-party activity that has the potential to damage the pipeline, but also may be a means of detecting small leaks.<sup>80</sup> At least every five years, pipeline crossings of navigable waters must be inspected.<sup>81</sup>

There is no requirement in statute or regulation that all operators employ a method to detect leaks. According to an advisory bulletin issued by PHMSA in 2010, operators are expected to track product movement along pipelines to ensure that all product going into a pipeline arrives at the designated interim points and its final destination.<sup>82</sup> If a computerized system is used to track the product, rather than manual calculations, it must comply with various industry standards.<sup>83</sup>

Whenever an operator discovers “any condition that could adversely affect the safe operation of its pipeline system,” it must correct the condition within a “reasonable time.”<sup>84</sup> If the condition presents an “immediate hazard to persons or property,” the pipeline may not operate until the condition has been corrected. Operators must ensure repairs are made “in a safe manner and are made so as to prevent damage to persons or property.”<sup>85</sup> While there are no timelines for general repairs, there is a specific provision that addresses damage caused by corrosion and dictates when an operator must replace or repair a pipe, or reduce the pressure to account for the loss of wall thickness from the corrosion.<sup>86</sup>

Finally, each operator must have a manual containing written operating and maintenance procedures. These manuals are to be reviewed at least once a year and include detailed procedures for making maps, gathering data, operating the line, and handling abnormal operations.<sup>87</sup> Operators must also maintain records of inspections and repairs.<sup>88</sup> Every year, operators must complete a report for each type of hazardous liquid pipeline facility and submit the report to PHMSA.<sup>89</sup> An operator must also report certain safety-related conditions within 5 days after the day a representative of the



operator first determines that the condition exists, but not later than 10 days after discovery of the condition.<sup>90</sup>

## Integrity Management: High Consequence Areas

The IM program has several goals, the most important of which is to ensure the quality of pipeline integrity in areas determined to be High Consequence Areas (HCAs).<sup>91</sup> Once an area has been designated as an HCA, hazardous liquid pipelines that are located in the area or that “could affect” a high consequence area become subject to IM requirements.<sup>92</sup> The designation of an area as an HCA thus acts as a threshold determination in deciding whether IM applies, making HCA definitions critically important. By PHMSA’s own account, 44% of the total miles of hazardous liquid pipelines regulated by PHMSA are located in areas that could affect an HCA.<sup>93</sup> In practice, it should be noted, operators may decide to apply IM to other portions of the affected pipeline. According to PHMSA’s online incident database, the Marshall spill was in an area that could affect an HCA.<sup>94</sup>

Congress directed the Secretary of Transportation to issue regulations for identifying HCAs in 1992. In particular, the Secretary was to prescribe standards that would establish criteria for identifying pipelines that crossed “waters where a substantial likelihood of commercial navigation exists,” that are located in an area of “high-density population,” or that are located in an area that is “unusually sensitive to environmental damage.”<sup>95</sup> Congress amended these requirements in 1996, directing DOT to consider areas where a pipeline spill “would likely cause permanent or long-term environmental damage.”<sup>96</sup> Such areas would include critical drinking water supplies, critical wetlands, riverine or estuarine systems, national parks, wilderness areas, wildlife preservation areas or refuges, wild and scenic rivers, and critical habitat areas for threatened and endangered species.<sup>97</sup> A Presidential memorandum accompanying the 1996 legislation stated that this list was not exclusive and that the department was to consider the potential for short-term damage from spills as well as for permanent and long-term damage.<sup>98</sup> While DOT was, in fact, “strongly urged” by agencies, including the Department of Justice and the Environmental Protection Agency (EPA), to include more areas within the HCA definition, DOT declined to do so.<sup>99</sup>

Commercially navigable waterways are defined as those where “a substantial likelihood of commercial navigation exists.”<sup>100</sup> The category focuses on the largest

waterways; in fact, 98% of the nation’s water bodies are not waters that would traditionally be considered navigable.<sup>101</sup> Some smaller water bodies are indirectly protected if a spill in those waters could ultimately affect commercially navigable waterways. Yet it is more difficult to detect spills in smaller waters and more difficult to access the waters for cleanup should a spill occur.

A “high population area” is one that contains 50,000 or more people and has a population density of at least 1,000 people per square mile.<sup>102</sup> “Other populated areas” are places that contain “a concentrated population, such as an incorporated or unincorporated city, town, village, or other designated residential or commercial area.”<sup>103</sup> Both areas are defined and delineated by the Census Bureau. These are based on the rationale that the more people in an area, the greater resulting harm should a spill occur. However, these definitions also exclude many areas by setting arbitrary numerical thresholds.

Lastly, an “unusually sensitive area” (USA) is defined as a drinking water or ecological resource area that is unusually sensitive to environmental damage resulting from a pipeline release.<sup>104</sup> Drinking water USAs are dependent on community water intakes, aquifers, and other areas to provide water to public water supplies. Ecological USAs encompass areas containing species that are at high risk of extinction or elimination due to a restricted range, few populations, or steep declines in population numbers.<sup>105</sup>

DOT initially considered adopting a USA definition that mirrored the definition of “environmentally sensitive areas” in the regulations governing responses to oil spills,<sup>106</sup> which would have included wetlands, national parks, wilderness and recreational areas, wildlife refuges, marine sanctuaries, and conservation areas.<sup>107</sup> Because DOT chose to focus on occurrences of species and populations rather than on geographic areas, critical areas that can be devastated by a pipeline rupture, such as wetlands, are not necessarily protected.<sup>108</sup> In terms of species, only those with large ranges or the “areas designated as occupied” are included.<sup>109</sup> This leaves out other areas that are geographically smaller but may be necessary to a species’ or population’s survival. Even if a species concentration area is sufficiently large, it may not be incorporated into the USA if PHMSA determines there is not enough data.<sup>110</sup>

HCA maps are not available to the public, nor are USA data or inventories, because of concerns regarding national security. The public can access high population areas and other populated areas through the National Pipeline Mapping System, and population and

commercially navigable waterway data are even available for public download.<sup>111</sup> However, pipeline routes on maps are often approximate with limited resolution.

## Integrity Management: The Process

If an area does qualify as an HCA, pipelines in the high consequence area or that could affect it are subject to IM requirements. The IM program supplements general pipeline requirements by mandating assessment, risk analysis, and repair of the pipeline segments on a set timetable. An operator’s IM program has a number of components, which include the following:

- Process for identifying which pipeline segments could affect HCAs;
- Baseline assessment plan;
- Continual assessment plan;
- Risk analysis to determine potential for and prevention of damage to the line;
- Repair methods and mitigative measures to protect HCAs; and
- Process for review.

Using information provided by PHMSA, operators must first identify all pipelines that could affect an HCA.<sup>112</sup> An operator must then formulate a baseline assessment plan and conduct a baseline assessment. All baseline assessments were due to be completed by 2009.<sup>113</sup> Under a continual assessment plan, operators must assess pipeline segments “as frequently as needed to assure pipeline integrity,” but at least at five year intervals, taking into consideration factors identified during a risk analysis specific to that segment.<sup>114</sup> Operators must create remediation plans for the conditions that have been identified as potential risks for leaks or ruptures as well as plans for mitigation measures to protect the HCA should a spill occur. Lastly, operators are required to develop methods to measure the effectiveness of their plans. New information from repairs must be incorporated into the risk analysis and continual assessment plan.

As the comparison chart below shows, the IM program requires much more of operators than the general prescriptive requirements. Operators must conduct assessments of their lines, incorporate a leak detection system, and repair defects on a timeline. Unlike the general requirements, the IM program specifically

	General	Integrity Management (Pipeline Could Affect HCAs)
<b>Assessment</b>	No assessment required.	Baseline and continual assessments. - Possible methods for assessing line: • Direct assessment for external corrosion • Internal inspection device • Pressure testing • An alternative that can be shown to be equally effective
<b>Leak Detection</b>	No method required.	Operator must have means to detect leaks in its pipeline system. <sup>115</sup> - Operator must evaluate the capability of its leak detection means and modify, as necessary, to protect the HCA. - Operator’s evaluation must consider the following factors: • Length and size of the pipeline • Type of product carried • Pipeline’s proximity to the HCA • Swiftens of leak detection • Location of nearest response personnel • Leak history • Risk assessment results
<b>Repair</b>	Conditions must be corrected within a “reasonable time” and in a “safe manner.”	Operator must take “prompt action to address all anomalous conditions the operator discovers through the integrity assessment or information analysis.” <sup>116</sup> - Barring unusual circumstances, operator must decide whether a condition poses a potential threat to the pipeline within 180 days and repairs must be made according to a prioritized schedule. - Some cases may call for immediate repair. - Those that do not require immediate repair must be repaired, depending on the condition, within 60 or 180 days of the condition’s discovery. Other less severe cases only require monitoring.
<b>Consideration of Impacts on Broader Environment</b>	Very limited.	IM applies if the pipeline could affect an HCA. - Environmental factors can be considered in the risk analysis under the baseline assessment, as well as when determining preventative and mitigation measures.



takes into account the surrounding environment in managing risk.

While the IM program mandates specific actions, pipeline operators retain substantial discretion. For instance, the baseline assessment lists available methods to assess the integrity of the pipeline, including the option to use a technology not listed if the operator can demonstrate it will provide an “equivalent understanding of the condition of the line pipe.”<sup>117</sup> Responsibility for identifying which pipeline segments “could affect” an HCA is also left to the pipeline operator. In addition, operators are responsible for incorporating any areas whose population density has increased so as to fall within the definition of an HCA.

To ensure that operators are following IM procedures, PHMSA requires them to submit annual reports.<sup>118</sup> Furthermore, PHMSA has developed a specialized training program for federal and state inspectors to inspect IM programs. When operators are found to have failed to meet the IM requirements, PHMSA has stated it will take enforcement action to accelerate program development and address program deficiencies. As of 2010, PHMSA had issued enforcement letters in 85% of all its IM inspections. Once an enforcement action has been initiated, operators must re-evaluate the aspect of their line or plan that has been deemed deficient and submit revised plans to correct the deficiencies.

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## SPILL RESPONSE PLANNING AND REPORTING

Beyond operation and maintenance of pipelines, operators must develop plans to respond to spills and must report spills when they occur. Two federal statutory regimes and a range of state approaches provide a number of different regulatory layers. The spill in Marshall, and the possibility of a spill in the Straits of Mackinac, highlight the importance of effective planning and quick reporting.

### Contingency Planning

Operators must comply with two sets of response planning requirements in federal law. First, under the PSA,

operators must develop “an emergency response plan describing the operator’s procedures for responding to and containing releases.”<sup>119</sup> Second, under the Oil Pollution Act of 1990 (OPA), operators must create a response plan to address a worst case discharge of oil into navigable waters or the adjoining shoreline.<sup>120</sup> While some of the requirements for the plans are similar, there are also fundamental differences.

The PSA gives PHMSA authority to prescribe safety standards for emergency plans and procedures.<sup>121</sup> Specifically, the PSA requires operators to develop “an emergency response plan describing the operator’s procedures for responding to and containing releases, including

- identifying specific action the operator will take on discovering a release;
- liaison procedures with State and local authorities for emergency response; and
- communication and alert procedures for immediately notifying State and local officials at the time of a release.”<sup>122</sup>

The emergency plan must include procedures for “[p]rompt and effective response” to each type of emergency; “personnel, equipment, instruments, tools, and material” needed; “[t]aking necessary action, such as emergency shutdown or pressure reduction, to minimize the volume” released; control of the released liquids; minimizing public exposure to spilled liquids; notifying emergency responders; and reviewing the efficacy of emergency procedures following any accident.<sup>123</sup> Operators must review and, if needed, update the plan every calendar year.<sup>124</sup> They must also create an emergency response training program, including training personnel to carry out the procedures in the emergency plan.<sup>125</sup>

Operators are not required to submit emergency plans to PHMSA for review and approval. Instead, PHMSA assesses the written procedures when it conducts an inspection.<sup>126</sup> If PHMSA determines that the plan must be amended to provide a reasonable level of safety, it cannot do so without giving the operator notice and providing an opportunity for a hearing.<sup>127</sup> In 2010, PHMSA advised operators that they are required to share the emergency plans with local emergency responders, and would face fines if they do not.<sup>128</sup>

Under the PSA, PHMSA has sole authority to determine the emergency planning requirements for interstate pipelines; states may not alter these requirements or directly enforce them. However, states may impose more



An oil-soaked Great Blue Heron in the shoreline of the Kalamazoo River after the Enbridge spill. Photo by EPA.

stringent requirements on intrastate pipelines if they have a certified program (see Regulatory Framework section, *infra*).

In the wake of the Exxon Valdez disaster, Congress passed the OPA in 1990. The OPA, an amendment to the Clean Water Act, requires a tiered planning process to respond to oil spills that threaten navigable waters. The President is charged with developing a National Contingency Plan, which serves as a federal blueprint for nationwide spill response; the National Response Team is an inter-agency group chaired by EPA that coordinates these response activities.<sup>129</sup> Committees of local, state and federal agency officials create regional Area Contingency Plans. These plans must comport with the national plan and be capable of removing, mitigating, or preventing a worst-case discharge or threat of such a discharge.<sup>130</sup>

Under the OPA, oil facilities, including pipelines, must develop individual Facility Response Plans that are consistent with both the national and area plans.<sup>131</sup> Onshore facilities such as pipelines are only required to develop plans if a discharge poses a threat to navigable waters and the adjacent shoreline.<sup>132</sup> Facility plans must be consistent with the national plan and applicable area plans, detail a chain of authority for incidents, identify personnel and equipment capable of resolving a worst case discharge, and describe training, testing, and drilling procedures.<sup>133</sup>

Responsibilities under the OPA are split between several federal agencies. The EPA and Coast Guard

direct the area planning. For inland zones, EPA designates areas, appoints area committee members, requires that information be included in area plans, and reviews and approves the area plans. The U.S. Coast Guard does the same for coastal zones such as the Great Lakes.<sup>134</sup> While the OPA establishes very broad requirements for area plans,<sup>135</sup> each region's area committee identifies the locations that are sensitive to oil pollution.<sup>136</sup> In turn, this informs the response planning for facilities within each area committee's footprint.<sup>137</sup>

PHMSA is responsible for reviewing the facility plans of onshore transportation facilities, including oil pipelines, to ensure that they are in compliance with the OPA and area plans.<sup>138</sup> DOT also has authority to review the response plans of "offshore" pipelines that are inland from the coast, which are defined in accordance with the OPA as those pipelines in, on, or under navigable waters.<sup>139</sup> PHMSA's response plan regulations, however, only apply to those pipelines "in, on, or under, any land within the United States other than submerged land."<sup>140</sup> It is thus unclear whether the regulations would apply to pipelines on Great Lakes submerged land, such as Enbridge's Line 5. In practice, it appears that pipeline operators submit facility plans to PHMSA for systems that include both onshore and offshore pipelines.

PHMSA requires operators to determine the potential worst-case discharge scenario by calculating maximum figures for response times, release times, and flow rates.<sup>141</sup> Additionally, the plans must identify environmentally and economically sensitive areas, divide responsibilities among federal, state, and local responders, and include procedures for spill detection and mitigation.<sup>142</sup> PHMSA's regulations allow operators to incorporate by reference appropriate procedures from their PSA-mandated manuals for operations, maintenance, and emergencies into the OPA-mandated facility response plans.<sup>143</sup> In 2012, Congress directed PHMSA to maintain copies of the most recent response plans and provide copies of the plans upon written request to interested parties, although PHMSA can withhold or redact information for security reasons.<sup>144</sup>

States may impose additional requirements for facility response plans under the OPA as long as the requirements are at least as stringent as the federal standards.<sup>145</sup> Several states—notably Washington and Alaska—have developed spill response requirements mandating public participation. Washington requires a range of response plans, from contingency plans for facilities, pipelines, and vessels, to geographic response plans





Oil in Talmadge Creek, a tributary to the Kalamazoo River, after the Enbridge spill.  
Photo by the Michigan Department of Environmental Quality.

for regions. All of these plans require a 30-day public comment period. Additionally, geographic response plans are reviewed periodically in public workshops, and the public may submit comments.<sup>146</sup> The Puget Sound Partnership works with a broad range of stakeholder groups and makes annual recommendations to the legislature regarding spill response plans.<sup>147</sup> Alaska uses a similar model, and the state has tasked Regional Citizens' Advisory Councils with developing broad-based plans to accelerate spill response efforts and build regional consensus.<sup>148</sup>

## Planning in The Great Lakes Region

In designating areas for contingency planning under the OPA, EPA followed its existing organizational structure, which splits the United States into ten regions.<sup>149</sup> As a result, the Great Lakes Basin is divided among several areas. Most of the Great Lakes states are within Region 5; however, New York is in Region 2 and Pennsylvania is in Region 3. The Coast Guard has seven area plans for the Great Lakes coastal zone and connecting channels.<sup>150</sup> Within EPA's Region 5, the EPA and Coast Guard have created a regional plan that defines the agencies' jurisdictional boundaries.<sup>151</sup> No states in the Great Lakes Basin have developed their own response planning requirements for pipelines. While Michigan requires onshore oil facilities to prepare a "Pollution Incident Prevention Plan," pipelines are exempted.<sup>152</sup>

EPA's Region 5 inland area plan identifies general characteristics of environmentally sensitive areas,

including: threatened and endangered species habitat; protected areas such as forests, parks, preserves, reserves and management areas; tribal lands; drinking water intakes; and industrial water intakes.<sup>153</sup> The specific areas in Region 5 are found on an inland sensitivity atlas, a map which shows pipeline locations; rivers, lakes, and wetlands; hazardous material sites; and wildlife habitats, among other designations.<sup>154</sup> The Coast Guard's area plans use a federal environmental sensitivity index, which lists sensitive shoreline habitat rankings, sensitive biological resources, and human-use features, such as marinas, boat launches, and water intakes.<sup>155</sup>

Through their facility response plans, operators must be able to demonstrate that they are capable of responding to the maximum extent practicable to a worst case discharge, as well as to a substantial threat of such a discharge. The Region 5 area plan defines a "worst case" discharge as "ANY discharge or threat of a discharge in quantities sufficient to impact public health, welfare or the environment, where the parties responsible for the threat or discharge are unwilling or unable to perform the required response actions."<sup>156</sup> The Coast Guard's area plan for Sector Lake Michigan defines "worst case discharge" as a discharge of a vessel's full cargo in adverse weather, or the largest foreseeable onshore discharge in adverse weather.<sup>157</sup>

While PHMSA must review facility response plans for consistency with the area plans, Enbridge's facility response plan for its pipelines in the Great Lakes region raises some questions about this process. The facility

response plan appears to base its environmental assessment on HCAs subject to the IM program, rather than the environmentally sensitive areas identified in Region 5's inland sensitivity atlas and the applicable Coast Guard plans.<sup>158</sup> As discussed above, environmentally sensitive areas include a far wider set of environmental factors than HCAs. With two overlapping sets of planning requirements and multiple sets of environmental designations and mapping data, the potential for confusing, redundant, or conflicting information is clearly high.

## Spill Reporting

Most pipeline spills over 5 gallons must be reported to PHMSA “as soon as practicable, but not later than 30 days after discovery of the accident.”<sup>159</sup> Spills under 5 barrels (210 gallons) resulting in no damage to life or property, and confined to the pipeline operator's rights-of-way, are exempt from reporting obligations.<sup>160</sup> When the spill causes death, a fire or explosion, significant property damage, or water pollution, the operator must notify the National Response Center “[a]t the earliest practicable moment” and must provide certain key information on the release.<sup>161</sup> This notification triggers the federal response under the National Contingency Plan. In 2012, Congress directed PHMSA to revise its regulations to require reporting “at the earliest practicable moment following confirmed discovery” of the spill but “not later than 1 hour following the time of such confirmed discovery.”<sup>162</sup> During the Marshall spill, Enbridge notified federal authorities approximately two hours after the spill was confirmed—which may have been as much as a full day after the rupture initially began.

The OPA explicitly reserves the right of states to impose requirements pertaining to oil spills, which can include spill reporting.<sup>163</sup> Despite this reserved authority, states have not consistently used it. According to the recent National Association of Pipeline Safety Representatives study, states have chosen to implement stricter reporting requirements on natural gas pipelines, but far fewer states have developed standards for hazardous liquid pipelines.<sup>164</sup> In fact, while most states have explicit standards for reporting of oil spills generally, “transportation-related facilities” (pipelines) are frequently exempted from these requirements.<sup>165</sup> For example, Enbridge had no responsibility to report the Marshall spill to Michigan, as the state has specifically exempted pipelines from its reporting requirement.

Where states have set their own reporting thresholds for spills of oil and hazardous liquids, they have done so in two primary ways. One option is to set a quantitative spill threshold; above this limit, all spills must be reported, whether or not they cause environmental damage. Indiana, for instance, mandates reporting incidents above 55 gallons,<sup>166</sup> while Minnesota requires reports for spills greater than 5 gallons.<sup>167</sup> A second option is to set spill thresholds without a numerical limit; for example, numerous states require reporting of any incident which might damage the waters of the state,<sup>168</sup> and Illinois requires reporting of any spill which leaves a surface sheen on water.<sup>169</sup> Frequently the state regulations indicate the order in which emergency responders are to be contacted, and often require reporting within a defined period of time.<sup>170</sup>

Where states have set their own standards for pipeline spill reporting, they are frequently similar to—if not identical to—reporting requirements for oil storage facilities such as tanks. Certain states, such as Minnesota and Indiana, have set spill responses in terms of the amount spilled and the potential impacts on health or the environment, rather than the type of facility where the release occurred.<sup>171</sup> The carve out for transportation-related facilities may increase regulatory uncertainty, as a pipeline operator who also operates a storage tank may have separate federal and state notification requirements for separate system segments.

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## CONCLUSION

After the spill in Marshall, the pressing question is whether laws governing pipelines adequately protect the Great Lakes Basin from oil pollution. Unfortunately, federal laws are inadequate in several respects, and states have not passed their own laws to fill in the gaps.

At the federal level, there is no review of the long-term risks associated with routing of new pipelines or consideration of impacts to entire watersheds such as the Great Lakes Basin. The IM program—which requires operators to assess the condition of their existing lines, install leak detection systems, and repair defects on a set timeline—only applies to 44% of hazardous liquid pipeline miles, and to only a subset of environmentally sensitive areas. And as the Marshall spill demonstrates, the IM program is not a panacea; among other issues,



operators have substantial discretion in determining how to manage risk. Finally, the division in responsibility between several federal agencies means that spill response plans may not address all sensitive areas.

Public involvement in federal pipeline regulation is limited, as is public access to information. Up until this year, the public had no right to access industry standards incorporated into the regulations without paying a fee. There is no opportunity for the public to comment on the safety of individual lines when they are constructed or during later operation except when an operator applies to obtain a waiver from general requirements. Moreover, the public does not have an opportunity to comment on operators' spill response plans.

Within the Great Lakes region, only a few states have chosen to regulate the safety and environmental impacts of oil pipelines. Those requirements are minimal. Michigan, Minnesota, and Illinois require operators to obtain a routing permit for new oil pipeline; only Minnesota and Illinois consider a range of environmental factors in the decision to approve a route. While Indiana, Minnesota, and New York have certified programs to regulate intrastate hazardous liquid pipelines, the states have not imposed more stringent safety requirements on the design, operation, and maintenance of pipelines. No state in the region has its own spill response planning requirement, although Illinois, Indiana, and Minnesota require operators to report oil spills.

## POLICY RECOMMENDATIONS

Based on the analysis in this report, the regulatory framework governing pipelines should be improved in the following ways.

### GENERAL

- The regulatory framework should consider the effects of oil pipelines on the Great Lakes Basin as a whole. Pipelines are governed by multiple laws, with authority divided among different federal agencies and individual states. The Great Lakes Commission and the International Joint Commission could act as facilitators for a much-needed Basin-wide perspective to improve pipeline regulation.
- Pipeline safety regulations should protect all areas that are environmentally sensitive to oil pollution. Under the current framework, PHMSA's risk management requirements protect only some of the areas considered important for spill response by EPA and the Coast Guard. Harmonizing PHMSA's definition of "unusually sensitive areas" with the "environmentally sensitive areas" identified in area plans under the OPA would also reduce

regulatory confusion and compliance burdens on operators.

- Pipeline information should be publicly available, consistent with national security interests. PHMSA should construe its obligation to promote awareness of the National Pipeline Mapping System with "other interested parties" as broadly as possible.<sup>172</sup> This should reasonably include residents potentially impacted by pipeline spills. Expanding the availability of information on pipeline locations and potential environmental impacts could induce improved pipeline siting, operation, and response plans.
- States that have not been certified by PHMSA to regulate intrastate pipelines and to participate in the oversight and inspection of interstate pipelines should do so. Certification would not only provide states with greater direct control over the safety of intrastate pipelines, but also with greater access to pipeline safety information about interstate pipelines. Most, if not all, costs could be recovered through a combination of federal funds and cost recovery fees assessed to operators.<sup>173</sup>

*Continued >*

## ROUTING AND CONSTRUCTION

- States that have not enacted laws governing siting and routing of pipeline facilities should do so. All states should use their ability to regulate pipeline routing to ensure that environmental impacts are fully considered and that routes are chosen to minimize environmental risk. Local authorities also should have an important oversight role through zoning and local environmental laws such as critical areas ordinances.
- Opportunities for public awareness and for public input at the planning and construction stages of new pipelines should be maximized. For example, a process similar to that used in Minnesota for routing decisions could allow anyone to submit a proposed route.

## OPERATION AND MAINTENANCE

- In 2012, Congress directed PHMSA to evaluate whether integrity management systems should be expanded beyond the current HCAs.<sup>174</sup> The IM program should be expanded to include all pipelines. Compared to the general requirements applicable to operators, the IM program better protects the environment by requiring assessments of lines, leak detection systems, and specific repair schedules.
- If IM is to be extended to all pipelines, HCAs should continue to function as a prioritization tool in the risk assessment process. However, consistent with the recommendation above, the HCA definitions should be expanded to capture all environmentally sensitive areas identified in area plans under the OPA.

## SPILL RESPONSE PLANNING AND REPORTING

- PHMSA should closely review operators' facility response plans for their consistency with area plans, including whether all environmentally sensitive areas have been identified and taken into account in planning. PHMSA should also make clear that operators must assess the impacts of a spill from pipelines that are under navigable waters such as the Great Lakes.
- In 2012, Congress directed PHMSA to maintain copies of the most recent facility response plans by operators and make them available to the public upon request, excluding proprietary and security-sensitive information.<sup>175</sup> Rather than wait for formal requests, PHMSA should make plans broadly available. PHMSA should also make public comment an integral part of plan reviews and revision.
- States should develop their own requirements for facility response plans and spill reporting. State programs could be modelled on the ones in Washington and Alaska, which encourage public input on response plans and provide greater transparency. States should also consider requiring reporting of spills within a short period of time.



## Endnotes

- 1 The total volume of oil spilled is unknown. Enbridge estimates 813,000 gallons of oil spilled from the pipeline. But as of April 2012, 1,147,933 gallons of oil had been collected during the response. *EPA's Response to the Enbridge Oil Spill*, EPA, <http://www.epa.gov/enbridgespill/index.html> (last visited Apr. 13, 2012).
- 2 *Line 6B Response: Frequently Asked Questions*, ENBRIDGE, [http://response.enbridgeus.com/response/main.aspx?id=12783#What\\_happened](http://response.enbridgeus.com/response/main.aspx?id=12783#What_happened) (last visited Apr. 11, 2012).
- 3 *Health Officials urge evacuations near Michigan oil spill*, CNN, July 29, 2010, [http://articles.cnn.com/2010-07-29/us/michigan.oil.spill.evacuation\\_1\\_oil-spill-oil-sheentalmadge-creek?\\_s=PM:US](http://articles.cnn.com/2010-07-29/us/michigan.oil.spill.evacuation_1_oil-spill-oil-sheentalmadge-creek?_s=PM:US).
- 4 *Id.*
- 5 *Id.*
- 6 The river contains self-sustaining populations of both warmwater and coolwater sport fish. JAY K. WESLEY, *KALAMAZOO RIVER ASSESSMENT* 39 (2005), *available at*: [http://www.michigandnr.com/publications/pdfs/IFR/ifrilibra/Special/Reports/sr35/sr35\\_text.pdf](http://www.michigandnr.com/publications/pdfs/IFR/ifrilibra/Special/Reports/sr35/sr35_text.pdf).
- 7 *Id.* at 54.
- 8 *Line 6b Response: About Lakehead*, ENBRIDGE, <http://response.enbridgeus.com/response/main.aspx?id=12780> (last visited Apr. 11, 2012).
- 9 Warning Letter from Ivan A. Hutoon, Central Region Director, PHMSA, to Terry McGill, Present of Enbridge Energy Partners (Jan. 21, 2010), *available at* [http://primis.phmsa.dot.gov/comm/reports/enforce/documents/320105002W/320105002W\\_Warning%20Letter\\_01212010.pdf](http://primis.phmsa.dot.gov/comm/reports/enforce/documents/320105002W/320105002W_Warning%20Letter_01212010.pdf).
- 10 *Enbridge to Expand Access to Eastern Markets for Western Crude Oil*, ENBRIDGE.COM (Oct. 3, 2011), <http://www.enbridge.com/MediaCentre/News.aspx?yearTab=en2011&id=1508309>.
- 11 *Pipeline System Configuration: Quarter 1, 2012*, ENBRIDGE.COM (Jan. 2012), [http://www.enbridge.com/DeliveringEnergy/OurPipelines/~/\\_media/www/Site%20Documents/Delivering%20Energy/2012\\_Q1%20System%20Config.ashx](http://www.enbridge.com/DeliveringEnergy/OurPipelines/~/_media/www/Site%20Documents/Delivering%20Energy/2012_Q1%20System%20Config.ashx).
- 12 Eartha Jane Melzer, *State Approves Work on Oil Pipeline under Mackinac Straits*, MICHIGAN MESSENGER (Sep. 21, 2010, 8:21 AM), <http://michiganmessenger.com/42060/state-approves-work-on-oil-pipeline-under-mackinac-straits>.
- 13 *Id.*
- 14 *Coastal and Inland Waters Permit Information System*, MICHIGAN DEPT. OF ENVTL. QUALITY, <http://www.deq.state.mi.us/ciwpcis/ciwpcis.asp> (enter "10-24-0035-P" in "File Number" box and click "Search") (last visited Apr. 6, 2012).
- 15 Melzer, *supra* note 12.
- 16 Great Lakes Environmental Law Center, et al., *Enbridge Pipeline Anchoring Comment Letter* (Sep. 14, 2010), [http://www.glelc.org/glelc/Enbridge\\_Pipeline\\_Anchoring\\_Comment\\_Letter.pdf](http://www.glelc.org/glelc/Enbridge_Pipeline_Anchoring_Comment_Letter.pdf).
- 17 Melzer, *supra* note 12.
- 18 *Enbridge to Expand Access to Eastern Markets for Western Crude Oil*, *supra* note 10.
- 19 In 2012, Congress ordered PHMSA to conduct a comprehensive review of its regulations to determine whether they are sufficient to address the transportation of diluted bitumen. Pub. L. No. 112-90 § 16 (2012). As part of the review, PHMSA must "conduct an analysis of whether any increase in the risk of a release exists for pipeline facilities transporting diluted bitumen." *Id.* This analysis will be done by the National Academy of Sciences and is expected to be complete by July 2013.
- 20 49 U.S.C. § 60101 *et seq.* (2006).
- 21 Pub. L. No. 108-426 (Nov. 30, 2004), *codified at* 49 U.S.C. § 108(f)(1) (2006) (creating PHMSA and directing the PHMSA Administrator to carry out the duties and powers vested in the Secretary of Transportation under the PSA). Rules promulgated by PHMSA concerning the safety of hazardous liquid pipelines are codified at 49 C.F.R. §§ 194 (spill prevention and response planning) and 195 (pipeline safety) (2011). In most instances, this report will refer to PHMSA as the relevant federal authority under the PSA, even though the language of the PSA itself refers to DOT and the Secretary. Before the creation of PHMSA, the Research and Special Programs Administration administered the PSA within the DOT.
- 22 49 C.F.R. §§ 195.1, 195.2 (2011). Exceptions include crude oil gathering lines less than 6 inches in diameter, operated at low pressure, and located in rural areas that are not unusually sensitive to environmental damage. 49 U.S.C. § 60101(b)(2)(B)(ii) (2006).
- 23 For hazardous liquid pipelines, "interstate or foreign commerce" is defined as commerce between "a place in a State and a place outside that State" or "places in the same State through a place outside the State." 49 U.S.C. § 60101(a)(8)(B).
- 24 49 U.S.C. § 60104(c) (2006).
- 25 *Id.*
- 26 49 U.S.C. § 60106(b) (2006).
- 27 49 U.S.C. § 60106(a) (2006).
- 28 49 U.S.C. § 60107(a) (2006); PAUL W. PARFORMAK, CONGRESSIONAL RESEARCH SERVICE, R41536, *KEEPING AMERICA'S PIPELINES SAFE AND SECURE: KEY ISSUES FOR CONGRESS* 18 (Mar. 13, 2012), *available at* <http://www.fas.org/sgp/crs/homsec/R41536.pdf>.
- 29 *State Pipeline Safety Programs – CY 2011*, PHMSA, <http://phmsa.dot.gov/portal/site/PHMSA/menuitem.ebdc7a8a7e39f2e55cf2031050248a0c/?vgnextoid=60dc8f4826eb9110VgnVCM1000009ed07898RCRD&vgnnextchannel=a576ef80708c8110VgnVCM1000009ed07898RCRD&vgnextfmt=print#page2> (last visited Apr. 6, 2012).
- 30 *Id.*
- 31 NATIONAL ASSOCIATION OF PIPELINE SAFETY REPRESENTATIVES, *COMPENDIUM OF STATE PIPELINE SAFETY REQUIREMENTS* (2011).
- 32 49 U.S.C. § 60102(a)(1) (2006).
- 33 49 U.S.C. § 60102(a)(2) (2006).
- 34 49 U.S.C. § 60102(b)(1) (2006).

- 35 49 U.S.C. § 60102(a)(2)(B) (2006).
- 36 49 U.S.C. § 60104(e) (2006).
- 37 49 U.S.C. § 60102(b)(5) (2006).
- 38 49 U.S.C. § 60102(b)(3) (2006).
- 39 *Id.*
- 40 49 U.S.C. §§ 60115(b)(2)-(3), 60102(b)(4)(B)(i) (2006).
- 41 49 U.S.C. §§ 60102(b)(4)(C), 60102(b)(2)(G) (2006).
- 42 49 U.S.C. § 60102(b)(4)(B)(ii) (2006).
- 43 49 U.S.C. § 60102(b)(2)(A)-(C), (F).
- 44 49 U.S.C. §§ 60117(l) (administrative orders); 60122 (administrative penalties); 60120(a)(1) (civil suits); 60121 (citizen suits) (2006).
- 45 Pub. L. No. 112-90 §§ 2(a)(1)(A)-(B) (penalty caps; amending 49 U.S.C. § 60122(a)(1)) and 2(c) (removal of cap in civil suits; amending 49 U.S.C. § 60120(a)(1)) (2012).
- 46 49 U.S.C. § 60122(b)(1)(A)-(C) (2006). The 2012 amendments removed the violator's ability to pay from this list of factors. Pub. L. No. 112-90 § 2(a)(2) (2012).
- 47 49 U.S.C. § 60123 (2006).
- 48 *E.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/RCED-00-128, PIPELINE SAFETY: THE OFFICE OF PIPELINE SAFETY IS CHANGING HOW IT OVERSEES THE PIPELINE INDUSTRY 5 (2000), available at <http://www.gao.gov/new.items/rc00128.pdf>.
- 49 NAT'L TRANSP. SAFETY BD., PAR-II-01, PACIFIC GAS AND ELECTRIC COMPANY NATURAL GAS TRANSMISSION PIPELINE RUPTURE AND FIRE, SAN BRUNO, CALIFORNIA, SEPTEMBER 9, 2010 at 126, 128 (Aug. 30, 2011), available at <http://www.nts.gov/investigations/summary/PAR1101.html>.
- 50 *Summary of Cases Involving Civil Penalties*, PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION, [http://primis.phmsa.dot.gov/comm/reports/enforce/CivilPenalty\\_opid\\_0.html?nocache=5689#\\_TP\\_1\\_tab\\_3](http://primis.phmsa.dot.gov/comm/reports/enforce/CivilPenalty_opid_0.html?nocache=5689#_TP_1_tab_3) (last visited Apr. 6, 2012) (average penalties of about \$3.3 million proposed per year, \$2.6 million assessed / collected per year); Pub. L. No. 107-355 § 8(b)(1) (2002).
- 51 *Summary of Cases Involving Civil Penalties*, *supra* note 50.
- 52 49 U.S.C. § 60121 (2006).
- 53 Carl Weimer, *Testimony of the Pipeline Safety Trust before the Subcommittee on Energy and Power of the Committee on Energy and Commerce, U.S. House of Representatives* at 18-20 (June 16, 2011), available at <http://pstrust.org/library/docs/WeimerTestimony6-16-11.pdf>.
- 54 Pub. L. No. 112-90 §24 (2012).
- 55 49 U.S.C. § 60108(a)(1) (2006). See "Spill Response Planning and Reporting" section, *infra*.
- 56 *Safety-Related Condition Reports (SRCRs)*, PHMSA, <http://phmsa.dot.gov/portal/site/PHMSA/menuitem.ebdc7a8a7e39f2e55cf2031050248a0c/?vgnextoid=4bde326d1104b210VgnVCM1000001ecb7898RCRD&vgnnextchannel=3430fb649a2dc110VgnVCM1000009ed07898RCRD&vgnextfmt=print> (last updated Mar. 19, 2012).
- 57 49 U.S.C. § 60104(e) (2006).
- 58 15 U.S.C. § 717(f) (2006).
- 59 *Environmental Guidelines*, FERC, <http://www.ferc.gov/industries/gas/enviro/guidelines.asp> (last visited Apr. 6, 2012).
- 60 1929 PA 16, MCL 483.2b (2012).
- 61 MINN. R. 7852.1400 (2012).
- 62 *Id.*
- 63 MINN. R. 7852.1900 (2012).
- 64 49 C.F.R. § 195, Subpart C (2011).
- 65 49 C.F.R. §§ 195.208, 214-234 (welds); 210, 248 (minimum cover); 250 (distance from other underground structures); 258, 260 (valves); 262, 264 (pumping stations and tanks) (2011).
- 66 49 C.F.R. §§ 195.302, 303 (2011).
- 67 49 C.F.R. § 195.557 (2011).
- 68 Carl Weimer, *supra* note 53, at 11.
- 69 Pipeline Safety: Miscellaneous Changes to Pipeline Safety Regulations, 76 Fed. Reg. 73,570 (Nov. 29, 2011).
- 70 *Id.*
- 71 *Coastal and Inland Waters Permit System*, *supra* note 14. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers also considers the short-term environmental impact of pipeline construction on regulated wetlands. 33 U.S.C. § 1344 (2006).
- 72 49 U.S.C. § 60118(c) (2006).
- 73 *Preventing Spills from Hazardous Liquid Pipelines Through Integrity Management: Hearing on Preventing Spills from Oil Pipelines through Integrity Management; Leak Detection; Shut-Off Valves; and Corrosion Prevention Before the Subcomm. on Railroads, Pipelines, and Hazardous Materials of the H. Comm. on Transportation and Infrastructure*, 111th Cong. 2 (2010) (statement of Cynthia Quarterman, Administrator, Pipelines and Hazardous Materials Safety Administration).
- 74 49 C.F.R. § 195.573 (2011).
- 75 49 C.F.R. § 195.588 (2011). Industry practices are incorporated under § 195.3.
- 76 49 C.F.R. §§ 195.581, 195.583 (2011).
- 77 49 C.F.R. § 195.579(a) (2011).
- 78 49 C.F.R. § 195.420 (2011).
- 79 49 C.F.R. § 195.428 (2011).
- 80 49 C.F.R. § 195.412(a) (2011); Leak Detection on Hazardous Liquid Pipelines, 75 Fed. Reg. 4134, 4135 (Jan. 26, 2011).
- 81 49 C.F.R. § 195.412(b) (2011).
- 82 Leak Detection on Hazardous Liquid Pipelines, 75 Fed. Reg. 4134, 4135 (Jan. 26, 2011).
- 83 49 C.F.R. § 195.444 (2011). These standards are found in API RP 1130. The industry standard contains technical information, operational recommendations, training, and testing information.
- 84 49 C.F.R. § 195.401(b)(1) (2011).
- 85 49 C.F.R. § 195.422(a) (2011).
- 86 49 C.F.R. § 195.585 (2011).
- 87 49 C.F.R. § 195.402 (2011). Current maps must be maintained pursuant to § 195.404.
- 88 49 C.F.R. § 195.404 (2011).
- 89 49 C.F.R. § 195.49 (2011).
- 90 49 C.F.R. §§ 195.55-.56 (2011).
- 91 *Id.*
- 92 49 C.F.R. § 194.452(a) (2011).
- 93 Safety of On-shore Hazardous Liquid Pipelines, 75 Fed. Reg. 63774 (Oct. 18, 2010).

- 94 *Incident Data Access*, PHMSA, <http://primis.phmsa.dot.gov/comm/reports/safety/SIDA.html> (last visited Apr. 13, 2012). The database classifies the pipeline as one that could affect “other populated areas,” described *infra*.
- 95 49 U.S.C.A. § 60109(a)(1)(B) (2006).
- 96 49 U.S.C.A. § 60109(b) (2006).
- 97 49 U.S.C.A. § 60109(b); *see also* Pipeline Safety: Areas Unusually Sensitive to Environmental Damage, 64 Fed. Reg. 73464 (Dec. 30, 1999).
- 98 Pipeline Safety: Areas Unusually Sensitive to Environmental Damage, 64 Fed. Reg. 73464 (Dec. 30, 1999).
- 99 Pipeline Integrity Management in High Consequence Areas (Hazardous Liquid Pipeline Operators with 500 or More Miles of Pipeline), 65 Fed. Reg. 75378 (Dec. 1, 2000).
- 100 49 C.F.R. § 195.450(1) (2011). These are identified by PHMSA using the National Waterways Network database from the Bureau of Transportation Statistics, available at: [http://www.npms.phmsa.dot.gov/application.asp?tact=Data&page=subapp.asp?app=data&act=data\\_req](http://www.npms.phmsa.dot.gov/application.asp?tact=Data&page=subapp.asp?app=data&act=data_req).
- 101 RICHARD L. REVESZ, ENVIRONMENTAL LAW AND POLICY 977 (2008).
- 102 49 C.F.R. § 195.450(2) (2011).
- 103 49 C.F.R. § 195.450(3) (2011).
- 104 49 C.F.R. § 195.6 (2011).
- 105 These determinations are based on a ranking given to a species by NatureServe, an international network that collects and manages data on animals, plants, and ecosystems. NatureServe’s Global Conservation Ranking can be found at <http://www.natureserve.org/explorer/ranking.htm>. Ecological USAs also include areas where threatened species are found together, as well as species listed under the Endangered Species Act.
- 106 Areas Unusually Sensitive to Environmental Damage, 64 Fed. Reg. 73464 (Dec. 30, 1999) (“Consideration of the OPA Approach to USAs”).
- 107 49 C.F.R. § 194.103 (2011); Areas Unusually Sensitive to Environmental Damage, 65 Fed. Reg. 80530 (Dec. 21, 2000) (“Resources Not Included in the Final Rule. These include national parks, wetlands, wildlife preservation areas, refuges, fish hatcheries, vulnerable species, cultural resources, recreation areas, and economic resource areas.”).
- 108 *Id.*
- 109 *Id.*
- 110 For example, DOT considered adding colonial waterbird nesting sites, but determined that the data collected by states varied too greatly in its format and quality to be used. DOT also considered using the Important Bird Areas program developed by the American Bird Conservancy and the National Audubon Society. DOT has stated that it will evaluate this program when full data are available, but to date no action has been taken. *Id.*
- 111 Safety of On-shore Hazardous Liquid Pipelines, 75 Fed. Reg. 63774 (Oct. 18, 2010). Maps are available at: <https://www.npms.phmsa.dot.gov/PublicViewer/>.
- 112 49 C.F.R. § 195.452 (2011).
- 113 49 C.F.R. § 195.452(d)(1) (2011).
- 114 49 C.F.R. § 195.452(j)(2) (2011).
- 115 49 C.F.R. § 195.452(i) (2011).
- 116 49 C.F.R. § 195.452(h) (2011).
- 117 49 C.F.R. § 195.542 (c)(1)(D) (2011).
- 118 49 C.F.R. § 195.49 (2011).
- 119 49 U.S.C. § 60102(d)(5) (2006).
- 120 33 U.S.C. § 1321(j)(5) (2006).
- 121 49 U.S.C. § 60102(a)(2)(B) (2006).
- 122 49 U.S.C. § 60102(d)(5) (2006). The emergency plan is one part of an overall manual detailing “written for procedures conducting normal operations and maintenance activities and handling abnormal operations and emergencies.” 49 U.S.C. § 60102(a) (2006).
- 123 49 C.F.R. § 195.402(e) (2011).
- 124 49 C.F.R. § 195.402(a) (2011).
- 125 49 C.F.R. § 195.403 (2011).
- 126 *See Briefing: Additional Details on Standard Inspections, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMINISTRATION*, <http://primis.phmsa.dot.gov/comm/InspectionDetails.htm?nocache=2610> (last visited Apr. 6, 2012).
- 127 49 C.F.R. § 195.402(b) (2011).
- 128 Notice, Pipeline Safety: Emergency Preparedness Communications, 75 Fed. Reg. 67807 (Nov. 3, 2010).
- 129 33 U.S.C. § 1321(d) (2006).
- 130 33 U.S.C. § 1321(j)(4) (2006).
- 131 33 U.S.C. § 1321 (j)(5)(C) (2006).
- 132 33 U.S.C. § 1321(j)(5)(C)(iv) (2006). PHMSA exempts pipelines with no reported problems or which are unlikely to have a worst case discharge reach navigable waters, drinking waters, or environmentally sensitive areas within 4 hours, and larger pipelines where no worst case discharge would affect these areas within 12 hours. 49 C.F.R. § 194.101 (2011).
- 133 33 U.S.C. § 1321 (j)(5)(D) (2006).
- 134 *See* Executive Order No. 12777, 56 Fed. Reg. 54757 (Oct. 22, 1991). *See also* 40 C.F.R. § 300.210 (2006) (describing core attributes of area contingency plans) *and* 40 C.F.R. § 300.211 (2011) (division of facility response plans among agencies). The Coast Guard’s vessel requirements can be found at 33 C.F.R., Subpart D (2006).
- 135 Area contingency plans must be able to remove worst case discharges, describe covered areas (including economically or environmentally important areas), detail spill responsibilities for operators and responders, list available equipment, provide contact information for scientists with relevant expertise, and describe the integration into other area plans. *See* 33 U.S.C. § 1321(j)(4)(c) (2006).
- 136 *See, e.g.*, National Oil and Hazardous Substances Pollution Contingency Plan, 59 F.R. 47384-01 (Sept. 15, 1994) (codified at 40 C.F.R. pts. 9 and 300).
- 137 *See, e.g.*, REGION 5 REGIONAL RESPONSE TEAM, FEDERAL REGION 5 REGIONAL CONTINGENCY PLAN/AREA CONTINGENCY PLAN § 4 (2009), *available at* [http://www.rtt5.org/acp/body/Region5ACP-RCP\\_revMay2011.pdf](http://www.rtt5.org/acp/body/Region5ACP-RCP_revMay2011.pdf); ENVIRONMENTAL PROTECTION AGENCY, INLAND AREA CONTINGENCY PLAN FOR REGION I – NEW ENGLAND, (2006), *available at* <http://www.epa.gov/region1/er/iacp/pdfs/284809.pdf>.



- 138 Executive Order No. 12777, 56 Fed. Reg. 54757 (Oct. 22, 1991).
- 139 See Memorandum of Understanding Among the Secretary of the Interior, Secretary of Transportation, and Administrator of the Environmental Protection Agency. 40 C.F.R. § 112, Appendix B (2011).
- 140 49 C.F.R. § 194.5 (2011).
- 141 49 C.F.R. § 194.105 (2011).
- 142 49 C.F.R. § 194.107 (2011).
- 143 *Id.*
- 144 Pub. L. No. 112-90, § 6 (Public Education and Awareness; amending 49 U.S.C. § 60132 and adding 49 U.S.C. § 60138) (2012).
- 145 33 U.S.C. § 2718(a) (2006). See also 49 C.F.R. § 194.109 (2011) (allowing pipeline operators to submit state response plans to meet PHMSA's requirement).
- 146 *Public Comments*, DEPARTMENT OF ECOLOGY, STATE OF WASHINGTON, [http://www.ecy.wa.gov/programs/spills/about\\_us/publiccomment.html](http://www.ecy.wa.gov/programs/spills/about_us/publiccomment.html) (last visited Apr. 11, 2012).
- 147 PUGET SOUND PARTNERSHIP, [www.psp.wa.gov](http://www.psp.wa.gov) (last visited Apr. 11, 2012). Responsibility (and state funding) was transferred to the PSP from the Oil Spill Advisory Council in 2009. See *id.* at [http://www.psp.wa.gov/oilspills\\_legislative\\_update.php](http://www.psp.wa.gov/oilspills_legislative_update.php).
- 148 See OIL SPILL EARLY ACTION TASK FORCE & WASH. STATE DEPT. OF ECOLOGY, ECOLOGY PUBLICATION No. 05-08-001, AN EVALUATION OF REG'L CITIZEN ADVISORY COUNCILS (2005), available at <http://www.ecy.wa.gov/pubs/0508001.pdf>.
- 149 See *Regional Emergency Management Programs*, ENVIRONMENTAL PROTECTION AGENCY, (June 14, 2011), <http://www.epa.gov/osweroel/content/regional.htm>.
- 150 REGION 5 REGIONAL AREA CONTINGENCY PLAN, *supra* note 137, § 1.3.
- 151 *Id.* § 1.4.
- 152 MICH. ADMIN. CODE r. 324.2001(g) (2012) (exempting transportation-related facilities from the definition of "on-land facility"); MICH. ADMIN. CODE r. 324.2006 (2012) (requiring pollution incident prevention plans for on-land facilities).
- 153 REGION 5 REGIONAL AREA CONTINGENCY PLAN, *supra* note 137, § 4.
- 154 See *U.S. EPA Region 5 Inland Sensitivity Atlas*, GREAT LAKES COMMISSION, [http://www.glc.org/spills/acpdata\\_desc.pdf](http://www.glc.org/spills/acpdata_desc.pdf) (last accessed Apr. 11, 2012). The Great Lakes Commission prepares the atlas for Region 5.
- 155 See, e.g., UNITED STATES COAST GUARD, SECTOR LAKE MICHIGAN AREA CONTINGENCY PLAN § 4710 (2011), available at <https://homeport.uscg.mil/> (go to "Environmental"; then go to "Area Contingency Plans"; then select "Show All Results"; select "Sector Lake Michigan Area Contingency Plan"; select "SLM ACP Sections 1000 to 8000") (last visited Apr. 6, 2012).
- 156 See REGION 5 REGIONAL AREA CONTINGENCY PLAN, *supra* note 137, at Appendix X (emphasis in original).
- 157 SECTOR LAKE MICHIGAN AREA CONTINGENCY PLAN, *supra* note 155, § 1320. The Western Lake Erie section of District 9 has even more specific worst-case discharge estimates, based upon the specifications of the largest vessel and pipeline in the area. See WESTERN LAKE ERIE AREA COMMITTEE, WESTERN LAKE ERIE AREA CONTINGENCY PLAN – COASTAL/INLAND (Sept. 2005), <http://www.uscg.mil/d9/msuToledo/docs/AreaContingencyPlan.pdf>.
- 158 Enbridge's plan states that it supplemented its environmental assessment with environmentally sensitive areas identified through regional or field knowledge; however, the plan does not explain in any detail how these areas were identified. ENBRIDGE, EMERGENCY RESPONSE PLAN CHICAGO REGION 9 (July 2007) ("Identification of Environmentally Sensitive Areas"). This plan was obtained through a Freedom of Information Act request by the National Wildlife Federation and is on file with the authors.
- 159 49 C.F.R. §§ 195.50, 195.54 (2011).
- 160 49 C.F.R. § 195.50 (2011).
- 161 49 C.F.R. § 195.52 (2011).
- 162 Pub. L. No. 112-90 § 9(a)-(b)(1) (2012).
- 163 33 U.S.C. § 2718(a) (2006).
- 164 See NATIONAL ASSOCIATION OF PIPELINE SAFETY REPRESENTATIVES, *supra* note 31.
- 165 35 PA. CONS. STAT. § 6021.103 (2011); OHIO ADMIN. CODE 1501:9-10-02 (2011).
- 166 327 IND. ADMIN. CODE 2-6.1-6 (2011).
- 167 MINN. STAT. § 115.061 (2012).
- 168 See, e.g., *id.*; N.Y. NAV. LAW § 173 (2011); 327 IND. ADMIN. CODE 2-6.1-6 (2012); OHIO REV. CODE ANN. § 1509.22 (LexisNexis 2011).
- 169 ILL. ADMIN. CODE tit. 41, § 176.320 (2011).
- 170 See, e.g. N.Y. NAV. LAW §§ 175-76 (2011) (requiring notification within two hours, as well as immediate containment measures); ILL. ADMIN. CODE tit. 41, § 176.320 (2011) (immediate reporting required).
- 171 MINN. STAT. § 115.061 (2012); 327 IND. ADMIN. CODE 2-6.1-6 (2012).
- 172 49 U.S.C. § 60132(e) (2006).
- 173 49 U.S.C. § 60107(a) (2006) (mandating federal funding of up to 80% of state annual program expenses).
- 174 Pub. L. No. 112-90 § 5(a)(1) (2012).
- 175 49 U.S.C. § 60138 (2006).