RACING TO THE TOP: HOW REGULATION CAN BE USED TO CREATE INCENTIVES FOR INDUSTRY TO IMPROVE ENVIRONMENTAL QUALITY

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I. INTRODUCTION

One is hard pressed to find in environmental regulation, or in any other area of regulation for that matter, a concerted effort by a regulator to continuously calibrate a regulatory standard to the highest level of performance within industry, thus creating a "race to the top."[1] Even though rigorous competition among firms is a vital ingredient for encouraging innovation and overall excellence in markets and regulation alike, this type of best-in-market standard is missing from most regulatory programs. In fact, rather than reward innovation and accomplishment, our regulatory system tends to cater to the noisy complaints of the lowest common de-

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1. Technology based standards seem to hold the promise of accomplishing some of this race-to-the-top approach, but as discussed in Part III.B., *infra*, they have not lived up to their promise.

nominator firms, who often make their presence known at each step of the regulatory process.[2]

A recent experience in Austin, Texas offers a particularly telling indication of just how blind the regulatory system has become to distinguishing between superior and inferior actors and products. In 2004, the City of Austin discovered that coal-tar based asphalt sealant was killing the highly endangered Barton Springs Salamander.[3] The sealant was leaching off freshly sealed parking lots and entering downstream pools where these fragile animals live.

The surprise in the City's investigation was not just that this one product—asphalt sealant—was gradually destroying its river system but that other asphalt sealants were far safer by comparison.[4] More specifically, when the City investigated the sealant market, it learned there were other products that were much less toxic and yet they are just as effective, sold at the same price, and in some cases made by the same company.[5] The Environmental Protection Agency (EPA) declined to restrict sale of the toxic sealant in response to this discovery, so the City of Austin passed an ordinance to ban the use of the highly toxic variant of asphalt sealant.[6] Lowes and Home Depot followed the City's lead and no longer carry it on their shelves.[7]

The sealant story not only underscores the recurring problem of under-regulation, but it highlights the rather obvious way that regulation could be improved; rather than focus on the floor—the point at which a chemical is simply too hazardous to be tolerated—regulators could instead assess whether a product is relatively more toxic than its competitors. When a product lags significantly behind its competitors in terms of unjustified toxicity, some type of regulatory action—ranging from labels to outright banning—

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2. *See, e.g.*, THOMAS O. MCGARITY, FREEDOM TO HARM: THE LASTING LEGACY OF THE LAISSEZ FAIRE REVIVAL (2013) (establishing this feature of our administrative process in detail).

3. *See, e.g.*, David C. Richardson, *Parking Lot Sealants: On the Trail of Urban PAHs,* STORMWATER, May-June 2006, at 40, 42-44 (describing the City of Austin's investigations); Barbara J. Mahler, Peter C. Van Metre, Thomas J. Bashara, Jennifer T. Wilson & David A. Johns, *Parking Lot Sealcoat: An Unrecognized Source of Urban Polycyclic Aromatic Hydrocarbons,* 39 ENV'T. SCI. TECH. 5560 (2005).

4. *See, e.g.*, WATERSHED PROT. & DEV. REVIEW DEP'T, CITY OF AUSTIN, *The Coal Tar Facts: Coal Tar Sealant Fact Sheet* (2004), *available at* http://ci.austin.tx.us/watershed/downloads/coaltarfacts.pdf.

5. *Id.*

6. *See, e.g.*, Richardson, *supra* note 3, at 46; Letter from Brent Fewell, Acting Assisting Administrator, EPA, to Senator Jim Jeffords (Oct. 16, 2006) (on file with author).

7. *See, e.g., Coal Tar-based Pavement Sealers Implicated As a Source of Urban Water Pollution,* SCIENCEDAILY (Feb. 13, 2007), http://sciencedaily.com/releases/2007/02/070212101900.htm; Matthew DeFour, *Dane County Bans Sealants with Coal Tar,* MADISON.COM (Apr. 6, 2007), http://host.madison.com/news/local/dane-county-bans-sealants-with-coal-tar/article_9deaa275-9856-55c9-97fa-3bc758c187ef.html.

should follow. Certain asphalt sealants, along with a number of other products played out in the news, including corrosive hair permanents,[8] toxic drywall,[9] and cancerous air fresheners,[10] are considerably more toxic than their competitors and yet offer no offsetting advantages or benefits in efficacy or cost. In such a situation, regulators are fully justified in culling out the needlessly unsafe products that duplicate other, safer products.[11]

This essay argues that a race-to-the-top approach to regulation will not only improve some failing regulatory programs but could well be transformative. Such a seemingly modest adjustment in the regulatory endgame—focusing regulators on a "best-in-market"—could effectuate a fundamental shift in the regulatory standard-setting exercise. Instead of ensuring that actors are above the floor, the best becomes the focus and debate centers on why competitors cannot do as well or better than these exemplars. In doing so, the new standard creates a race to the top. In this race, firms benefit from investing in environmental innovation, perhaps for the first time. Front-movers recoup significant regulatory rewards by their foresighted investments, again, a stark contrast with the status quo. And rather than engaging in a collective that resists any form of regulatory intervention, the race-to-the-top approach fractures regulated industry and pits them against each other. In doing this, firms encounter first-time incentives to share with regulators unflattering information on other firms, boast of accomplishments that exceed the collective industry standards, and continue to invest in research for improvement beyond the promulgated standards.

Rather than attempt a systematic overhaul of environmental law in a short essay, this piece examines the race-to-the-top approach in one discrete area of environmental regulation in particular need of repair—the regulation of chemicals and other toxic products. This preliminary assessment of both the merits and practicalities of this approach for toxics control proceeds in five parts. The first section provides background and context on chemical regulation and its well-established regulatory failures. The sec-

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8. *See, e.g.*, Susonnah Gonzalez, *OSHA Warning Issued For Brazilian Keratin Treatment Hazard*, NATURALLYCURLY.COM (Apr. 29, 2011), http://naturallycurly.com/curlreading/ingredients/osha-warning-issued-for-brazilian-keratin-treatment-hazard (discussing controversy over Brazilian hair permanents).

9. *See, e.g.*, Greg Allen, *Toxic Chinese Drywall Creates A Housing Disaster*, NPR (Oct. 27, 2009, 12:01 AM), http://npr.org/templates/story/story.php?storyId=114182073.

10. *See, e.g.*, Michelle Schoffro Cook, *Exposed: Cancer-Causing Toxins Found in Air Fresheners*, CARE2 (Sept. 14, 2012, 4:11 PM), http://care2.com/greenliving/exposed-cancer-causing-toxins-found-in-air-fresheners.html.

11. This regulatory intervention is reinforced by the fact that the market for hazardous products functions poorly on its own given information asymmetries, high search costs, and many unknowns. *See infra* Part I.

ond section introduces the idea of altering regulatory standards to focus on the best in the market and considers the advantages to that approach. The third section places the idea against other, somewhat similar regulatory programs and from this synthesis identifies design features that appear integral to ensuring the success of a regulatory standard based on the best performers. The final two sections troubleshoot some of the remaining challenges associated with the proposal and attempt to chart a path forward in toxics regulation and beyond.

II. TOXICS REGULATION IN CONTEXT

Even by the most generous accounts, the regulation of chemical products in the United States is badly broken. One can count on one hand the number of chemicals banned by EPA over the last thirty-five years.[12] Equally regrettable, our regulatory programs do not require agencies to cull out these useless toxic products that are outcompeted by safer products.[13] This section explores this particularly inexplicable lapse in the regulatory oversight of chemicals in the United States.

A. Toxics 101

Chemical regulation in the United States is extraordinarily information and resource-intensive, and these demands have slowed agency progress considerably. Under the statutes governing chemical and toxic consumer products, in order to restrict a product, EPA must prove that the product presents an "unreasonable risk" to health and the environment.[14] This showing requires evidence that the aggregate costs of each product and chemical to society, such as cancer or environmental degradation, outweigh the benefits to society. If the Agency can make this showing, it can then justify restricting or even banning unreasonable products.[15]

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12. Noah M. Sachs, *Jumping the Pond: Transnational Law and the Future of Chemical Regulation*, 62 VAND L. REV. 1817, 1830 (2009).

13. *See infra* Part I.B.

14. See the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2604(f)(1), 2605(a) (2012), and for consumer products, the Federal Hazardous Substances Act, 15 U.S.C. § 1261 (2012) and the Consumer Product Safety Act (CPSA), 15 U.S.C. § 2082 (2013). For an excellent discussion of the current obstacles that afflict the ability of regulators to specify the quantity and quality of testing needed under TSCA, see John S. Applegate, *The Perils of Unreasonable Risk: Information, Regulatory Policy, and Toxic Substances Control*, 91 COLUM. L. REV. 261, 310-13 (1991).

15. *See, e.g.*, John S. Applegate, *The Government Role in Scientific Research: Who Should Bridge the Data Gap in Chemical Regulation?, in* RESCUING SCIENCE FROM POLITICS: REGULATION AND THE DISTORTION OF SCIENTIFIC RESEARCH 255, 257 (Wendy Wagner

Needless to say, the actual showing that a chemical presents an unreasonable risk—namely, that the costs outweigh the benefits—is not a simple exercise. In the case of asbestos, EPA dedicated over ten years to data collection and analysis.[16] EPA's proposed partial ban of asbestos, which was published in the 1980s, long after the hazards of asbestos had been established, was then subjected to twenty-two days of public hearings and sparked 13,000 pages of comments from over 250 parties. The administrative record spanned over 45,000 pages.[17] Yet in the view of the Fifth Circuit panel, EPA's record was still incomplete in showing the Agency had selected the "least burdensome" approach to certain asbestos products, nor had the Agency adequately demonstrated the cumulative health costs that result from asbestos. These gaps in EPA's rule were so significant that the Fifth Circuit vacated the rule and remanded it to the Agency.[18] Congress ultimately intervened and accomplished much of what EPA endeavored to do through amendments to Toxic Substances Control Act (TSCA) that addressed asbestos specifically.[19] EPA never repaired the rule itself.[20]

Even in less elaborate cases, the Agency's analytical work is non-trivial.[21] The assessment and ultimate quantification of the potential costs of a chemical to society, integral to the unreasonable risk standard, necessarily involve quantitative assessments of the product's basic toxicity to humans (of all ages) and the environment through all the life stages of the product.[22] The Agency must also evaluate the exposure scenarios to assess the extent to which humans, animals, plants, and other resources will come in contact with the chemical. Much information—even for the crudest regulatory assessments—will be necessary for this analysis. Final-

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& Rena Steinzor eds. 2006) (discussing how TSCA places the burden on EPA to justify regulatory intervention).

16. *See, e.g.*, JOHN S. APPLEGATE ET AL., THE REGULATION OF TOXIC SUBSTANCES AND HAZARDOUS WASTES 291 (Robert C. Clark et al. eds., 2d ed. 2011) (summarizing the history of the asbestos rule).

17. *Id.*

18. Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1214 (5th Cir. 1991) (invalidating EPA's ban of asbestos under TSCA because (citing *Benzene*) the Agency has the burden of proving banned products place an unreasonable risk to the public and EPA did not do a thorough enough assessment (with evidence)).

19. *See* Asbestos Hazard Emergency Response, 15 U.S.C. §§ 2641-2656 (2012).

20. *See, e.g.*, Thomas O. McGarity, *The Courts, and the Ossification of Rulemaking: A Response to Professor Seidenfeld*, 75 TEX. L. REV. 525, 548 (1997) (noting that EPA abandoned the project).

21. For an excellent overview of the steps to the assessment of whether a chemical presents an unreasonable risk—still in force today—see Applegate, *supra* note 14, at 284-89.

22. For more detail on this step, see JOHN R. FOWLE III, ENVTL. PROT. AGENCY, EPA 100-B-00-002, RISK CHARACTERIZATION HANDBOOK (2000), *available at* http://epa.gov/spc/pdfs/rchandbk.pdf.

ly, the benefits of the product must be quantified, usually by assuming that the purported uses are important and by identifying the extent that the product is or could be used in the future. While the evaluation of benefits is much more determinable, it still entails considerable data-dredging and speculation.

The assessment of risks, exposures, and benefits—followed always by the monetization of these features so that the units can be cross-compared—must then be accompanied by a regulatory plan of action proved by the Agency to be the least disruptive to the status quo.[23] Chemicals that may appear to come close to having costs that exceed benefits are not necessarily candidates for banning. Restrictions on their use might be developed to mitigate the worst harms while preserving the benefits. Simple labeling changes or use instructions, for example, might take care of the worst of the problems. In all cases, the Agency is expected to develop reasonable scenarios and identify the best way to make the most of the product without subjecting it to the "death penalty."[24]

Two further problems arise from this basic regulatory design that add still more impediments to the Agency's ability to make progress. First, as mentioned, the Agency must have information about a chemical to undertake its analysis, but information is not always cheap and sometimes it may not even exist without concerted testing. For their part, manufacturers will generally not invest voluntarily on testing for latent harms; this type of testing is rarely decisive, and the uncertainties typically raise doubts about safety that only hurt and do not help sell the product.[25] Moreover, since latent harms are difficult to prove in tort cases, tort liability provides additional incentives to choose ignorance than to invest in robust and complete tests.[26]

Despite the market failure that can arise in creating toxicity information, the Agency's authority to require testing is limited. Under the TSCA, EPA must first make a regulatory finding that

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23. *See* 15 U.S.C. § 2605(a) (2012) (specifying that EPA's action must be the "least burdensome" action).

24. *See, e.g.*, Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1214 (5th Cir. 1991).

25. Mary L. Lyndon, *Information Economics and Chemical Toxicity: Designing Laws to Produce and Use Data*, 87 MICH. L. REV. 1795, 1813-17 (1989).

26. *See* Margaret A. Berger, *Eliminating General Causation: Notes Towards a New Theory of Justice and Toxic Torts*, 97 COLUM. L. REV. 2117, 2135-40 (1997) (arguing that the current common law causation standard provides perverse incentives for defendants to remain ignorant); Heidi Li Feldman, *Science and Uncertainty in Mass Exposure Litigation*, 74 TEX. L. REV. 1, 41 (1995) (arguing that under-deterrence will occur under current toxic tort liability rules because "placing the burden of proof on the plaintiff creates a perverse incentive for actors to foster strong uncertainty about general causation"); Wendy E. Wagner, *Choosing Ignorance in the Manufacture of Toxic Products*, 82 CORNELL L. REV. 773, 796 (1997) ("The common-law requirement that plaintiffs assume the entire burden of proving causation in toxic tort cases . . . creates inappropriate incentives for long-term safety research . . . .").

the chemical "may present an unreasonable risk of injury to health or the environment" as a prerequisite to requiring more testing,[27] which requires a "more-than-theoretical" possibility of an unreasonable risk.[28] Ironically, where there is effectively no toxicity information at all on a reactive chemical, the Agency may not be able to support its demand for testing since it lacks concrete evidence that the chemical is risky. This testing standard thus creates a Catch-22 for the Agency with respect to requiring testing on untested chemicals.[29] As a result, the gaps in toxicity data for most chemicals in commerce are still substantial.[30]

Second, the Agency's decisions can be challenged in court.[31] While in theory these challenges can be brought by both public interest groups and manufacturers, in practice the oversight of EPA's regulation of chemicals is dominated by the chemical industry.[32] This is not surprising since chemical manufacturers have immediate and high stakes in the outcome of product oversight and typically have more resources to engage in the battles in rela-

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27. *See* TCSA, 15 U.S.C. § 2604(e) (2012).

28. Chem. Mfrs. Ass'n v. EPA, 859 F.2d 977, 984 (D.C. Cir. 1988).

29. This prerequisite has deterred EPA from requiring testing. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-05-458. CHEMICAL REGULATION: OPTIONS EXIST TO IMPROVE EPA'S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM 18, 26 (2005) [hereinafter GAO, OPTIONS], *available at* http://gao.gov/new.items/d05458.pdf; Applegate, *supra* note 14, at 315-17 (discussing the test rule in more detail). In fact, EPA now negotiates testing largely outside the jurisdiction of TSCA. *See, e.g.*, Sarah Bayko, Note, *Reforming the Toxic Substances Control Act to Protect America's Most Precious Resource*, 14 SOUTHEASTERN ENVTL. L.J. 245, 255, 267-69 (2006).

30. The last assessment of the extent of toxicity testing on chemicals in commerce is somewhat dated, but the conclusion is that there is only limited toxicity data available on about two-thirds of all chemicals in commerce; the remaining chemicals are supported by almost no data. *See, e.g.*, ENVTL. HEALTH. PROGRAM, ENVTL. DEF. FUND, TOXIC IGNORANCE (1997) *available at* http://edf.org/sites/default/files/243_toxicignorance_0.pdf; *Testing: CMA more optimistic than EDF and lack of data for 100 chemicals*, 230 Daily Env't Rep. (BNA), at A-4, (Dec. 1, 1997); OFFICE OF POLLUTION PREVENTION & TOXICS, ENVTL. PROT. AGENCY, WHAT DO WE REALLY KNOW ABOUT THE SAFETY OF HIGH PRODUCTION VOLUME CHEMICALS? 261 (1998), *available at* http://epa.gov/hpv/pubs/general/hazchem.pdf. Since the late 1990s, high production volume chemical manufacturers did agree to produce some data voluntarily, but this initiative only applies to some high production volume chemicals, and even with respect to these chemicals as of 2007 (eleven years into the program), expert observers observed that it was still "well away from delivering on the promises it made." RICHARD A. DENISON, ENVTL. DEF. FUND, HIGH HOPES, LOW MARKS: A FINAL REPORT CARD ON THE HIGH PRODUCTION VOLUME CHEMICAL CHALLENGE 3 (July 2007), *available at* http://edf.org/documents/6653_HighHopesLowMarks.pdf.

31. *See, e.g.*, 15 U.S.C. § 2618; CPSA, 15 U.S.C. § 2060(a) (2012) (providing for judicial review of Agency decisions).

32. *See* Preliminary Participation of Industry and Public Interest Groups in Data Pie Charts for EPA TSCA Test Rule, NSF study, PI-Wagner (Nov. 14, 2013) (on file with author); *See generally* Jason Webb Yackee & Susan Webb Yackee, *A Bias Towards Business? Assessing Interest Group Influence on the U.S. Bureaucracy*, 68 J. POL. 128, 128 (2006) (identifying a "bias towards business"); Wendy Wagner et al., *Rulemaking in the Shade: An Empirical Study of EPA's Air Toxic Emission Standards*, 63 ADMIN. L. REV. 99, 125 (2011).

tion to public interest counterparts.[33] The result, however, is that the Agency receives lopsided feedback in favor of weaker standards and the dominant constituency that holds EPA's feet to the fire is this same collective of regulated parties.

B. The Lowest Common Denominator Problem

With regulatory action conditioned on an initial, detailed cost-benefit analysis of an individual chemical, the availability of safer products—used for the same purpose—becomes largely peripheral to the regulatory investigation. Under the current program, the existence of clearly safer substitutes may not even be part of the analysis unless the Agency decides that the chemical must be banned.[34]

The resulting irrelevance of the best products in the market in assessing the worst leads to a textbook adverse selection or "market for lemons" problems.[35] If innovating in green chemistry or even running in-house toxicity tests to identify safer recipes is not relevant in evaluating whether a chemical makes it over the regulatory bar, then, as a regulatory matter, this type of testing is not cost-justified.

While safer products could be a market virtue, without the Agency's validation of tests, there is no practical way for investors or consumers to assess the self-serving claims and supporting data.[36] Nonprofits attempt to provide mechanisms for distinguishing between competitors on important features like toxicity, but these metrics are crude and entail added search costs for consumers.[37] But even if manufacturer claims were validated and established by agencies to be rigorous, consumers and even savvy investors may

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33. *See, e.g.*, William T. Gormley, Jr., *Regulatory Issue Networks in a Federal System*, 18 POLITY 595, 607-08 (1986) (describing how this high stakes, high resources feature, when pitted against the general public interest, places the issue in the "boardroom" where the engagement in Agency decision-making is lopsided against the public interest).

34. One author has even suggested that the consideration of substitutes may be outside the Agency's statutory authority, although this conclusion seems to take the legal analysis too far. *See* Richard A. Denison, *Comment on Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ENVTL L. REP. 10799, 10800-01 (2009).

35. *See, e.g.*, George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 QUART. J. ECON. 488 (1970); *see also* Lyndon, *supra* note 25, at 1814-15 (making this same observation about the chemical market).

36. *See, e.g.*, Lyndon, *supra* note 25, at 1816 (discussing how information on chemical safety produced voluntarily by manufacturers might be discounted because of its commercial context). *See also id*. at 1813-14 ("Comprehensive and accessible toxicity rating systems would support affirmative advertising, but without a developed information context, there is no incentive to study a chemical: the long-term health effects remain invisible for one's own products and for those of one's competitors.").

37. *See infra* note 76.

often lack the expertise and resources to process this information.[38] Mere disclosures are thus likely to be insufficient to produce a functioning market.[39]

In view of the market and regulatory failure to distinguish between toxic and less toxic competitors, there is no point to being above average in the chemical market. Excellence is not rewarded; instead, it is the noisy bottom of the class that sets the regulatory standards.

III. A BETTER WAY

Rather than focusing on the worst, regulators should seek out the best performers in the market—for products that perform comparable services—and hold all other chemical products to it. This comparison should include nonchemical alternatives.[40] Such an altered focus could transform chemical regulation in a variety of ways: it could create powerful incentives for innovation, raise product standards, and break up the powerful industry coalition that has monopolized the political process. Even if basing standards on the best in the market does not have all of these salutary effects or becomes somewhat compromised, it should only move products regulation forward and seems unlikely to be capable of making the status quo worse for health and environmental protection.

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38. Search costs include costs associated with accessing and processing information. Information processing costs can arise from information that requires specialized training or extensive background expertise, information that is voluminous, information that is dense and complex, and information that is poorly organized and not explained in clear ways. The importance of these different types of information costs to rational behavior is still being worked out, but their basic features—of raising the costs for audiences to understand a message—seems well accepted. For some of the ongoing work that attempts to better understand how these species of information costs affect behavior, see, for example, Haruo Horaguchi, *The Role of Information Processing Cost as the Foundation of Bounded Rationality in Game Theory*, 51 ECON. LETTERS 287 (1996); Stephen Morris & Hyun Song Shin, *Optimal Communication*, 5 J. EUR. ECON. ASS'N 594 (2007).

39. *See, e.g.*, HERBERT A. SIMON, ADMINISTRATIVE BEHAVIOR: A STUDY OF DECISION-MAKING PROCESSES IN ADMINISTRATIVE ORGANIZATIONS 242 (4th ed. 1997) (criticizing organizations' information systems as generally not being designed to "conserve the critical scarce resource—the attention of managers").

40. *See, e.g.*, Mary Jane Angelo, *Embracing Uncertainty, Complexity, and Change: An Eco-pragmatic Reinvention of a First-Generation Environmental Law,* 33 ECOLOGY L.Q. 105, 183 (finding that benefits for a pesticide are assumed by EPA in its cost-benefit analysis because "at the time of registration, EPA does not determine whether more efficacious alternatives, including non-chemical alternatives, exist.").

A. Specifics

Rather than rely on an abstract cost-benefit analysis, the reformed test for product safety looks to the market and engages in a rigorous substitute analysis. Ideally, the regulator would construct this alternative, best-in-market approach by breaking down all chemical or toxic products into functional use categories and subcategories (e.g., sets of industrial solvents, cleaning fluids, etc.) and then the regulator would—with the help of information from manufacturers and public stakeholders—identify the "mean" or "better" among the chemical products to meet these functional uses.[41] (At least a few products would need to be selected for this best-in-market benchmark to avoid creating a monopoly in a sector of the market.) During this exercise, the green manufacturers and front-movers in product safety would presumably emerge to showcase the significant gains in product chemistry that allow for much safer products relative to laggards.[42]

Both EPA and the states have been experimenting with conducting methods for alternatives assessments, and thus the procedures for conducting these comparisons are already becoming well worked out.[43]

After the regulator identifies the appropriate best-in-market benchmark,[44] it would be up to the individual manufacturers to show their product(s) exceed this floor or standard.[45] The burden of

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41. The categorization of chemicals by functional uses is by no means automatic, but methodological advances are being made on that score as well. *See, e.g.*, *Functional-Class Criteria*, EPA, *available at* http://epa.gov/dfe/pubs/projects/gfcp/index.htm#Functional (last updated Sept. 26, 2013) (breaking the chemical universe into various end uses which can then be compared against one another in identifying safer substitutes for use classes).

42. If there are grounds for concern regarding information available to the Agency, the best-in-market approach may present an opposite risk that the Agency will have too much, rather than too little, information. Manufacturers could conceivably inundate the Agency with evidence supporting the benefits of their pet projects. Much like the use of contractors to handle thousands of comments, presumably the Agency can delegate some of the initial assessment of these filings, if they occur in high number (which might not happen), to contractors and other early gatekeepers who approach the information with a very coarse filter.

43. In 2010, EPA issued a draft guideline for conducting alternatives assessments in general. OFFICE OF POLLUTION PREVENTION & TOXICS, ENVTL. PROT. AGENCY, DESIGN FOR THE ENVIRONMENTAL PROGRAM ALTERNATIVES ASSESSMENT CRITERIA FOR HAZARD EVALUATION, OFFICE OF POLLUTION PREVENTION & TOXICS (2010), *available at* http://epa.gov/dfe/alternatives_assessment_criteria_hazard_eval_nov2010_final_draft2.pdf. The Toxic Use Reduction Institute, a think tank based at the University of Massachusetts-Lowell, has developed an even more elaborate set of methods and alternatives assessment techniques. *See, e.g.*, *Chemical Hazard Comparison Tools,* TURI, http://turi.org/Our_Work/Research/Alternatives_Assessment/Chemical_Hazard_Comparison_Tools (last updated Nov. 17, 2011).

44. This showing would presumably be subject to some general comment, although it may not require full notice and comment.

45. This approach parallels the emphasis in alternatives assessment advocated by Joel Tickner. *See, e.g.*, Joel A. Tickner, *Science of Problems, Science of Solutions or Both? A*

proof for establishing safety of individual products or classes of products relative to the best-in-market standard, once established, would rest with the individual manufacturers.

To expedite the analysis, various default presumptions could apply that identify whether the product meets the standard.[46] For example, if a product offers no benefits beyond its competitors and yet is more toxic—perhaps by two times or more—in ways that do not involve trade-offs, then the inferior chemical might be automatically slated for banning or gradual phase-out.[47] Since this type of approach has never been applied to toxic products or chemicals before, there may be quite a few chemicals that flunk this relatively straightforward default rule. Other trade-offs, say between acute and chronic harms or energy-saving versus toxicity, might involve more complicated assessments. Ultimately, these complex trade-offs might lead to the opposite default presumption that when two products cannot be compared against one another due to many incommensurables, both are presumed market-worthy. Using defaults that presumptively, but not conclusively, compare chemicals, the Agency should be able to make considerable progress in culling out useless toxic chemicals and products from the marketplace.

This comparative exercise requires vastly less information than is currently demanded to regulate a chemical or even require testing under TSCA because the primary areas of inquiry are *relative* toxicity, cost, and effectiveness.[48] Routes of exposure can be assumed to be similar across similar variations of the same product. The benefits can also be assumed to be the same for products or chemicals within the same use category. Even some features of toxicity can be bracketed if they are shared in common with some chemicals. The primary point of inquiry is the relative question of whether one product is more carcinogenic or more reactive than another.

Since product innovation in the open market may not go far enough, a protective backstop could be added to authorize the

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Case Example of Bisphenol A, 65 J. EPIDEMIOLOGY & COMMUNITY HEALTH 649 (2011), *available at* http://jech.bmj.com/content/65/8/649.full.pdf+html.

46. Some of the areas for guidance would be in comparing efficacy vs. health, price vs. health, and acute vs. chronic toxicity.

47. Some firms may need time to adjust if key chemicals in their processes are banned. Greenwood raises this concern about a best-in-market approach. *See* Mark Greenwood, *Comment on Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ENVTL. L. REP. 10796, 10797 (2009). A gradual phase out should take care of these concerns.

48. *See* Tickner, *supra* note 45 (arguing for alternatives assessments rather than detailed singular characterizations of the risk of a substance); *see also* NAT'L RESEARCH COUNCIL, SCIENCE AND DECISIONS 246 (2008) (the NRC's framework for risk analysis attempts to minimize the effects of uncertainties by comparing an intervention (e.g., a suspect chemical) against the status quo).

Agency to intervene in marketing a product if information indicates that, even without superior substitutes, the costs of a product outweigh the benefits. The proposal here is not intended to be a complete replacement for the Agency's discretion to intervene in dangerous products; rather, the proposal is that in the first instance the Agency need apply only a best-in-market standard to determine whether a toxic product can enter or remain on the market. If the product passes the best-in-market test, it still may be restricted based on larger concerns about its net social value in light of its costs.

Even with simple default presumptions, there may be a great deal of analysis and information-collection required to make various judgments about chemicals and products. To address these demands, Agency processes, particularly in processing the rebuttal information, could be subsidized in a variety of ways, such as mini-adjudications funded by licensing fees.[49] Manufacturers could even petition to eliminate competitors by establishing the superior safety attributes of their own products in an effort to emerge as among the best in the market for regulatory purposes.[50]

Ideally, the selection of "best" or "mean" products against which competitors are held would be revisited every few years or at least could be revised in a dynamic fashion. A standing expert committee could dedicate itself full-time to keep up with green chemistry and related developments in the field and alter product standards accordingly. Additionally, a manufacturer with a new innovative product could petition the Agency to revisit the best-in-market product benchmark for a given functional use of chemicals/products. While all manufacturers could be allowed a several-year grace period to come into compliance with a new product benchmark, or at least to affix a label to their product that signals that the product falls below the mean standard (or other intermediate regulatory-backed signals), regulatory standards would reflect, at least, the developments and innovations in the market and expect the same dynamism from regulatory standards. Indeed, since the target is the regulation of products, there is no reason to permit manufacturers more latitude than the market itself permits.

The proposal here is admittedly ambitious, particularly given the potentially enormous size of the chemical market (there are over 80,000 chemicals in commerce alone, although some estimate that only about ten percent of these chemicals are in use at signifi-

49. These specifics can be worked out but currently are considered beyond the scope of this article.

50. *See infra* Part IV.

cant levels).[51] Some triaging of the chemical universe will likely be necessary, at least at the beginning. The prioritization approach advocated by a number of authors would identify "chemicals of concern" or "extremely hazardous chemicals" and investigate these chemicals' potentially less toxic substitutes for various uses.[52] An alternate prioritization system could focus instead on identifying chemicals that compete with numerous other products for the same use. In such saturated markets, there may be particularly useful opportunities for culling out unnecessarily toxic products. Manufacturers might also be invited to nominate competitor chemicals (or products) that involve potentially high risks, which, at least based on the readily available information, do not appear to be justified by their benefits.

B. Benefits

A shifted regulatory focus on the best in the market makes several positive moves. To the extent that the regulatory process looks to the best performers for standards, at least some regulated parties will become involved in building regulatory solutions, rather than lobbying for reduced regulatory oversight. Innovators who expect their products to fare well may even share in-house expertise with the Agency in developing assessment processes that are rigorous and allow for smooth comparisons.

Relatedly, as the regulatory process treats regulated parties differently—as winners and losers—the now solidified collective of regulated parties will become more fragmented and could even fracture completely. Rather than finding common ground in arguing for a low floor, manufacturers seem more likely to be pitted against one another in a race to the top. By focusing on the best products, then, the regulatory endgame infuses market competition back into the manufacture of products and the political process.[53] The benefits to collective action are greatly reduced in a regulatory system that provides for winners and losers among manufacturers, with the winners setting the standards for the rest. The incentives within the regulated community will thus be

51. *See, e.g.*, Greenwood, *supra* note 47, at 10796.

52. *See, e.g.*, Richard A. Denison, *Ten Essential Elements in TSCA Reform*, 39 ENVTL. L. REP. 10020, 10021-22 (2009) (arguing for the identification and prioritization of chemicals of concern in chemicals regulation).

53. Political positions are often the result of powerful collective action among regulated parties. *See, e.g.*, Gormley, *supra* note 33. The best-in-market approach breaks apart this strong collective action and pits manufacturers against one another.

turned from rent-seeking in the political process to a self-interested drive to be selected among the best in the market.[54]

By culling out the worst in the market, this regulatory oversight also improves the functioning of the market. Consumers and investors may not have the expertise or resources to make fine comparisons in the toxicity of different products, even if they had this information in accessible formats. Yet by doing this work for them—eliminating the surplus of inferior products that offer no price or efficacy advantages—the bad products are culled out and the market functions more efficiently. And by holding products to the best standards, the adverse selection problems of the market are reversed and transformed into quite the opposite—a race to the top among competitors. In response to this incentive, other companies are more likely to innovate just to keep up, as well as invest to win the regulatory competition and enjoy the privilege of being the best, against which all other products are compared.[55]

With more assistance from regulated parties in dredging up relevant information to make relative assessments of products, coupled with far lower analytical demands because of this much more limited comparison (as opposed to a full-fledged cost-benefit assessment), standards will not only be more rigorous but likely be considerably easier to set as compared to the predecessor approach under TSCA.[56] For example, once a functional category of products is identified based on a type of general use, the only relevant issue is whether a product falls below a set of identified superior products in terms of efficacy, cost, and toxicity; the entire benefits side of the equation, as well as exposure information, can be bracketed since the products in a functional use will likely share similar characteristics on these variables. The analysis is thus made immensely simpler, since it focuses much more narrowly on toxicity and, to a lesser extent, the price and efficacy of the product. Since this simpler analysis has not yet been undertaken, it seems likely that some products will flunk quickly and even be withdrawn by

54. *Cf.* Neil Komesar, *Stranger in a Strange Land: An Outsider's View of Antitrust and the Courts*, 41 LOY. U. CHI. L.J. 443 (2010) (making some of these same arguments in the context of anti-trust regulation).

55. Although Akerlof does not explicitly identify clear rewards for first-movers as a solution to the lemons problem, surely turning the asymmetrical information into a competition against the top entrants does exactly that type of flipping of a market for lemons into a market that encourages top innovation and gains. *See* Akerlof, *supra* note 35. Markets also incorporate vastly more expertise and information than regulatory processes can hope to replicate, and they integrate this information much more swiftly, seamlessly, and without the large transaction costs that afflict the regulatory process. Markets work continuously, so the need for updating, which can be a significant cost endemic in regulatory analyses, is eliminated to the extent the regulatory standards can be calibrated adaptively to changes in the availability of safer products.

56. *See* Tickner, *supra* note 45.

manufacturers voluntarily once a benchmark is established, like asphalt sealant.[57]

The validity and availability of information available to regulators to assess chemicals should also be improved if manufacturers must prove that their chemical does not fall below the best-in-market standard. Since they will be put into competition with one another, the veracity of the information will be subjected to scrutiny by rival manufacturers. Under the current system, by contrast, manufacturer-produced data is submitted to the Agency, but the Agency often lacks the resources to investigate its reliability, much less to replicate it, and there are few to no incentives for competitors to provide added oversight.

Beyond the numerous domestic advantages, a shift to the best-in-market determination of safety might also become useful as a global standard that not only draws its information from the best in the global market but produces an output—a regulatory standard—that is easily exported and communicated across national borders. From the standpoint of regulatory harmonization, a market benchmark for product safety provides something akin to the Rosetta Stone; standards based on market analogs raise fewer concerns about objectivity, political representation, and the like as compared to national standards that are based on varying levels of precaution. If the test is simply what is a "reasonable alternative design" or even the "best reasonable alternative design" on the market, then this type of simple market-benchmark translates to a variety of political structures regardless of the precise approaches that the decision-maker takes to decision-making. A best-in-market standard is also dynamic and calibrated to changes in the market that should ideally lead to smoother harmonization across borders over time.

Setting product standards against the best in the global market would also seem, in the abstract, to satisfy concerns about unfair trade barriers.[58] A nation that demands only the safest products in

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57. For example, San Francisco determined that phthalates are a non-essential ingredient in children's toys, and yet they present health hazards. The City banned the use of phthalates in children's toys, which in turn triggered similar actions at the federal level. *See*, *e.g.*, Debbie O. Raphael & Chris A. Geiger, *Precautionary Policies in Local Government: Green Chemistry and Safer Alternatives*, 21 NEW SOLUTIONS 345, 354 (2011) (describing this and other similar developments).

58. Although the implications of the best-in-market standard for fair trade deserves further research, at least facially it would seem to survive one of the most rigorous trade agreements. *See The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)*, WORLD TRADE ORG., http://wto.org/english/tratop_e/sps_e/spsagr_e.htm (last visited Feb. 9, 2014). The SPS Agreement expects that restraints on trade be supported by risk assessments and other legitimate analyses. *See, e.g.*, *id.* at art. 2(2) ("Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific

the global market across a number of functional product categories would not seem protectionist, particularly when those standards are justified in part by the substantial scientific uncertainties that preclude more precise human and environmental testing and analysis. In contrast to an abstracted regulatory judgment based on national preferences, a basic "demand safer alternatives in the global market when the risks are unspecified" regulatory standard considers all products in the global marketplace and not simply those sold by its own manufacturers.

At the same time, a global best-in-market determination for product safety should accelerate the race-to-the-top features of this regulatory standard. Manufacturers in a global market may find themselves in competition for possibly the first time, innovating better ways to design products regarding human health and environment in order to be considered an exemplar. Much like the technological revolution, this regulatory-triggered revolution would turn the market for lemons into precisely the opposite regarding product innovation. By focusing on global innovation and rewarding the best, the standards will be set to encourage research, development, and safety by singling out market "winners."

In benchmarking regulatory standards against this global market, there may even be potentially significant gains from the economies of scale in sharing information between governments. Some countries might want to benchmark their product regulatory standard on the "average" best product in the market; others might prefer a higher standard based on the three safest products in a functional class. Yet whatever the determination, methods for identifying and assessing the relative safety of functionally equivalent products should become fungible and easy to translate across borders since they compare global products against one another based on seemingly translatable features of toxicity and cost.

IV. EXISTING HYBRID APPROACHES THAT PARALLEL A BEST-IN-MARKET APPROACH TO TOXICS PRODUCT REGULATION

Although basing regulatory standards on best performers may seem a relatively dramatic change from the status quo, this hybrid approach resonates with existing approaches found in tort law and pollution control standards in the United States and chemical reg-

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principles and is not maintained without sufficient scientific evidence . . . ."). An alternatives assessment that identifies a chemical as both risky and presenting no additional benefit, particularly as against a global marketplace of analogous products, would seem to meet this test.

ulation in the European Union. These complementary, existing approaches are considered in this section. The investigation explores both their similarities to the proposal for toxic product regulation and also how implementing these various programs could be improved, particularly if adapted to toxic product regulation in the future.

A. "Reasonable Alternative Design" in Products Liability Law

In United States tort law, negligence is generally determined—implicitly or explicitly—by comparing a defendant's behavior or product against alternative courses of action.[59] Whether a defendant is negligent or unreasonable depends on whether the costs of his activity, as compared against alternative precautions, outweigh the benefits. Negligence is thus relational; it involves a comparison of what a defendant did against what he could have done.

Over time, the largest area of products liability law—governing design defects—has evolved to develop a similar, relative standard for product safety in tort law: namely, whether a product's costs outweigh its benefits when compared against a "reasonable alternative design."[60] This reasonable alternative design (RAD) serves as a comparison point that anchors an assessment of a product's safety against the market alternatives.[61] The RAD standard is dynamic: improvements in product design lead to a constant, upward pressure for innovation by manufacturers. Since the RAD test is applied to individual tort claims on a case-by-case basis, it should be more insulated from politics and collective self-interested action by product manufacturers as compared to the political process.[62]

To stave off liability, product manufacturers must keep up with competitors to produce products at least average in safety. If some cars are designed to prevent mis-shifting when a gear is not engaged[63] or from allowing power windows to close even if objects

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59. *See, e.g.*, Mark F. Grady, *Untaken Precautions*, 18 J. LEGAL STUD. 139, 144 (1989) ("by selecting an untaken precaution on which to rely, the plaintiff defines the analysis that everyone else will use [in a negligence case] . . . .").

60. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2(b) (1998).

61. Plaintiffs may also be required to create prototypes of the preferred alternative, at least in some states. *See, e.g.*, Unrein v. Timesavers, Inc., 394 F.3d 1008, 1012 (8th Cir. 2005) (requiring plaintiff to develop a prototype of the preferred alternative); Jaurequi v. Carter Mfg. Co., 173 F.3d 1076, 1084 (8th Cir. 1999).

62. This is not always the case. *See, e.g.*, Alan Schwarz, *As Injuries Rise, Scant Oversight of Helmet Safety*, N.Y. TIMES, Oct. 20, 2010, at A1 (documenting the low standards set by an association for football helmets, which are overseen by an association made up of helmet manufacturers and physicians; the standards have been influential in some tort litigation against manufacturers).

63. *See*, *e.g.*, Gen. Motors Corp. v. Sanchez, 997 S.W.2d 584 (Tex. 1999).

(such as children's heads) are in the way,[64] then plaintiffs injured by cars without these safety features can argue that a RAD would have prevented the accident at little to no additional cost. While in theory the assessment involves quantifications of risks and benefits, in reality the analysis generally considers only whether this "reasonable alternative design" is available and affordable. If it is, then the defendant is at risk of liability for choosing a less safe design.

In theory, a RAD standard would ensure reasonable product safety for all products, including toxic products. Products that are unreasonably toxic as compared to equally efficacious competitors would trigger liability, and manufacturers would reconsider their decision to market unreasonably unsafe products. In practice, however, the "actual cause" requirement necessary for a successful case involving latent injuries absolves most manufacturers from liability for the manufacture of unreasonably unsafe toxic products.[65] Products that are highly carcinogenic, teratogenic, or otherwise reactive will generally remain unaffected by tort law because there is not likely to be adequate information to connect a plaintiff's generic injuries to his exposure to the product decades earlier. While tort law provides a RAD standard that should encourage safer toxic products (since tort law requires injured victims to prove causation), the retrospective, information-intensive nature of the proof leaves tort law ineffective in reaching most toxic products that cause latent harm.[66]

The test advocated here to regulate toxic products is the equivalent of the RAD test, but it would be applied by regulators and not be barred by uncertainties involved in tracing cause and effect. Additionally and in contrast to tort law, rather than a plaintiff, the Agency would be in search of a prototype or better reasonable alternative product. And, rather than a jury, regulators will determine whether the case has been made against an unreasonably unsafe product.

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64. *See Power Windows,* KIDSANDCARS.ORG, http://kidsandcars.org/power-windows.html (last visited Feb. 9, 2014).

65. *See, e.g.*, Berger, *supra* note 26.

66. This problem—a Catch-22 of sorts—has led to its own series of puzzles and possible fixes within the four corners of tort law itself. Leading among them is a suggestion that rather than physical injuries that are causally linked to a toxic product, at least for non-therapeutic drugs (or presumably by extension highly toxic chemicals with high exposure), the plaintiff need only show dignitary harm from the lack of notice or informed consent. By approaching the claim as effectively a battery (without the intent), tort law can offer some deterrence value for some of these problems that otherwise fall through the cracks. *See* Margaret A. Berger & Aaron B. Twersky, *Uncertainty and Informed Choice: Unmasking Daubert*, 104 MICH. L. REV. 257 (2005).

B. Pollution Control Standards in the United States

"Best available pollution control technology" standards, which are required by Congress in the Clean Air and Clean Water Acts and, to a lesser extent, in a few other statutory programs, offer another analogy to the proposed best-in-market standards for toxic product regulation.[67] Under these statutes, the Agency is directed to find the best pollution control technology, or sometimes the ninety-five percent best technology, and to promulgate industry-wide pollution control standards based on the capabilities of these best technologies. There are several overlapping justifications for this best-in-market approach to pollution regulation. First, basing pollution control on the technologies that have been installed at some facilities ensures that the pollution control requirements are feasible. Second, the best-in-market standard dodges information-intensive inquiries into what levels of pollution might be appropriate in different localities. Third, as a moral imperative, this best-in-market standard demands that industry "do their best," but does not require regulators to invest scarce resources into determining, with added precision, whether "doing one's best" is enough regarding public health and welfare.

Despite the seemingly clear best-in-market benchmark for identifying appropriate levels of pollution, the Agency's promulgation of these pollution control standards has been weakened by unrelenting and often unchecked pressure from the regulated industry. For example, due to asymmetries in information regarding industry capabilities, it has been difficult for the agencies to determine what and whether various pollution control technologies are truly feasible across facilities or to determine with quantitative precision the types of reductions these pollution control technologies can generally accomplish once installed.[68] These informational hurdles have not only slowed the Agency's setting of the standards but may have led the Agency to strike compromises with affected industries hoping to stave off judicial challenges.[69] It should be

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67. Technology-based standards made their initial appearance in the first major statute to impose federal regulatory controls on pollution—the Clean Air Act of 1970. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended at 42 U.S.C. §§ 7401-7671q (2006)). Section 111 of the Clean Air Act requires EPA to set technology-based emission limitations for new major sources of air pollution. *Id.* at § 111 (codified as amended at 42 U.S.C. § 7411).

68. *See, e.g.*, Sanford E. Gaines, *Decisionmaking Procedures at the Environmental Protection Agency*, 62 IOWA L. REV. 839, 839-64 (1977); D. Bruce La Pierre, *Technology-Forcing and Federal Environmental Protection Statutes*, 62 IOWA L. REV. 771, 809-31 (1977).

69. *See, e.g.*, Wendy Wagner, *Revisiting the Impact of Judicial Review on Agency Rulemakings: An Empirical Investigation*, 53 WM. & MARY L. REV. 1717 (2012) (conjecturing on this point).

noted, however, that in best-in-market benchmarks for product safety, these asymmetrical information problems would not be as significant; products can be compared without more intricate determinations of underlying industrial processes, and a product's feasibility can be assessed by its market price. This is not the case for pollution control technologies, which must be retrofitted and maintained in a wide variety of facilities.

Industry has also weakened the standards by successfully lobbying agencies to subdivide the relevant sets of industrial actors subjected to a "best available technology" standard into smaller and smaller units.[70] If there are only five industries within a group, the best available pollution control technology is less costly and rigorous than when hundreds of facilities are compared in the search for the single best technology. In products, identifying the set of comparators could be equally slippery and subject to manipulation for determining which products are functionally equivalent. The initial categorization of products and their comparators will need process-based rules to stave off concerted lobbying by regulated parties in order to ensure the categories are not too narrow.

Even more problematic, the existing standards for pollution control technology are rarely updated by the agencies.[71] While Congress requires the Agency to revisit the standards every five years, the Agency rarely does this in practice. Many of the pollution control standards are based on what the Agency identified as among the best technologies in the 1970s and 1980s. These standards lag well behind the actual best-in-market, technological exemplars contemplated in the original environmental laws.

C. Chemicals Regulation Locally and Globally

The notion of a comparative approach to toxics regulation—that culls out inferior and dangerous substitutes—is becoming increasingly well accepted in both the states and Europe. In Maine, regulators may ban children's products that contain priority chem-

70. One example is the deeply buried discussion of the authority to subcategorize industries to set the standards and the economic advantages to this technique in a court case where this practice was challenged. Sierra Club v. EPA, 479 F.3d 875, 885 (D.C. Cir. 2007) (Williams, J., concurring) ("[Although] authority to generate subcategories is obviously not unqualified . . . one legitimate basis for creating additional subcategories must be the interest in keeping the relation between 'achieved' and 'achievable' in accord with common sense and the reasonable meaning of the statute.").

71. A 2012 GAO study documents this problem in detail under the Clean Water Act. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-845, WATER POLLUTION: EPA HAS IMPROVED ITS REVIEW OF EFFLUENT GUIDELINES BUT COULD BENEFIT FROM MORE INFORMATION ON TREATMENT TECHNOLOGIES (2012), *available at* http://gao.gov/assets/650/647992.pdf.

icals if a safer alternative is available at a comparable cost.[72] The core idea is that if needlessly hazardous chemicals are used in producing a product, like children's products, that can be replaced with safer chemicals, the product should be banned.[73] A Massachusetts's law may be even more far-reaching since it requires the state's businesses to identify and use less toxic materials for all products where possible. Alternatives assessments are conducted to identify these opportunities.[74] Other state laws are cropping up that follow Maine's and Massachusetts's leadership on substitute analysis. Even nonprofits are engaging in ways that help both tee up the ready availability of safer substitutes and make the information easier to access regarding conducting these comparative assessments.[75]

The European Union's renowned effort to regulate chemicals, through the Registration, Evaluation, Authorization and Restriction of Chemicals regulation (REACH), is perhaps the most wide-ranging effort to integrate a comparative or substitute analysis into toxics regulation. Although the primary thrust of REACH requires basic toxicity testing as a precondition to the sale of chemical products, for extremely hazardous chemicals the European Union legislation requires manufacturers to also justify the continued marketing of their products against the available substitutes.[76] Like RAD, this substitute analysis requires a best-in-market assessment of the viability of at least a subset of chemicals against their competitors.

Since the REACH program is only just getting started, it is unclear how vigorously this substitute analysis will be implemented.[77] The fact that the substitute analysis requirement is codified in REACH, however, lends at least some credence to a best-in-market approach to chemicals regulation. While identifying a reliable set of comparators presumably will be difficult, it is apparent-

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72. ME. REV. STAT. ANN. tit. 38 §§ 1691-1699 (2013).

73. *Id.* § 1696.

74. The Massachusetts legislature established a program to assist businesses in reducing the use of toxics. That program has resulted in a concerted effort to identify safer substitutes and to develop methods for alternatives assessments. *See* MASS. GEN. LAWS ch. 21I (2013) (the Toxics Use Reduction Act of 1989); *see also Alternative Assessments*, TURI http://turi.org/Our_Work/Research/Alternatives_Assessment (last visited Feb. 9, 2014).

75. *See*, *e.g.*, GOODGUIDE, http://www.goodguide.com (last visited Feb. 9, 2014); *see also* EWG'S SKIN DEEP, http://ewg.org/skindeep/ (last visited Feb. 9, 2014).

76. Regulation 1907/2006, of the European Parliament and of the Council of 18 December 2001 Concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Establishing a European Chemicals Agency, Amending Directive 1999/45/EC and Repealing Council Regulation No 793/93 and Commission Regulation No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, 2006 O.J (L 396) 3, 4.

77. *See, e.g.*, Joanne Scott, *From Brussels with Love: The Transatlantic Travels of European Law and the Chemistry of Regulatory Attraction*, 57 AM. J. COMP. L. 897, 898 (2009).

ly not such a great challenge that the drafters and stakeholders found it necessary to avoid substitute analysis altogether.

Relatedly, REACH is likely to produce considerable practical information about a best-in-market approach to chemical regulation, at least as applied to extremely hazardous chemicals. Such practical experience can expedite the adoption of this approach in the United States and elsewhere. Implementation in the European Union should also stigmatize the marketability of at least those extremely hazardous substances that cannot establish their continued market viability in comparison with substitutes.

D. Learning from Experience

Some general lessons for the design of best-in-market approaches emerge from these analogous experiences in tort law, United States pollution control, and REACH. First, a market benchmark must be based on the products or options on the market. In setting market standards, there can be no deference to industry collectives in defining the best alternatives or in establishing the appropriate set of comparators. A best-in-market benchmark simulates the market by placing manufacturers in competition against one another.

Second, Agency efforts to find the average or best toxic product in the market must be structured to be constantly updated with the emergence of new and better products. Just as the market is dynamic, so the regulatory standards must change as well. To block political pressure that might be placed on the Agency to forgo this updating, adaptive mechanisms should be hardwired into the authorizing legislation. Fortunately, and in contrast to the installation of pollution control technologies, rapid developments in innovation and product design are generally a fact of life for product manufacturers; innovations in preventing immediate risks and acute harms are ever-present in the market. At least facially requiring a similar, dynamic regulatory standard for latent harms seems non-problematic. From the manufacturers' standpoint, provided there are reasonable grace periods—two years or so—to meet the rising product standards, the need for this type of periodic updating should be capable of being factored into manufacturers' research and development plans.

The final challenge involves incorporating a best-in-market approach into a regulatory system to ensure there is a reliable, relatively objective way to find market analogs or standards. This is more challenging. Under one approach, regulators could identify a presumptive "best" or "average" product against which others are

compared and then shift the burden to those attempting to defend their individual products to provide evidence of how their product fares by comparison. In this way, regulators need not find a perfect analog, and the asymmetries and complexity of the relevant information will still rest on the individual manufacturers in distinguishing their product from the presumptive best product.[78]

Even if this basic approach is used, there may be regulatory challenges in identifying the average or best products on the market. To supplement this critical inquiry, regulators could provide rewards or other inducements for the discovery of a particularly good product within a functional use category; the rewards could be provided to citizens, nonprofits, and competitors.[79] Regulatory agencies would also benefit from a standing expert committee assigned the task of monitoring the market for examples of innovative products and even reviewing agency determinations of the best in the market. The more independent such a research body, the more successful the regime should be in objectively making comparisons and identifying superior analogs.

V. GETTING FROM HERE TO THERE

Although the race to the top seems a much-improved approach to regulating toxic products from all perspectives ranging from pure efficiency to public health protection, that fact alone does not guarantee that the reform will be politically viable. Since the existing regulatory oversight of toxic chemicals and products has been effectively nonexistent over the last forty years, there will inevitably be a strong segment of regulated groups that will vigorously resist this type of change. Tethering product safety assessments to market options may also signal a bumpy future ride for manufacturers who currently do not invest much in research and development, where products can quickly grow obsolete as front-moving global firms innovate and put competitors out of business. The vast majority of manufacturers, in other words, may worry they won't be singled out as among the best, particularly in a market that has been characterized by noncompetitive features for so long. Manufacturers who view themselves as losing the race to the top will likely be the most vigorous opponents to the legislation.

A first step to importing a best-in-market approach into EPA's review of chemicals might be accomplished incrementally and

78. The methods are already being worked out for these comparisons. *See supra* text accompanying note 43.

79. See similar suggestions in Wendy Wagner, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 83 IND. L. J. 629 (2008).

through light external pressure using the petition process. A petitioner—either a nonprofit or even the manufacturer of a superior product—could argue that a chemical presents an unreasonable risk if there is a safer substitute that provides comparable benefits at comparable cost. In an earlier article, I discuss how this petition process might work.[80] While there are still kinks to be worked out, the statute seems to create space for this type of assessment by the Agency.[81]

The identification of superior substitutes, at least in some product categories, might also be provided by reliable nonprofits to help fill some of the many information gaps in the market. While this will not cure the regulatory programs, it may create pressure on manufacturers that will lead them to ultimately prefer or at least not resist as strenuously various regulatory interventions that provide this type of comparison.

There are already moves towards providing this type of comparison research and product disclosure, however preliminarily, through public interest groups who partner with academic institutions to generate the information.[82] Front-moving product manufacturers might also partner with public interest groups to develop robust sources of consumer and investor based information to raise the salience of the range of safety risks in diverse chemical products and to highlight the benefits of greater regulatory oversight of chemical products.[83] These information-based reforms, albeit expensive, could identify in a primary way the losses to consumers and the adverse selection problems that result without more rigorous information on product toxicity. This salience-raising could then raise the majoritarian interest in reform and may even lead to some fragmentation among the strong industry coalition in resisting political reform.

Cross-national differences might also help raise public awareness of the otherwise invisible institutional failures and tip the political process towards more meaningful regulatory oversight which includes a comparison of similar products based on their relative toxicity. If the European Union's REACH succeeds in generating a wealth of new information on toxicity and, even more, to the extent it implements a rigorous approach to substitute-analysis for at least the most toxic chemicals, it ups the ante for other nations by changing the salience of the risks and alternative

80. *See id.*

81. *See id*. *But see* Dennison, *supra* note 34 (suggesting the statute may not provide the policy space for this type of decision).

82. *See, e.g.*, *supra* text accompanying note 76; *Who We* Are, TURI, http://turi.org/About/Who_We_Are (last updated Jan. 1, 2014).

83. *See, e.g.*, CERES, http://www.ceres.org/ (last visited Feb. 9, 2014).

regulatory approaches. This type of cross-national exporting of information may be an important mechanism for triggering change in domestic settings that are overcome with institutional stasis and perpetual inaction. Although it is circuitous, there is evidence that the salience-raising/information cost-lowering features of chemical regulation in the European Union can catalyze activity in local and state regimes in the United States, which might trickle up to create public pressure for change at the national level.[84]

However it is accomplished, once the best-in-market approach is incorporated incrementally into toxics control, it will have practical experience upon which to proceed. The experimentation should also affect the coalitions that build to support it and that might not otherwise exist. Firms that succeed in a best-in-market approach may rally behind it, and the current, strong industry coalition might be more fragmented, if not disbanded entirely.[85]

VI. BEYOND TOXICS REGULATION

A best-in-market approach that introduces competition among regulated parties in a "race-to-the-best" regulatory standard might also transfer to other faltering regulatory programs. At the least, the notion of an ever escalating, competition-based standard could be retrofitted into the technology-based standards programs. Active competition among firms in identifying the ideal pollution control standard would seem to be a critical feature in making this regulatory approach successful. EPA's current implementation of the "best technology" standard under the Clean Air and Clean Water Acts, however, generally resists basing the best standard on a rigorous race to the top. The standards are rarely updated,[86] and even when set the first time, EPA seems to capitulate to weaker standards advocated by trade associations and some industries.[87]

The analysis here suggests that EPA's current approach misses the genius at the core of these standards. In order to make meaningful progress and encourage continued innovation in pollution control, the Agency must set standards based on rigorous compari-

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84. *Cf.* Hari M. Osofsky & Janet Koven Levit, *The Scale of Networks?: Local Climate Change Coalitions*, 8 CHI. J. INT'L L. 409 (2008) (discussing the role of cities as leaders in U.S. policy on climate change and the coalition of local governments as an important source of innovation that integrates global policies back into the United States).

85. Short of this more gradual wearing down of the anticipated strong anticipation through experience, beginning with a legislative approach may be the most risky way to proceed and could even backfire by causing the opposition to sabotage early experimental efforts to get it working.

86. *See supra* text accompanying note 71.

87. *See, e.g.*, Wendy Wagner et al., *supra* note 32, at 125 (2011) (documenting this weakening of the standards).

sons of the best available possibilities. The Agency should also consistently revise the standards as technology evolves and may even need to subsidize or even encourage the development of these technologies in other ways. In doing so, the regulatory program will continually bring out the best that industry has to offer by splicing in a market-based competitive edge to the standard setting process.

Corporate sustainability, which appears to be stalled perpetually,[88] might also be advanced by a race-to-the-top approach. EPA could identify exemplars of sustainability in various manufacturing and other heavy industry categories. These exemplars could provide a basis for identifying reasonable soft standards (e.g., certifications or star labeling) initially. Key characteristics of the exemplars could then become enforceable later with legislation. Sustainability goals and, ultimately, requirements would be set by the best innovators in the industry. The front-movers would not only receive positive publicity but also receive an edge on competitors if others are expected to follow in their technological footsteps. Other competitors presumably will be inclined to leapfrog over these accomplishments to become the regulatory standard in the future, both for publicity and for profit-making reasons.

Other regulatory programs governing products—like diet supplements and processed foods—might also adopt a best-in-market approach for setting standards for purity, quality, and other features. While there is considerable variation among these programs in terms of the challenges that regulators face, if safety remains a concern, the regulatory system could adopt standards based on the best designs within the industry and continuously adjust them upwards as the technology develops. This would be a best-in-industry type of standard.

Finally, areas where there is little consensus over the best approach—like climate change and even fracking regulation—could similarly adopt a best-in-market approach to controlling the industry. Within fracking, for example, there is likely to be at least some variation in the environmental sensitivity of the firms and the precautions they take during extraction. Rather than attempt to establish standards based on environmental sensitivities, the standards could be tied back to the precautions that the best firms take. These types of established measures could form at least the starting point for industry-wide requirements. And, with the focus on insisting on the best available techniques, the incentives are al-

88. *See, e.g.*, Alan D. Hecht, *The Next Level of Environmental Protection: Business Strategies and Government Policies Converging on Sustainability*, 8 SUSTAINABLE DEV. L. & POL'Y 19, 23 (2007) (lamenting the absence of a sustainability policy in the United States).

ways pointed upwards to encourage more innovation on careful extraction techniques in the future. Some of the debates over the risks of spills, human exposures versus worker exposures, and the like can be circumvented by a more simple moral resolve that, at the least, firms that contribute greenhouse gasses or extract natural gas should use the best techniques available to minimize the public harm.

There may be other relatively easy applications of the best-in-market approaches beyond those listed here. Because it looks to the best of what is being done as a standard for what should be done more generally, the best-in-market approach is technologically realistic. As long as these standards are constantly being updated, the approach creates incentives for firms to innovate in environmental protection. The competition created to do better ripples over to the political process. Rather than engage collusively to pressure the Agency—often in processes where they are the only voice—to weaken standards and lower the floor, the best-in-market approach shifts the focus to identifying the best actors and setting standards accordingly. With clear winners (and losers), the political endgame changes and the previously unified industry coalition is fractured into smaller pieces.

VII. CONCLUSION

Some of the best regulatory analyses in environmental law have been focused on the deplorable state of toxics regulation. These combined analyses expose several major weaknesses that combine to create a seemingly hopeless system. In this essay, I developed one of the recurring themes: namely, the failure of many environmental regulatory programs to encourage a race to the top in technological and related innovation. By reframing the standards to inject a best-in-market goal in areas like toxics control, some of the consistent failures may be capable of being redressed, while the incentives within regulated industry will shift from the collective benefits of ignorance regarding product toxicity to more competitive struggles within one another to rise to the top. Through this competition, more information that is also vetted in an adversarial way will be available to the regulatory system. There will be more significant payoff associated with innovating in green and related technologies, which include not only positive publicity but gaining a head start on competitors in setting regulatory standards. While still preliminary and many details in need of filling in, the essay makes a case for considering this new approach more integrally throughout environmental law and regulation.

RECENT DEVELOPMENTS IN HYDRAULIC FRACTURING REGULATION AND LITIGATION

KEITH B. HALL*

I. INTRODUCTION

Hydraulic fracturing—sometimes called "fracking" or "fracing"[1]—is a process that uses a high-pressure fluid to create frac-

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1. Hydraulic fracturing goes by a variety of names, including: "fracing," "fracking," "hydrofracturing," and "hydrofracking." Hannah Wiseman, *Fracturing Regulation Applied*, 22 DUKE ENVTL. L. & POL'Y F. 361, 361 (2012). "Fracking" has become the shortened term most often used in the media, but "fracing" is more traditional and still is often used by persons who regularly do oil and gas law or other work in the industry. NORMAN J. HYNE, NONTECHNICAL GUIDE TO PETROLEUM GEOLOGY, EXPLORATION, DRILLING AND PRODUCTION 423-26 (2d ed. 2001) (petroleum geologist using "fracing"); Christopher S. Kulander, *Environmental Effects of Petroleum Production: 2010-2011 Texas Legislative Developments*, 44 TEX. TECH L. REV. 863, 869 (2012) (oil and gas law professor repeatedly using "fracing");

tures in an underground formation.[2] Those fractures can then serve as pathways for oil or gas to flow through the rock, thereby facilitating the production of oil and gas from low-permeability formations.[3] Hydraulic fracturing was developed in the late 1940s and was used in many thousands of oil and gas wells over the next several decades without attracting much notice.[4] But in the last several years, hydraulic fracturing has become controversial. The public, regulators, industry, and environmentalists have all given considerable attention to various environmental issues related to hydraulic fracturing and to other aspects of oil and gas activity,[5] and there have been a large number of important developments in the law.

Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture: An Oil and Gas Perspective*, 35 ENVTL. L. 899, 933–36 (2005) (two oil and gas law professors repeatedly using the word "fracing").

2. NAT'L ENERGY TECH. LAB., U.S. DEP'T OF ENERGY, MODERN SHALE GAS DEVELOPMENT IN THE UNITED STATES: A PRIMER 15 (2009) [hereinafter SHALE GAS PRIMER] at ES-4, 57, *available at* http://www.netl.doe.gov/File%20Library/Research/Oil-Gas/Shale_Gas_Primer_2009.pdf.

3. *Id.* Oil and natural gas generally are not found in subsurface caverns. Instead, they are found in the pore spaces of certain underground rock formations. RICHARD C. SELLEY, ELEMENTS OF PETROLEUM GEOLOGY 239 (2d ed. 1998); JAMES G. SPEIGHT, THE CHEMISTRY AND TECHNOLOGY OF PETROLEUM 103 (2d ed. 1991). In some formations, the interconnections between pore spaces are sufficient to allow oil or gas to flow easily through the formation. *Id.* at 142; MARTIN S. RAYMOND & WILLIAM L. LEFFLER, OIL AND GAS PRODUCTION IN NONTECHNICAL LANGUAGE 167 (2006). But in other formations, the interconnections are not sufficient to allow oil or gas to flow easily. In those formations, oil and gas essentially remain trapped in isolated pore spaces unless the formation is fractured. *See* DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND REMAKING THE MODERN WORLD 326 (1st. ed. 2011).

4. *See* Keith B. Hall & Lauren E. Godshall, *Hydraulic Fracturing Litigation*, 57 THE ADVOCATE, Winter 2011 at 13, 13.

5. *Id.* Hydraulic fracturing is just one part of the process of drilling and completing an oil and gas well. Some members of the public erroneously use "hydraulic fracturing" or "fracking" to refer to the entirety of oil and gas activity. The erroneous use of terminology is unfortunate because it has the potential to distort public discussions of oil and gas activity by causing persons to overestimate the risks involved in using hydraulic fracturing (if they hear hydraulic fracturing being blamed for some incident that actually is caused by some other aspect of oil and gas activity) and by distracting attention from other issues that merit attention, such as the regulation of the casing and cementing of wells. Similar observations have been made by multiple commentators. *See, e.g.*, Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 U. COLO. L. REV. 729 (2013); Scott Anderson, *If the Problem Isn't Hydraulic Fracturing, Then What Is?*, EDF (Feb. 16, 2012), http://blogs.edf.org/energyexchange/2012/02/16/if-the-problem-isnt-hydraulic-fracturing-then-what-is/ (article by policy advisor at Environmental Defense Fund); Keith B. Hall, *Hydraulic Fracturing and Well Drilling -- What Safety Issues Should We Be Discussing?*, Envtl. & Energy L. Brief (Apr. 24, 2011), http://environmentalandenergylawbrief.com/hydraulic-fracturing/hydraulic-fracturing-and-well-drilling----what-safety-issues-should-we-be-discussing/. When some problem is caused by some aspect of oil and gas activity other than hydraulic fracturing, it can be as equally nonsensical to refer to that as a "fracking" problem as it would be to refer to a "traffic" problem if a person is injured while filling his car with gasoline. If one is referring to the entirety of the oil and gas exploration and production process, it is preferable to use such phrases as "oil and gas activity" or "exploration and production" or "shale gas development" (if the drilling happens to be in a shale formation from which natural gas is produced), rather than "hydraulic fracturing."

This Article discusses some of the most significant recent developments in hydraulic fracturing regulations and litigation, as well as developments relating to aspects of oil and gas activity closely associated with hydraulic fracturing.[6] These developments relate to numerous issues, including: (1) baseline testing of groundwater; (2) mandatory disclosure of fracturing water additives; (3) subsurface trespass claims; (4) the regulation of hydraulic fracturing under the Safe Drinking Water Act; (5) the regulation of the disposal of flowback under the Clean Water Act; (6) the regulation of venting during flowback under the Clean Air Act; (7) regulations to reduce the risk of induced seismic events at wastewater disposal wells, including wells used for the disposal of flowback; (8) litigation of contamination claims; (9) use of *Lone Pine* orders in contamination litigation; (10) use of the Endangered Species Act; (11) local government regulation of hydraulic fracturing and disputes regarding whether state laws preempt local laws; (12) regulation to minimize local inconvenience during the drilling and fracturing of wells; (13) regulation of fracturing on federal lands; (14) the sourcing of water for use in hydraulic fracturing; and (15) well construction standards.

II. BASELINE TESTING OF GROUNDWATER QUALITY

Sometimes a landowner or other person alleges that a company's oil and gas activities have caused groundwater contamination. The company may deny the allegation, thereby giving rise to a dispute. Such disputes can be difficult to resolve because a large number of natural phenomena[7] and human activities[8] can cause groundwater contamination of one type or another.[9] For example,

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6. Hydraulic fracturing has attracted considerable attention from legal scholars in recent years. *See, e.g.*, Wiseman, *supra* note 5; Keith B. Hall, *Hydraulic Fracturing*: *Trade Secrets and the Mandatory Disclosure of Fracturing Water Composition*, 49 IDAHO L. REV. 399 (2013); Christopher S. Kulander, *Shale Oil And Gas State Regulatory Issues And Trends*, 63 CASE W. RES. L. REV. 1101 (2013); Bruce M. Kramer, *Federal Legislative And Administrative Regulation of Hydraulic Fracturing Operations*, 44 TEX. TECH L. REV. 837 (2012); David E. Pierce, *Developing A Common Law Of Hydraulic Fracturing*, 72 U. PITT. L. REV. 685 (2011); Owen L. Anderson, *Subsurface "Trespass": A Man's Subsurface Is Not His Castle*, 49 WASHBURN L.J. 247 (2010).

7. *See*, *e.g.*, MARTHA G NIELSEN ET AL., U.S. GEOLOGICAL SURVEY, ASSESSMENT OF ARSENIC CONCENTRATIONS IN DOMESTIC WELL WATER, BY TOWN, IN MAINE, 2005–09 1 (2010), *available at* http://pubs.usgs.gov/sir/2010/5199/pdf/sir2010-5199_nielsen_arsenic_report_508.pdf (noting that arsenic is found naturally in the groundwater in some areas).

8. *Id.* at 1 (noting use of arsenic as a pesticide on crops).

9. The difficulty plaintiffs sometimes can have in proving their claims is illustrated by *Mitchell Energy Corp. v. Bartlett*, 958 S.W.2d 430, 447-48 (Tex. Ct. App. 1997), though the contaminant at issue in that case was not methane. It is not clear that the defendant caused the alleged contamination in that case—there was evidence of other potential causes—but it is clear that proving the plaintiffs' case would not have been a simple task. *Id.*

methane contamination can occur naturally,[10] but such contamination also can be caused by multiple types of human activity, including oil and gas exploration and development.[11] Further, because methane is odorless and tasteless,[12] it might not be immediately detected, and if it is detected, it may not be clear when the contamination occurred.

If a landowner had baseline water quality data—that is, data on the quality of his groundwater prior to the oil and gas activity that he alleges is the cause of contamination—the data would not necessarily be determinative in resolving the dispute, but it might be extremely useful. Unfortunately, landowners often lack such data. The absence of such data can make it more difficult to resolve such disputes and can make it more difficult for government officials and citizens to make public policy decisions that might be influenced by their understanding of the risks associated with oil and gas activity.

A few states have addressed this problem by enacting provisions that either require or encourage baseline testing before an oil or gas well is drilled or fractured. For example, Ohio amended its laws in 2012 to require baseline testing.[13] Section 1509.06 of the Ohio Revised Code states that the application to drill a horizontal well must include the test results from the analysis of water samples from water wells located within 1500 feet of the proposed horizontal wellhead unless the owner of the water well refuses to allow the applicant to collect a sample. And if any owner of a water well refuses to allow the permit applicant to collect a water sample, the applicant must identify the location of the well.[14]

In early 2013, Colorado enacted a regulation which mandates that "[i]nitial baseline samples" be collected from "all Available Water Sources, up to a maximum of four (4), within a one-half (1/2) mile radius of a proposed Oil and Gas Well" prior to drilling the

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(noting that plaintiff needed to provide evidence that ruled out other potential sources). *See generally* Keith B. Hall, *Hydraulic Fracturing: Problems of Proof*, 74 OHIO ST. L.J. FURTHERMORE 71 (2013).

10. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 2012-1162, DISSOLVED METHANE IN NEW YORK GROUNDWATER 1 (2012), *available at* http://pubs.usgs.gov/of/2012/1162/pdf/ofr2012-1162_508_09072012.pdf.

11. U.S. GEOLOGICAL SURVEY, FACT SHEET NO. 2006-3011, METHANE IN WEST VIRGINIA GROUND WATER 1 (2006), *available at* http://pubs.usgs.gov/fs/2006/3011/pdf/Factsheet 2006_3011.pdf (noting multiple human activities that can cause methane to be present in groundwater). Natural gas is mostly methane. Hyne, *supra* note 1, at 241.

12. Connecticut Light & Power Co. v. United States, 299 F.2d 259, 261 (Ct. Cl. 1962); U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 2012-1162, DISSOLVED METHANE IN NEW YORK GROUNDWATER 1 (2012), *available at* http://pubs.usgs.gov/of/2012/1162/pdf/ofr2012-1162_508_09072012.pdf.

13. OHIO REV. CODE ANN. § 1509.06(A)(8)(c) (LexisNexis 2013). The language requiring baseline testing was added by 2012 Senate Bill 315.

14. *Id.*

well.[15] If more than four "Available Water Sources" exist, the operator should sample those that are closest.[16] The regulation includes substantial additional detail about the initial sampling and testing requirements.[17] After the drilling operation, the operator must collect and analyze two rounds of "subsequent samples," with one round being collected sometime between six and twelve months after completion of the well and another round being collected between sixty and seventy-two months following completion.[18]

Pennsylvania law does not require baseline testing, but a statute enacted in 2012 strongly encourages it.[19] The statute provides that, if a groundwater supply located within 2500 feet of the vertical section[20] of an unconventional oil or gas well[21] becomes contaminated within twelve months after the completion of hydraulic fracturing of the well, there is a "rebuttable presumption" that the unconventional oil and gas operations caused the contamination.[22]

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15. 2 COLO. CODE REGS. § 404-1:609(b) (2013). Initial samples must be collected within 12 months of setting the conductor pipe, an early stage in the drilling process; *Id.* § 404-1:609(d)(1) (describing timing of sampling); Hyne, *supra* note 1, at 241 (describing drilling and noting setting of conductor pipe early in process).

16. 2 COLO. CODE REGS. § 404-1:609(b)(1).

17. The operator is directed to collect samples from both down-gradient and up-gradient locations if such locations are available and the direction of groundwater flow is known. *Id.* § 404-1:609(b)(3). If the direction of flow is uncertain, the operator should attempt to collect samples from locations in a radial pattern around the proposed oil and gas well. *Id.* If aquifers exist at different depths, the operator should attempt to sample from the shallowest and the deepest depth. *Id.* § 404-1:609(b)(4).

18. *Id.* § 404-1:609(d)(2). The regulation also specifies certain substances for which the samples must be analyzed and requires certain actions if the substances are found in concentrations higher than specified levels. *See id.* § 404-1:609(e).

19. *See* 58 PA. CONS. STAT. § 3218 (2013).

20. Many of the oil and gas wells drilled into shale formations, a classic unconventional formation, are drilled vertically downward until drilling nearly reaches the desired depth, then the direction of drilling is gradually turned from vertical to horizontal, with the drilling then proceeding horizontally for perhaps a mile or more within the shale formation. Hannah Wiseman, *Regulatory Adaptation in Fractured Appalachia*, 21 VILL. ENVTL. L. J. 229, 236-37 (2010); *see also* Keith B. Hall, *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, 19 BUFF. ENVTL. L.J. 1, 7-8 (2011-2012). "Shale gas" is natural gas produced from a shale formation. Glossary of Terms, U.S. ENERGY INFO. ADMIN., http://eia.gov/tools/glossary/index.cfm?id=S.

21. The Energy Information Administration's glossary of terms defines "unconventional oil and natural gas production" as "[a]n umbrella term for oil and natural gas that is produced by means that do not meet the criteria for conventional production." In turn, it defines "[c]onventional oil and natural gas production" as being production from "a well drilled into a geologic formation in which the reservoir and fluid characteristics permit the oil and natural gas to readily flow to the wellbore." *Id.* Hydraulic fracturing often is used in unconventional formations. Thomas E. Kurth et al., *American Law and Jurisprudence on Fracing*, 58 ROCKY MTN. MIN. L. INST. 4-1, 4-5 (2012) ("Hydraulic fracturing is generally viewed as a completion technique that is a practical necessity to promote development of unconventional 'tight' shale reservoirs, particularly oil shale and gas shale.").

22. For unconventional wells, the statute provides that the rebuttable presumption will apply if contamination occurs within twelve months after completion or "stimulation" of the well. Hydraulic fracturing is a form of "well stimulation." The *Manual of Oil and Gas Terms* does not define "well stimulation," but it notes that "stimulate" is defined by a West

A similar rebuttable presumption applies for conventional wells, though it applies for a smaller area and for a shorter period of time.[23]

An operator can rebut the presumption that he caused the contamination by "affirmatively prov[ing]" that something else caused the contamination[24] or by showing that the owner of the water supply refused to allow the operator to sample the water.[25] The Pennsylvania statute also states that "[a]n operator electing to preserve a defense [based on rebutting the presumption] shall retain an independent certified laboratory to conduct a predrilling . . . survey of the water supply," and shall provide the survey results to state regulators and the owner of the water supply that is sampled.[26] This provision arguably makes the presumption irrebuttable if the operator failed to perform the baseline testing.[27]

The West Virginia Horizontal Well Act,[28] enacted in late 2011, contains somewhat similar provisions that apply to "horizontal" oil and gas wells.[29] The Act provides that if a water supply located

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Virginia statute as "any action taken by well operator to increase the inherent productivity of an oil or gas well including, but not limited to, fracturing, shooting or acidizing, but excluding cleaning out, bailing or workover operations." PATRICK H. MARTIN & BRUCE M. KRAMER, WILLIAMS & MEYERS: MANUAL OF OIL AND GAS TERMS 1092 (12th ed. 2003).

23. 58 PA. CONST. STAT. § 3218(c)(1). For a conventional oil and gas well (one that is not hydraulically fractured), the rebuttable presumption applies whenever a water supply located within 1000 feet of the well becomes contaminated within six months of completion of the well. *Id.*

24. *Id.* § 3218(d). The operator also can rebut the presumption by proving that the contaminated water supply is located outside the area for which the presumption is established, that the contamination occurred either before the operator's drilling activity or after the time period for which the presumption applies, or that "the landowner or water purveyor refused to allow the operator access to conduct a predrilling . . . survey." *Id.* If the defendant rebuts the presumption by proving that something other than his operations caused the contamination, that proof probably will be sufficient to defeat liability. If, on the other hand, the defendant rebutted the presumption by proving that the contamination occurred after the time period for which the presumption applies or that the owner of the water refused to allow the operator to sample the water, a court might allow the owner of the water supply to attempt to prove (without the aid of a rebuttable presumption) that the operator caused contamination.

25. The statute requires the operator to inform the landowner that he will lose the benefit of the rebuttable presumption if he refuses to grant the operator access to perform a predrilling survey. *See id.* § 3218(e.1).

26. *See id.* § 3218(e). The statute does not specify the chemicals for which an operator should test, but given the rebuttable presumption established by the statute, operators have an incentive to conduct a reasonably thorough analysis.

27. Perhaps a court would interpret this language as merely precatory. Otherwise, this provision could lead to unjust results. Assume, for example, that an operator did not perform the required baseline testing using an independent laboratory but there is irrefutable evidence that something else caused the contamination. It would be unfair in such a situation to impose an irrebuttable presumption that the operator caused the contamination.

28. W. VA. CODE §§ 22-6A-1 to -24 (2013).

29. In a horizontal well, the operator begins drilling vertically downward, then turns the direction of drilling to proceed in the horizontal direction when drilling reaches the formation from which the operator wishes to produce oil or gas. The advantage of this is that a

within 1500 feet of the vertical section of a horizontal well becomes contaminated, there will be a rebuttable presumption that the operator of the oil and gas well caused the contamination.[30] The operator of the well can rebut the presumption by proving that the "pollution existed prior to the drilling," but the Act appears to provide that the operator forfeits the right to rebut the presumption on that basis unless he performed baseline testing prior to drilling.[31] An operator also can rebut the presumption by proving that the contamination was caused by something other than the operator's drilling activity, that the contamination occurred more than six months after the operator's drilling operations, or that the contaminated water supply is not within 1500 feet of the oil and gas well, and an operator's right to rebut the presumption in these ways does not appear to be conditioned on his having performed baseline testing prior to drilling.[32]

In mid-2013, Illinois became the most recent state to enact a baseline testing requirement.[33] Section 1-80(b) of the new law requires each applicant for a "high volume horizontal hydraulic fracturing permit" to hire an independent third party to conduct baseline water quality sampling and analyses for each water source within 1500 feet of the oil and gas well site prior to any hydraulic fracturing. The recipient of the permit must also cause all water sources within 1500 feet of the oil and gas well to be tested again six months, eighteen months, and thirty months after completion of the hydraulic fracturing operation.[34]

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greater length of the well's piping can be placed in the productive formation with horizontal drilling than with vertical drilling alone because a formation may extend a few hundred feet or less in the vertical direction, but miles in the horizontal direction. Placing a greater length of the wellbore in the productive formation is advantageous because oil or gas enters the well through perforations that the operator creates in the sections of pipe within the productive formation (rather than through an open at the end of the well), and a greater length of pipe in the productive formation allows for a greater length of pipe that can be perforated and therefore more perforations into which oil and gas can enter (as well as a greater length of area that can be fractured). *See* YERGIN, *supra* note 3, at 17. *But cf.* HYNE, *supra* note 1, at xl, 127, 285-86, 344-45; Lamont C. Larsen, *Horizontal Drafting: Why Your Form JOA Might Not Be Adequate for Your Company's Horizontal Drilling Program*, 48 ROCKY MTN. L. FOUND. J. 51, 53 (2011).

30. W. VA. CODE § 22-6A-18(b).

31. *Id.* § 22-6A-18(d). Under the West Virginia Horizontal Well Act, an operator's failure to perform baseline testing would not appear to preclude the operator from rebutting the presumption altogether, as the Pennsylvania statute arguably does.

32. *Id.* § 22-6A-18(c).

33. S.B. 1715, 98th Gen. Assemb., Reg. Sess. (Ill. 2013).

34. *Id.* at § 1-80(c).

III. MANDATORY DISCLOSURE OF HYDRAULIC FRACTURING FLUID COMPOSITION

A. State Regulations Requiring Disclosure

The fluid used in hydraulic fracturing typically is a mixture of water, proppants, and numerous additives that facilitate the hydraulic fracturing process in various ways.[35] Traditionally, the companies that perform hydraulic fracturing have kept the composition of their fracturing fluid confidential in order to preserve any competitive advantage they might have obtained over their rivals by developing a better mix.[36] However, in recent years, as concern about hydraulic fracturing grew, public support for regulations that would require the disclosure of fracturing fluid composition also grew.[37]

In August 2010 Wyoming became the first state to enact regulations requiring the mandatory disclosure of hydraulic fracturing fluid composition.[38] In January 2011 Arkansas became the second state to do so.[39] After that, mandatory regulations began to be adopted by states at a rapid pace. As of August 2013 about nineteen states had enacted mandatory disclosure regulations, including the two states noted above, as well as Colorado,[40] Idaho,[41] Illinois,[42] Indiana,[43] Louisiana,[44] Michigan,[45] Mississippi,[46] Mon-

35. SHALE GAS PRIMER, *supra* note 2, at 56, 61, 62, ES-4. Proppants are small particles—frequently sand is used—that the fracturing fluid carries into the fractures. The proppants stay behind after the fracturing operation is complete. Their purpose is to prop open the fractures so that they do not reclose. The other additives included in the fracturing water typically include corrosion inhibitors, biocides, friction reducers, and other substances.

36. Hall, *supra* note 6, at 406.

37. Ben Casselman, *'Fracking' Disclosures to Rise: Gas Drillers Begin Supporting Laws Requiring Them to List the Chemicals They Use*, WALL ST. J., June 20, 2011, *available at* http://online.wsj.com/news/articles/SB10001424052702304887904576395630839520062.

38. 55-3 WYO. CODE R. § 45(d)(ii) (LexisNexis 2012); *see also* Jacquelyn Pless, *Fracking Update: What States are Doing to Ensure Safe Natural Gas Extraction*, NAT'L CONF. OF STATE LEGS., http://ncsl.org/issues-research/energyhome/fracking-update-what-states-are-doing.aspx (last updated July 2011) (noting that Wyoming was first to adopt disclosure requirement). Wyoming's rule applies to "well stimulation." Hydraulic fracturing is a type of well stimulation.

39. 178-00-1 Ark. Code R. § B-19 (LexisNexis 2013); *see also* Bill Holland, *Arkansas to Require Hydraulic Fracturing Fluid Disclosure in January*, PLATTS (Dec. 8, 2010), http://platts.com/latest-news/natural-gas/Washington/Arkansas-to-require-hydraulic-fracturing-fluid-6660232 (noting that in the following month, Arkansas would become the second state to require disclosure).

40. 2 COLO. CODE REGS. § 404-1205A (2013).

41. IDAHO ADMIN. CODE r. 20.07.02.055.01(c), (e) (2013*)*; *id.* at 20.07.02.056.01.

42. S.B. 1715, Gen. Assemb., Reg. Sess. (Ill. 2013).

43. The Indiana legislature has directed the Indiana Department of Natural Resources to develop mandatory disclosure regulations. IND. CODE § 14-37-3-8 (2013). Indiana adopted a disclosure requirement by emergency rule, pending adoption of final rules. *See* 312 IND. ADMIN. CODE LSA Doc. 12-292(E) (2012).

44. LA. ADMIN. CODE tit. 43:XIX, § 118 (2013).

tana,[47] New Mexico,[48] North Dakota,[49] Ohio,[50] Oklahoma,[51] Pennsylvania,[52] South Dakota,[53] Texas,[54] Utah,[55] and West Virginia.[56] Collectively, these states are hosts to a large majority of the oil and gas activity in the United States. For example, in one recent week, more than ninety-five percent of drilling rigs operating either on land or in state waters were operating in states that have enacted mandatory disclosure rules.[57] Other states are considering the adoption of mandatory disclosure regulations, including such states as Alabama, Alaska,[58] California,[59] Florida,[60] Kansas,[61] and New York.[62]

The mandatory disclosure regulations enacted by the various states differ in some ways,[63] but also have important similarities. For example, the regulations uniformly make most information regarding fracturing fluid composition available to the public, but they all protect exempt information that qualifies as a trade secret from public disclosure.

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45. MICH. DEP'T OF ENVTL. QUALITY, SUPERVISOR OF WELLS INSTRUCTION 1-2011, HIGH VOLUME HYDRAULIC FRACTURING WELL COMPLETIONS (2011).

46. 26-2:1 MISS. CODE R. § 26 (LexisNexis 2013).

47. MONT. ADMIN. R. 36.22.1015 (2013).

48. N.M. CODE R. § 19.15.16.19(B) (LexisNexis 2013).

49. N.D. ADMIN. CODE 43-02-03-27.1(1)(g) (2013).

50. OHIO REV. CODE ANN. § 1509.10 (LexisNexis 2013).

51. OKLA. ADMIN. CODE § 165:10-3-10(b) (2013).

52. 58 PA. CONS. STAT. § 3222(b.1) (2012).

53. S.D. ADMIN. R. 74:12:92 (2013).

54. 16 TEX. ADMIN. CODE § 3.29 (2013).

55. UTAH ADMIN. CODE r. 649-3-39(1.1) (2013).

56. W. VA. CODE R. § 22-6A-7(e)(5) (2013).

57. A review of Baker-Hughes rig count data for July 26, 2013, showed that 95.1% of rigs operating on land or in state waters were operating in states that have enacted mandatory disclosure regulations. The rig count data is available at *Rig Count Overview & Summary Count*, BAKER HUGHES, http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-rigcountsoverview (last visited Feb. 12, 2014).

In Canada, the province of British Columbia also adopted mandatory disclosure regulations. An announcement regarding the British Columbia regulations is available at *Increased transparency for natural gas sector* BRITISH COLUMBIA (Sept. 8, 2011) http://newsroom.gov.bc.ca/2011/09/increased-transparency-for-natural-gas-sector.html.

58. ALASKA OIL & GAS CONSERVATION COMM'N., PROPOSED RULE 20 AAC 25.283, *available at* http://doa.alaska.gov/ogc/frac/02_02_Hydraulic%20Fracturing%20Proposed%20Regulations.pdf (last visited Feb. 12, 2014).

59. CAL. DEP'T OF CONSERVATION, PRE-RULEMAKING DISCUSSION DRAFT, HYDRAULIC FRACTURING, *available at* http://conservation.ca.gov/dog/general_information/Documents/121712DiscussionDraftofHFRegs.pdf. (last visited Feb. 12, 2014).

60. Four hydraulic fracturing bills were introduced in the 2013 session, but none passed prior to the end of the session. H.B. 743, 2013 Leg. (Fla. 2013), *available at* http://myfloridahouse.gov/Sections/Bills/billsdetail.aspx?BillId=49977.

61. Andy Marso, *Proposed Regs Call for Limited Disclosure of 'Fracking' Chemicals*, TOPEKA CAPITAL-JOURNAL (July 22, 2013), http://cjonline.com/news/2013-07-22/proposed-regs-call-limited-disclosure-fracking-chemicals.

62. *New Recommendations Issued in Hydraulic Fracturing Review*, N.Y. DEP'T OF ENVTL. CONSERVATION (June 30, 2011), http://www.dec.ny.gov/press/75403.html.

63. A discussion and analysis of the differences between the various states' disclosure regulations is available elsewhere. *See, e.g.*, Hall, *supra* note 6.

A significant case regarding trade secrets was recently decided in Wyoming.[64] In that state, operators must disclose to the Wyoming Oil and Gas Conservation Commission (Commission) the identity of all substances contained in the fracturing fluid, including any substances whose identity the operator claims is a trade secret.[65] The Commission makes the information disclosed to it available to the public, except that the Commission evaluates any claims by operators that information constitutes a trade secret, and if the Commission agrees that the identity of a particular substance qualifies as a trade secret, the Commission will not include the identity of that substance in the information made available to the public.[66]

Pursuant to the Wyoming regulation, operators have disclosed information regarding fracturing fluid composition to regulators, and much of that has been disclosed to the public.[67] But operators have made trade secret claims as to identity of some substances.[68] Regulators have accepted many of those trade secret claims and therefore withheld the identity of those substances from the information made available to the public.[69]

Certain environmental organizations challenged the Wyoming Oil and Gas Conservation Commission's acceptance of several trade secret claims.[70] To do so, they first made a request to the Commission for documents showing the identity of the substances claimed to be a trade secret.[71] Wyoming, like most states, has a statute that makes most governmental records available to the public, and the environmental organizations relied on that statute.[72] But, like the federal Freedom of Information Act[73] and the open records statutes in most states,[74] the Wyoming statute provided that any governmental documents that contain trade secret information are not subject to the open records statutes.[75] Relying

64. Powder River Basin Res. Council v. Wyo. Oil & Gas Conservation Comm'n, 43 Envtl. L. Rep. (Envtl. Law Inst.) 20072 (Wyo. Dist. Ct., Mar. 21, 2013), *available at* http://elr.info/litigation/43/20072/powder-river-basin-resource-council-v-wyoming-oil-gas-conservation-commission (last visited Feb. 12, 2014).

65. 55-3 WYO. CODE R. § 45(d)(ii) (LexisNexis 2012).

66. *Id.* at § 45(f); *see also Powder River Basin Res. Council,* 43 ENVTL. L. REP. at 20072.

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

72. WYO. STAT. ANN. §§ 16-4-201 to -205 (2013).

73. 5 U.S.C. § 552(b)(4) (2013).

74. W. VA. CODE ANN. § 29B-1-4(a)(1) (2013); TEX. GOV'T CODE ANN. § 552.110(b) (West 2013).

75. WYO. STAT. ANN. § 16-4-203(d)(v) (2013).

on that provision, the Commission denied the environmental organizations' public records requests.[76]

But also like the open records statutes in most states, the Wyoming statute allows a person who makes a public records request to bring a court action to challenge any improper denial of a public records request.[77] Relying on that provision, the environmental organizations filed suit, asserting that the Commission's denial of their public records request was improper because, according to the environmental organizations, the information they sought did not qualify for trade secret status.[78] They argued that the identity of a particular chemical compound in fracturing fluid could never qualify as a trade secret and that only the combination of both the identity of a compound *and* its concentration in the fracturing fluid could potentially be a trade secret.[79] The district court rejected the organizations' claims.[80]

B. FracFocus—A Central Website for Disclosures

At the same time that public support for mandatory disclosure grew, several companies began to voluntarily disclose the composition of their fracturing water. Some of these companies did so by posting information on their company websites. But in April 2011 the Ground Water Protection Council[81] and the Interstate Oil Gas Compact Commission[82] jointly launched FracFocus,[83] a website that was designed to be a central location where companies could voluntarily disclose the composition of fracturing fluid used anywhere in the United States on a well-by-well basis.[84]

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76. *Powder River Basin Res. Council,* 43 ENVTL. L. REP. at 20072.

77. WYO. STAT. ANN. § 16-4-203(f) (2013).

78. *Powder River Basin Res. Council,* 43 ENVTL. L. REP. at 20072.

79. *Id.* at 6.

80. *Id.* at 17.

81. "The Ground Water Protection Council (GWPC) is a nonprofit 501(c)6 organization whose members consist of state ground water regulatory agencies which come together within the GWPC organization to mutually work toward the protection of the nation's ground water supplies." *About the Ground Water Protection Council,* GROUNDWATER PROT. COUNCIL, http://gwpc.org/about-us (last visited Feb. 12, 2014).

82. The Interstate Oil and Gas Compact Commission describes itself as a "multi-state government agency" whose members include governors and state agency representatives from oil and gas producing states. *About the Interstate Oil & Gas Compact Commission,* INTERSTATE OIL & GAS COMPACT COMM'N, http://iogcc.state.ok.us/about-us (last visited Feb. 12, 2014); *see generally Member States,* INTERSTATE OIL & GAS COMPACT COMM'N, http://iogcc.state.ok.us/member-states (last visited Feb. 12, 2014).

83. *See generally* FRACFOCUS, http://fracfocus.org/ (last visited Feb. 12, 2014).

84. Keith B. Hall, *Hydraulic Fracturing: Voluntary Disclosure of Fracking Water Additives*, ENVTL. & ENERGY L, BRIEF (Apr. 18, 2011), http://environmentalandenergylawbrief.com/hydraulic-fracturing/hydraulic-fracturing-voluntary-disclosure-of-fracking-wateradditives.

The movement for voluntary disclosure of fracturing water composition has been superseded in large part by the widespread enactment of mandatory disclosure regulations. Nevertheless, FracFocus has remained relevant, and actually has increased in importance, because many of the states that have enacted mandatory disclosure regulations have specified in their regulations that companies should make their disclosure by posting the information to FracFocus. For example, the Texas legislature enacted legislation in mid-2011[85] that directed the Texas Railroad Commission to draft regulations that require companies to disclose fracturing fluid composition on a well-by-well basis by posting information on FracFocus,[86] and the Commission complied with the directive, enacting such regulations in December 2011.[87]

In October 2011 Louisiana enacted a mandatory disclosure regulation that gave operators the option of either posting their disclosures on FracFocus or sending the information directly to the Office of Conservation[88] (and many companies that fracture wells in Louisiana are choosing to post to FracFocus). In December 2011 Colorado enacted regulations requiring disclosure to the FracFocus website.[89] North Dakota began requiring companies to post disclosures at the FracFocus site on April 1, 2012.[90] Oklahoma enacted a regulation that became effective July 1, 2012, requiring companies either to post fracturing water information to FracFocus or to send the information to the state's Corporation Commission.[91] The regulation further stated that if the company sends the information to the Corporation Commission only, the Commission will post the information to FracFocus.[92]

FracFocus contains listings of the composition of fracturing water on a well-by-well basis. The website is designed so that a person can search for wells based on one or more of several criteria, including the company that operates the well, the state or county in which the well is located, or the API number[93] of the well.[94]

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85. H.B. 3328, 82d Leg., Reg. Sess. (Tx. 2011).

86. TEX. NAT. RES. CODE ANN. § 91.851(a)(1)(A) (2013).

87. *See generally* 16 TEX. ADMIN. CODE § 3.29 (2013). In Texas, oil and gas activity is regulated by the Railroad Commission.

88. LA. ADMIN. CODE tit. 43:XIX, § 118 (2011). In Louisiana, oil and gas activity is regulated by the Office of Conservation. In 2012, the Louisiana legislature enacted a statute requiring the Office of Conservation to draft regulations that would mandate certain disclosures, but the legislatively mandated disclosures mirror the disclosure requirements that already were in place. LA. REV. STAT. ANN. § 30:4(L) (2012).

89. 2 COLO. CODE REGS. § 404-1:205A (2013).

90. N.D. ADMIN. CODE 43-02-03-27.1(1)(g) (2013).

91. OKLA. ADMIN. CODE § 165:10-3-10(b) (2013).

92. *Id.* The Corporation Commission is the agency that regulates oil and gas activity in Oklahoma. NBI Servs., Inc. v. Ward, 132 P.3d 619, 626 (Okla. Civ. App. 2005).

93. The "API Number" is an identification number that is unique for each oil and gas well drilled in the United States.

Some users of the website requested the ability to search by an additional criteria—by fracturing fluid ingredients—and FracFocus recently added that capability to its system. Thus a person can search for all wells (or all wells in a given state or county or that are operated by a particular company) in which a particular substance is included in the fracturing fluid. The website has significant utility: it is fairly user friendly, it allows searches based on several criteria, and it is a central location for the disclosure of fracturing fluid composition from wells located almost anywhere in the country. The site also contains other information regarding hydraulic fracturing,[95] state regulations relating to the process,[96] and other information relating to well construction[97] and groundwater protection.[98]

C. Federal Initiatives Regarding Disclosure

All of the mandatory disclosure regulations that have been enacted have been done at the state level, but certain mandatory disclosure initiatives have come from the federal level. For example, in September 2010 the United States Environmental Protection Agency (EPA) sent letters to nine service companies that perform hydraulic fracturing, requesting that the companies "voluntarily" respond to the EPA's requests for information.[99] Eight of the companies voluntarily provided responses that satisfied the EPA, but the Agency was not satisfied with the "voluntary" response of the ninth company, and the EPA reacted by serving a subpoena on that company.[100]

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94. *See generally Find a Well*, FRACFOCUS, http://www.fracfocusdata.org/DisclosureSearch/ (last visited Feb. 12, 2014).

95. *See generally Hydraulic Fracturing: How it works*, FRACFOCUS, http://fracfocus.org/hydraulic-fracturing-process (last visited Feb. 12, 2013).

96. *See generally Regulations by State*, FRACFOCUS http://fracfocus.org/regulations-state (last visited Feb. 12, 2014).

97. *See generally How Casing Protects Groundwater,* FRACFOCUS, http://fracfocus.org/water-protection/casing-process (last visited Feb. 12, 2013).

98. *See Groundwater Protection & Water Usage*, FRACFOCUS http://fracfocus.org/groundwater-protection (last visited Feb. 12, 2014).

99. *See EPA Formally Requests Information From Companies About Chemicals Used in Natural Gas Extraction / Information on Hydraulic Fracturing Chemicals is Key to Agency Study of Potential Impacts on Drinking Water*, EPA, (Sept. 9, 2010), *available at* http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/ec57125b66353b7e85257799005c1d64%21OpenDocument.

100. *See Eight of Nine U.S. Companies Agree to Work with EPA Regarding Chemicals Used in Natural Gas Extraction / EPA Conducting Congressionally Mandated Study to Examine the Impact of the Hydraulic Fracturing Process on Drinking Water Quality; Halliburton Subpoenaed After Failing to Meet EPA's Voluntary Requests for Information,* EPA, (Nov. 9, 2010) *available at* http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/a96496444c546959852577d6005e63d6%21OpenDocument.

Further, in response to a petition filed by Earthjustice and several other organizations, the EPA stated in late 2011 that it will draft regulations pursuant to the Toxic Substances Control Act (TSCA) to require companies to disclose information regarding "chemical substances and mixtures used in hydraulic fracturing."[101] The EPA has not specified what information will be subject to disclosure, but the Agency has stated that it will attempt to avoid duplication of "the well-by-well disclosure programs already being implemented in several states," and that it anticipates that its TSCA regulations will "focus on providing aggregate pictures of the chemical substances and mixtures used in hydraulic fracturing."[102]

In a November 23, 2011, letter to Earthjustice, the EPA stated that "the first step" in its development of disclosure regulations will be to "convene a stakeholder process to develop an overall approach that would minimize reporting burdens and costs, take advantage of existing information, and avoid duplication of efforts."[103] The EPA did not specify in its letter or its public announcement when it would convene the stakeholder process or publish notice of its proposed rulemaking. Earthjustice's petition asked that chemical manufacturers be required to supply the EPA with "various records," including the chemical and trade names of all substances manufactured for use in hydraulic fracturing, along with other information regarding each substance, including the amount produced, all existing data concerning the effects of exposure on health and the environment, copies of all health and environmental studies "known to" the manufacturers, and information regarding all adverse health or environmental effects that the manufacturers know have been "alleged to have been caused" by the substance.[104]

Another federal initiative relating to mandatory disclosure has come from the Bureau of Land Management (BLM), which has proposed regulations that would have required mandatory disclosure of the composition of the fracturing water whenever fracturing is performed on federal lands. Those regulations, which are discussed in more detail in section XIV of this Article, would include a requirement that companies disclose the composition of fracturing fluid for wells located on federal lands. The operator

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101. Letter from Stephen A. Owens, EPA, to Deborah Goldberg, EarthJustice (Nov. 23, 2011), *available at* http://epa.gov/oppt/chemtest/pubs/EPA-Letter-to-Earthjustice-on-TSCA-Petition.pdf.

102. *Id.*

103. *Id.*

104. Letter from Deborah Goldberg, EarthJustice to Lisa P. Jackson, EPA (Aug. 4, 2011), *available at* http://epa.gov/oppt/chemtest/pubs/Section_21_Petition_on_Oil_Gas_Drilling_and_Fracking_Chemicals8.4.2011.pdf.

would have to make the disclosure either to FracFocus or BLM,[105] and BLM has indicated that if a company discloses information directly to BLM, the Bureau will then submit the information to FracFocus.[106]

IV. SUBSURFACE TRESPASS CASES

Hydraulic fracturing operations have given rise to two cases in recent years in which plaintiffs asserted subsurface trespass claims, with one of the cases coming from Texas and the other from West Virginia.[107] In each case, the plaintiffs alleged that hydraulic fracturing operations that were conducted on a neighboring property caused fracturing fluids to enter the subsurface of the plaintiffs' property and cause fracturing there.[108] In each case, the plaintiffs argued that this subsurface intrusion constituted an actionable trespass.[109] But they did not allege that the fracturing caused any harmful contamination.[110] Instead, in each case the plaintiffs alleged that they were harmed by the cross-boundary fracturing because it caused natural gas to drain from beneath their property to the well on the neighboring property.[111] Thus the plaintiffs alleged similar facts and asserted similar legal theories in each case. But the two cases reached different results regarding the viability of the plaintiffs' claims.

In *Coastal Oil & Gas Corp. v. Garza Energy Trust*, a majority of Texas Supreme Court held that the plaintiffs did not have an actionable trespass claim.[112] The majority based its reasoning on the rule of capture,[113] a traditional oil and gas principle that appears to have been applied in all states that have oil and gas activity.[114] The rule of capture provides that if a person drills a well on his property, he is entitled to all of the oil and gas produced from

105. Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands, 78 Fed. Reg. 31636, 31676 (proposed May 24, 2013) (to be codified in 43 C.F.R. pt. 3160).

106. *Id.* at 31640.

107. Stone v. Chesapeake Appalachia, LLC, No. 5:12-CV-102, 2013 WL 2097397 (N.D. W. Va. 2013); Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1 (Tex. 2008).

108. *Stone*, 2013 WL 2097397 at *1; *Garza*, 268 S.W.3d at 7.

109. *Stone*, 2013 WL 2097397 at *1; *Garza*, 268 S.W.3d at 7.

110. In *Garza*, the court expressly notes that the only harm alleged by the plaintiffs was drainage. 268 S.W.3d at 12-13. In *Stone*, the court did not expressly state that, but the court only discusses drainage. *See generally Stone*, 2013 WL 2097397. If the plaintiffs had alleged that the intrusion of fracturing fluids caused other harms, then it would not have made sense for the court to discuss, as it did, whether the rule of capture might bar the trespass claim altogether.

111. *Stone*, 2013 WL 2097397 at *1; *Garza*, 268 S.W.3d at 7, 12-13.

112. *Garza,* 268 S.W.3d at 17.

113. *Id.* at 16-17.

114. PATRICK H. MARTIN & BRUCE M. KRAMER, WILLIAMS & MEYERS, OIL & GAS LAW § 204.4.

that well, even if the well drains some oil or gas from beneath the neighboring property.[115] The rule of capture has been justified on the bases that it is difficult to determine how much oil or gas is drained form beneath a plaintiff's property by a neighboring well, that court's should be hesitant to prohibit a defendant from making productive works on his property, and that a plaintiff has a self-help remedy—he can drill his own well near the property line to offset what the defendant is doing.[116]

The dissent concluded that the rule of capture should not apply. The dissenters noted that courts have recognized that a defendant commits an actionable, subsurface trespass if he drills a well and the wellbore itself intrudes into the subsurface of the plaintiff's property without authority to do so.[117] The dissent analogized the fractures, fracturing fluid, and proppants that allegedly intruded into the subsurface of the plaintiffs' property to a wellbore that intruded into someone's subsurface.[118] Based on that analogy, the dissent opined that the plaintiffs had an actionable trespass.[119]

In *Stone v. Chesapeake Appalachia, LLC*, a federal district court in West Virginia faced a dispute similar to that in *Garza*.[120] The defendant moved for summary judgment, basing its motion in part on the reasoning of *Garza*.[121] But the federal district court denied the motion, making an "*Erie* guess"[122] that the West Virginia Supreme Court would reject *Garza*'s reasoning and hold that the rule of capture does not preclude a subsurface trespass claim that is based on drainage of oil or gas that is facilitated by cross-boundary fracturing.[123] The federal court acknowledged that the West Virginia Supreme Court has adopted the rule of capture,[124]

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115. *Id.*; *Garza*, 268 S.W.3d at 12-13.

116. JOHN S. LOWE, OIL AND GAS LAW IN A NUTSHELL at 8-11 (5th ed. 2009).

117. *Garza* 268 S.W.3d at 42-43.

118. Hastings Oil Co. v. Texas Co., 234 S.W.2d 389 (Tex. 1950). *See also* Williams v. Cont'l Oil Co., 14 F.R.D. 58 (W.D. Okla. 1953); Gliptis v. Fifteen Oil Co., 16 So. 2d 471 (La. 1943); Alphonzo E. Bell Corp. v. Bell View Oil Syndicate, 76 P.2d 167 (Cal. App. 1938).

119. *Garza*, 268 S.W.3d at 44.

120. *See Stone,* 2013 WL 2097397.

121. *Stone,* 2013 WL 2097397 at *4.

122. In *Erie R.R. Co. v. Tompkins*, 304 U.S. 64, 78 (1938), the United States Supreme Court stated that principle that, when a federal court's jurisdiction is based on diversity of citizenship, the court generally must apply the substantive law of the forum state. When the forum state's highest court has not issued a decision directly on point, the federal court must make its best "*Erie* guess" regarding how the forum state's highest court would rule on the legal question. Conlin v. Mortg. Elec. Registration Sys, Inc., 714 F.3d 355, 358-59 (6th Cir. 2013). *Stone* did not expressly state that the court's jurisdiction was based on diversity, but the court's decision implicitly referred to the fact that it was attempting to apply West Virginia law. 2013 WL 2097397 at *8 ("this Court . . . believes that the West Virginia Supreme Court of Appeals would find . . .").

123. *Stone*, 2013 WL 2097397 at *8.

124. *Id.* at *2 (citing Energy Dev. Corp. v. Moss, 591 S.E.2d 135 (W. Va. 2003)).

but the federal court concluded that the rule likely would not apply under West Virginia law in a case in which hydraulic fracturing crosses property lines.[125] The federal court was persuaded by the reasoning of the *Garza* dissent, and by a secondary recovery case from Arkansas in which the defendant's operations had caused fluids to intrude into the subsurface of the plaintiff's land and displace minerals from that subsurface.[126]

The question of whether plaintiffs have an actionable trespass in such circumstances has received considerable attention from scholars, who have pointed to rules arising from a variety of arguably analogous fact patterns as potentially providing the rule that should govern such claims.[127]

V. SAFE DRINKING WATER ACT

Part C of the Safe Drinking Water Act[128] (SDWA) seeks to protect underground sources of drinking water by regulating underground injections.[129] Part C applies, or potentially applies, to several activities relevant to oil and gas activity, including hydraulic fracturing,[130] enhanced recovery operations,[131] injection disposal,[132] and the underground storage of hydrocarbons.[133] Of particular note have been certain recent developments relating to regulation of hydraulic fracturing under the SDWA—developments that can be better understood after a brief explanation of the history of the relation between hydraulic fracturing and the SDWA.

For years, the EPA took the position that the SDWA did not apply to hydraulic fracturing, though some groups disputed that interpretation and the United States Eleventh Circuit Court of Appeals rejected that interpretation in the late 1990s, holding that the SDWA's then current language applied to hydraulic fracturing.[134] But only a small fraction of the country's oil and gas activity

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125. *Id.* at *8.

126. *Id.* at *6 (quoting the Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1 (Tex. 2008) (Thomas, J., dissenting); also quoting Young v. Ethyl Corp., 521 F.2d 771 (8th Cir. 1975)).

127. *See generally* Anderson, *supra* note 6.

128. The Safe Drinking Water Act is found at 42 U.S.C. § 300f (2006). Part C of the SDWA is found at 42 U.S.C. § 300h (2006).

129. Legal Envtl. Assistance Found., Inc. v. EPA, 276 F.3d 1253, 1255 (11th Cir. 2001), *cert. denied*, 537 U.S. 989 (2002).

130. 42 U.S.C. 300h(d).

131. 40 C.F.R. § 144.6(b)(2) (2011).

132. 40 C.F.R. § 144.6(b)(1) (2011).

133. 40 C.F.R. § 144.6(b)(3) (2011).

134. *See, e.g.*, Legal Envtl. Assistance Found., Inc. v. EPA, 118 F.3d 1467, 1469 (11th Cir. 1997); *see also* 151 Cong. Rec. S7278-79 (2005) (EPA stating to Congress that, prior to *EPA v. LEAF*, the EPA had never interpreted the SDWA as applying to hydraulic fracturing).

takes place within the three states that are part of the Eleventh Circuit's jurisdiction, and outside that circuit the EPA did not seek to apply the SDWA to hydraulic fracturing.[135] Thus considerable doubt remained regarding the applicability of the SDWA to hydraulic fracturing.

The 2005 Energy Policy Act[136] clarified things somewhat by providing that the SDWA generally does not apply to hydraulic fracturing but that the SDWA will apply in the event that the fracturing fluid contains "diesel."[137] But even after the Energy Policy Act made it clear that the SDWA applies to fracturing in certain circumstances, the EPA still did nothing to regulate hydraulic fracturing for several years.[138] But in 2010, the EPA signaled a change. At some point during that year, the EPA posted a page on its website with information regarding hydraulic fracturing. Among other things, the page stated:

> While the SDWA specifically excludes hydraulic fracturing from UIC regulation under SDWA § 1421 (d)(1), the use of diesel fuel during hydraulic fracturing is still regulated by the UIC program. Any service company that performs hydraulic fracturing using diesel fuel must receive prior authorization from the UIC program. Injection wells receiving diesel fuel as a hydraulic fracturing additive will be considered Class II wells by the UIC program.[139]

This caught many people in the oil and gas industry by surprise. Although the 2005 Energy Policy Act had made it relatively clear that the SDWA applied to hydraulic fracturing operations in which diesel fuel was an ingredient of the fracturing fluid, neither the EPA nor any state other than Alabama had ever used the SDWA

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135. *See* Hall, *supra* note 20.

136. Energy Policy Act of 2005, Pub. L. No. 109-58 (2005) (codified throughout scattered sections of 26 and 42 U.S.C.).

137. The 2005 Energy Policy Act did this by revising the definition of "underground injection" to exclude hydraulic fracturing, unless the fracturing fluid contains diesel. 42 U.S.C. § 300h(d) (2006). For a discussion of the Safe Drinking Water Act's limited application to hydraulic fracturing, see Keith B. Hall, *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, 19 BUFF. ENVTL. L.J. 1 (2011-12); Kramer, *supra* note 6.

138. *See* Keith B. Hall, *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, 19 BUFFALO ENTL. L.J. 1, 26-27 (2011-12).

139. While the most updated version of the EPA webpage contains a slightly altered version of this language, the original wording of the post has been reported by various sources, including L. POE LEGGETTE ET AL., FEDERAL REGULATION OF HYDRAULIC FRACTURING: A CONVERSATIONAL INTRODUCTION 23 (2012), *available at* http://nortonrosefulbright.com/files/us/images/publications/20121113FederalRegulationofHydraulicFracturingAConversationalIntroduction.pdf, and Lissa Harris, *EPA and Gas Drillers Square Off in Court About Diesel in Frac Fluid*, WATERSHED POST, Nov. 9, 2011, http://www.watershedpost.com/2010/epa-and-gas-drillers-square-court-about-diesel-frac-fluid.

to regulate hydraulic fracturing, even if diesel fuel was an ingredient. Further, the EPA had expressly taken the position in *LEAF* that its SDWA regulations did not apply to fracturing, and the agency had not revised its regulations or disclaimed its prior position, at least not at any time prior to the EPA's 2010 posting to its website.[140]

Two industry groups, the Independent Petroleum Association of America and the U.S. Oil & Gas Association (collectively, the "IPAA") filed suit in late 2010 challenging the EPA's statement that companies must obtain a UIC permit before conducting hydraulic fracturing using diesel.[141] The plaintiffs contended that the EPA's change in position effectively was the same as adopting a new regulation and that the EPA could not make such a dramatic change in its interpretation and application of its existing regulations without following procedures outlined by the Administrative Procedures Act (APA) for the adoption of a new regulation.[142] That litigation settled in early 2012, with the plaintiffs agreeing to dismiss their claims and the EPA stating that it would publish a document with proposed guidance regarding how the EPA's permit writers should evaluate applications for permits to conduct hydraulic fracturing with a fracturing fluid that contains diesel. Further, the EPA stated that it would invite public comments regarding the proposed guidance.[143]

On May 10, 2012, the EPA published *Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels—Draft*.[144] The EPA solicited comments, with an original deadline for comments being July 9, 2012,[145] and an extended comment period that ran through August 23, 2012.[146] The guidance will only apply to EPA permit writers overseeing SDWA programs for states that do not have primacy, though the EPA has urged states that have primacy to take the guidance into consideration.[147]

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140. *Id.*

141. *See* Brief for Petitioners, Indep. Petroleum Ass'n of Am. v. EPA, No. 10-1233 (D.C. Cir. May 10, 2011), 2011 WL 2496293.

142. *Id.* at 32-33.

143. U.S. ENVTL. PROT. AGENCY, PROPOSED AMENDMENTS TO AIR REGULATIONS FOR THE OIL AND GAS INDUSTRY: FACT SHEET at 2 (2011), *available at* http://epa.gov/airquality/oilandgas/pdfs/20110728factsheet.pdf.

144. U.S. ENVTL. PROT. AGENCY, EPA 816-R-12-004, PERMITTING GUIDANCE FOR OIL AND GAS HYDRAULIC FRACTURING ACTIVITIES USING DIESEL FUELS—DRAFT: UNDERGROUND INJECTION CONTROL PROGRAM GUIDANCE #84, *available at* http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/hfdieselfuelsguidance508.pdf.

145. 77 Fed. Reg. 27451 (May 10, 2012).

146. 77 Fed. Reg. 40354 (July 9, 2012).

147. U.S. Envtl. Prot. Agency, *supra* note 143. (EPA "fact sheet" discussing the new guidance document). The SDWA contains provisions that allow states to apply for "primacy" (a state that has primacy is delegated the role of enforcing and administering the SDWA

VI. CLEAN AIR ACT

During the flowback portion of hydraulic fracturing that is performed in shale plays, a two-phase mixture of gas and liquid flows from the well.[148] The liquid is mostly water, while the gas is mostly natural gas. Sometimes, companies have vented the gas, either because they did not have the equipment to recover the natural gas or because they did not yet have a pipeline connection to the well. That created a concern because natural gas contains volatile organic compounds (VOCs) that can contribute to ozone formation.[149] Further, natural gas is mostly methane, which is a greenhouse gas.[150]

The EPA announced proposed regulations to address these concerns in July 2011[151] and announced final regulations in April 2012.[152] The regulations generally will require companies to use "green completions," also called "reduced emissions completions," in which the companies separate and recover the gas. The requirement will not apply to exploratory or delineation wells that are not near pipeline connections, but companies will be required to flare that gas (which would be better than venting it), rather than vent it, unless doing so would be a safety hazard.[153]

Some states, such as Colorado and Wyoming, already require the use of reduced emissions completions.[154]

VII. THE CLEAN WATER ACT AND THE DISPOSAL OF FLOWBACK AND PRODUCED WATER AT POTWS

Most operators dispose of flowback and produced water in underground injection wells,[155] a process that is regulated by the Safe Drinking Water Act[156] and that, for the most part, does not raise

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within its borders) by showing that they have implemented an underground injection control scheme that meets federal standards. 42 U.S.C. § 300h-1(b)(3) (2006).

148. U.S. ENVTL. PROT. AGENCY, *supra* note 143, at 2; U.S. ENVTL. PROT. AGENCY, *supra* note 144.

149. *Id.* at 3.

150. *Id.* at 7.

151. *Press Release, EPA Proposes Air Pollution Standards for Oil and Gas Production*, EPA, (July 28, 2011) http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/8688682fbbb1ac65852578db00690ec5!OpenDocument.

152. *Id.*

153. 77 Fed. Reg. 49490 (Aug. 16, 2012).

154. 2 Colo. Code Regs. § 404-1:805(b)(3) (2013); AIR QUALITY DIVISION, WYO. DEP'T OF ENVTL. QUALITY, OIL AND GAS PRODUCTION FACILITIES CHAPTER 6, SECTION 2 PERMITTING GUIDANCE at 5 (2010), *available at* http://deq.state.wy.us/aqd/Oil%20and%20Gas/March%202010%20FINAL%20O&G%20GUIDANCE.pdf.

155. R.R. Comm'n of Tex. v. Tex. Citizens for a Safe Future & Clean Water, 336 S.W.3d 619, 621 (Tex. 2011).

156. 40 C.F.R. § 144.6(b)(1) (2013).

much controversy.[157] On occasion, however, operators have disposed of flowback or produced water by sending it to publicly owned treatment works (POTWs).[158] Such a practice, though apparently rare, raises a concern because POTWs may not be designed to remove some of the compounds found in flowback and produced water.

Responding to this concern, the EPA announced plans on October 20, 2011, to develop regulations that would require companies to pre-treat flowback before it is sent to a POTW.[159] The plans were announced as part of the "Final 2010 Effluent Guidelines Program Plan" (which was prepared pursuant to section 304 of the Clean Water Act) and require the EPA to publish a plan every two years identifying sources that discharge water either directly to surface waters or to treatment plants, and which the EPA has selected for new or additional regulations.[160] The EPA has stated that it plans to gather information from stakeholders, then draft regulations and seek public comments in 2014.[161]

VIII. EARTHQUAKES

Several types of human activities have occasionally been linked to induced seismic activity—earthquakes. Such activities include creating large reservoirs of water by damming rivers, withdrawal of fluids from beneath the surface, mining, pumping water under-

157. There are exceptions. In a few places, for example, the operation of underground injection disposal wells has been blamed for causing induced seismic activity. One example of such a location is Ohio. *See Ohio's New Rules for Brine Disposal Among Nation's Toughest*, OHIO DEP'T OF NAT. RESOURCES (Mar. 9, 2012), *available at* http://ohiodnr.com/home_page/NewsReleases/tabid/18276/EntryId/2711/Ohios-New-Rules-for-Brine-Disposal-Among-Nations-Toughest.aspx Another is Arkansas. *See* ARK. OIL & GAS COMM'N, ORDER 602A-2010-12, CLASS II COMMERCIAL DISPOSAL WELL OR CLASS II DISPOSAL MORATORIUM (Feb. 8, 2011), *available at* http://aogc2.state.ar.us/Hearing%20Orders/2011/Jan/602A-2010-12.pdf.

158. For a while, some operators in Pennsylvania were sending flowback and produced water to POTWs, but at the direction of Governor Tom Corbett, the Pennsylvania Department of Environmental Protection requested that companies cease doing so by May 19, 2011. *See DEP Calls on Natural Gas Drillers to Stop Giving Treatments Facilities*, PR NEWSWIRE (Apr. 19, 2011), *available at* http://www.prnewswire.com/news-releases/pennsylvania-dep-calls-on-natural-gas-drillers-to-stop-giving-treatment-facilities-wastewater-120206249.html.

159. *See EPA Announces Schedule to Develop Natural Gas Wastewater Standards*, EPA *available at* (Oct. 20, 2011) *available at* http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/91e7fadb4b114c4a8525792f00542001!OpenDocument; 76 Fed. Reg. 66286 (Oct. 26, 2011) (publication of plan), *available at* http://gpo.gov/fdsys/pkg/FR-2011-10-26/pdf/2011-27742.pdf; U.S. ENVTL. PROT. AGENCY, EPA 820-R-10-021, TECHNICAL SUPPORT DOCUMENT FOR THE 2010 EFFLUENT GUIDELINES PROGRAM PLAN (2011), *available at* http://water.epa.gov/lawsregs/lawsguidance/cwa/304m/upload/tsd_effluent_program_10_2011.pdf.

160. *Id.*

161. *Id.*

ground to recover geothermal energy, and the underground injection of fluids for disposal.[162] The operation of injection disposal wells sometimes comes up during discussions of hydraulic fracturing.

Injection disposal wells generally are regulated under the Safe Drinking Water Act.[163] Such wells are used to dispose of a wide variety of waste fluids (including fluids unrelated to oil and gas activity), as well as for some purpose other than disposal, and hundreds of thousands of such wells have received permits in the United States under the Safe Drinking Water Act.[164] One of the types of fluid frequently disposed of in injection wells is the flowback wastewater from the hydraulic fracturing process.[165] On a handful of occasions, there have been earthquakes that authorities suspect were caused by the operation of injection disposal wells, and in some of those cases the disposal wells apparently were being used for the disposal of flowback water or the produced water from oil and gas wells.[166]

Some media reports have inaccurately suggested that the injection disposal wells were wells in which hydraulic fracturing was being conducted,[167] but those reports give an erroneous impression. The process of operating an injection disposal well is different from hydraulic fracturing and should be distinguished from it.[168] In about three locations worldwide, there is substantial suspicion

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162. NATIONAL RESEARCH COUNCIL, INDUCED SEISMICITY POTENTIAL IN ENERGY TECHNOLOGIES 18 (2012).

163. 42 U.S.C. § 300h(a)-(b) (2012).

164. U.S. ENVTL. PROT. AGENCY, UIC INVENTORY BY STATE, *available at* http://water.epa.gov/type/groundwater/uic/upload/uicinventorybystate2011.pdf.

165. R.R. Comm'n of Tex. v. Tex. Citizens for a Safe Future & Clean Water, 336 S.W.3d 619, 621 (Tex. 2011).

166. *USGS FAQs: Do All Wastewater Disposal Wells Induce Earthquakes?*, USGS http://usgs.gov/faq/?q=categories/9833/3424 ("Only a small fraction of these disposal wells have induced earthquakes that are large enough to be of concern to the public."); *Youngstown Seismic Activity Questions and Answers,* OHIO DEP'T OF NAT. RES., http://ohiodnr.com/downloads/northstar/YoungstownFAQ.pdf (last visited Feb. 12, 2014) ("There are more than 144,000 operational Class II disposal wells in the United States, but only six have been linked to earthquakes."); ARK. OIL & GAS COMM'N, *supra* note 157 (implementing a moratorium on Class II injection disposal wells in a particular area and noting that there appeared to be circumstantial evidence linking such disposal wells to seismic activity). A "Class II" injection disposal well is an injection disposal well for brine from oil and gas operations. 40 C.F.R. § 144.6(b) (2011).

167. *Cf.* David J. Hayes, *Is the Recent Increase in Felt Earthquakes in the Central US Natural or Manmade?*, U.S. DEPT. OF THE INTERIOR, (Apr. 11, 2012), http://doi.gov/news/doinews/Is-the-Recent-Increase-in-Felt-Earthquakes-in-the-Central-US-Natural-or-Manmade.cfm# (statement noting that some media reports "[u]nfortunately" had given impression that a U.S. Geological Survey scientist was reporting that hydraulic fracturing had caused earthquakes, when the scientist had found no such link and that instead scientist was reporting on apparent "correlation between wastewater injection sites and seismicity").

168. Keith B. Hall, *Frack Quakes? Can Hydraulic Fracturing Really Cause Earthquakes?*, ENVTL. & ENERGY L. BRIEF (Jan. 9, 2012), http://environmentalandenergylawbrief.com/hydraulic-fracturing/frack-quakes-can-hydraulic-fracturing-really-cause-earthquakes.

that hydraulic fracturing itself, rather than the operation of an injection disposal well, caused induced seismic activity,[169] but the likelihood of any particular hydraulic fracturing operation inducing seismic activity appears very small given that, by some accounts, more than a million wells have been hydraulically fractured.[170] With respect to induced seismic activity, the real issue is injection disposal wells and certain other activities, rather than hydraulic fracturing itself.

In at least two states, authorities have taken steps to address the risk that injection disposal wells will cause induced seismic activity. In Arkansas, a series of earthquakes occurred and many people suspected a link between those earthquakes and oil and gas activity. The Arkansas Oil & Gas Commission issued an order to prohibit the operation of injection disposal wells in a particular area, but did not prohibit hydraulic fracturing in that area.[171] The Arkansas Oil & Gas Commission noted that, "[b]ased upon the studies of the Arkansas Geological Survey," there is "no evidence" that hydraulic fracturing caused the series of earthquakes, but that there is "circumstantial evidence" that injection disposal wells might have contributed to the seismic activity.[172]

Another series of earthquakes occurred near Youngstown, Ohio in late 2011.[173] Ohio officials suspected that the operation of a particular injection well, the Northstar One Class II Injection Well, might be causing the seismic activity, which ranged from 2.1 to 4.0 on the Richter scale, and they ordered the operator of the well to cease injections.[174]

In March 2012 the Ohio Department of Natural Resources (Ohio DNR) issued a statement and preliminary report that contained certain findings and recommendations regarding the issue.[175] Ohio DNR stressed that it is "extremely rare" for the opera-

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169. The three locations are in Oklahoma, Canada, and the United Kingdom. *See* ROYAL ACAD. OF ENG'G, SHALE GAS EXTRACTION IN THE UK: A REVIEW OF HYDRAULIC FRACTURING 41-2 (2012), *available at* http://raeng.org.uk/news/publications/list/reports/Shale_Gas.pdf; AUSTIN HOLLAND, OKLA. GEOLOGICAL SURV., OPEN-FILE REPORT OF1-2011, EXAMINATION OF POSSIBLY INDUCED SEISMICITY FROM HYDRAULIC FRACTURING IN THE EOLA FIELD, GARVIN COUNTY, OKLAHOMA (2011), *available at* http://ogs.ou.edu/pubsscanned/openfile/OF1_2011.pdf; B.C OIL & GAS COMM'N, INVESTIGATION OF OBSERVED SEISMICITY IN THE HORN RIVER BASIN (2012), *available at* http://bcogc.ca/node/8046/download?documentID=1270.

170. Kurth et al., *supra* note 21, at 4-6.

171. ARK. OIL & GAS COMM'N, *supra* note 157.

172. *Id.*

173. OHIO DEP'T NATURAL RES., PRELIMINARY REPORT ON THE NORTHSTAR 1 CLASS II INJECTION WELL AND THE SEISMIC EVENTS IN THE YOUNGSTOWN, OHIO, AREA (2012), *available at* http://ohiodnr.com/downloads/northstar/UICReport.pdf.

174. *Id.*

175. *Id.*; *Ohio's New Rules for Brine Disposal Among Nation's Toughest*, *supra* note 157.

tion of injection disposal wells to induce seismic activity.[176] The statement elaborated, stating that "[t]here are more than 144,000 operational Class II disposal wells in the United States, but only six have been linked to earthquakes," and that the U.S. Environmental Protection Agency considers injection disposal to be the preferred method for disposal of such fluids.[177] But the statement also noted that Ohio DNR had concluded that operations at the Northstar One injection disposal well probably were the cause of the earthquakes that occurred near Youngstown in late 2011.[178] Further, Ohio DNR stated that it would implement new regulatory requirements relating to injection disposal wells in order to reduce the likelihood of similar incidents in the future.[179]

In its report, Ohio DNR added that geologists believe that several circumstances must all be present in order for the operation of an injection disposal well to induce seismic activity and that the simultaneous existence of all those conditions is very uncommon.[180] To induce an earthquake:

- a fault must already exist within the crystalline basement rock;
- that fault must already be in a near-failure state of stress;
- an injection well must be drilled deep enough and near enough to the fault and have a path of communication to the fault; and
- the injection well must inject a sufficient quantity of fluids at a high enough pressure and for an adequate period of time to cause failure, or movement, along that fault (or system of faults).[181]

Ohio DNR concluded that the Northstar One Class II Injection Well was drilled near a previously unmapped fault.[182] To prevent similar problems from occurring in the future, Ohio DNR announced plans to reform its injection well regulations in several ways. For example, Ohio DNR stated that it would prohibit all future drilling into the Precambrian basement rock into which the Northstar One Injection Well was drilled.[183] The new regulations

176. *Ohio's New Rules for Brine Disposal Among Nation's Toughest*, *supra* note 157.
177. *Id.*
178. *Id.*
179. *Id.*
180. *Id.*
181. *Id.*
182. *Id.*
183. *Youngstown Seismic Activity Questions and Answers*, *supra* note 166.

also will require officials to review existing geological data for known fault areas within the state and will require that new injection disposal wells avoid those areas.[184]

In addition, Ohio DNR will begin requiring that operators of disposal wells make various geophysical measurements. For example, operators will be required to measure the pressure of the injection reservoir prior to starting injections, to continuously monitor the formation's pressure during injections, and to provide an electronic feed of those results to Ohio DNR for its review.[185] Further, Ohio DNR will require that operators of injection wells install automatic shutoff systems that will halt injections if fluid injection pressures exceed a maximum level set by the agency.[186]

IX. CONTAMINATION LITIGATION

In a number of states, plaintiffs have filed claims asserting that they have incurred personal injuries or property damages caused by contamination arising from hydraulic fracturing or other aspects of oil and gas activity.[187] The number of such cases has continued to grow, but few have yet gone to final judgment. Different observers who track hydraulic fracturing litigation have come to different counts of the number of pending cases. There are a few reasons why different individuals come to different counts, including: the challenge in learning about pending cases in which there has been no published decision, the fact that it sometimes is unclear whether a plaintiff who alleges contamination is claiming that the contamination resulted from hydraulic fracturing or some other aspect of oil and gas activity, and the fact that some individuals have concentrated on counting contamination lawsuits, while others have included in their counts lawsuits in which plaintiffs allege other types of damages, and still others include in their counts lawsuits that do not involve damages claims and which instead concern controversies regarding the proper interpretation of regulations or disputes about whether regulations are preempted. It appears to the author of this Article, however, that there have probably been at least two or three dozen suits in which plaintiffs have alleged contamination damages.

In such lawsuits, the plaintiffs typically assert one or more of the following types of harm: (1) personal injuries, (2) costs for peri-

184. *Id.*
185. *Id.*
186. *Id.*
187. *See* Hall & Godshall, *supra* note 4; Barclay Nicholson and Kadian Blanson, *Tracking Fracking Case Law: Hydraulic Fracturing Litigation*, NAT. RESOURCES & ENV'T, Fall 2011, at 25.

odic medical monitoring in the future, (3) the costs of replacing the plaintiff's water supply, (4) costs for clean-up of the plaintiff's property or the aquifer under the property, (5) loss of property value, and (6) punitive damages.[188]

They typically assert one or more of the following causes of action based on: (1) the abnormally dangerous activity doctrine, (2) negligence, (3) breach of contract, (4) private attorney general or citizen suit statutes, (5) fraud, (6) trespass, and (7) nuisance.[189]

X. LONE PINE ORDERS

Lawsuits in which plaintiffs alleged that they incurred personal injuries or property damage caused by contamination often involve complicated scientific and technical evidence, the use of multiple experts from different scientific and technical disciplines, and significant discovery. Such factors can make cases expensive for the parties to litigate and can cause such cases to consume a disproportionate amount of the court's resources and attention.

Given the significant expense of litigating cases involving complex technical or scientific issues, courts sometimes have reasoned that, before such a case proceeds, the plaintiffs should be required to produce certain types of evidence—such as evidence that should be available to the plaintiffs without formal discovery (or for which the plaintiffs already have been given a chance to conduct discovery) and which is essential to some required element of the plaintiff's case.[190] An order requiring the plaintiffs to produce such evidence before the case proceeds is sometimes called a *Lone Pine* order.[191] Plaintiffs often argue that such orders are unfair and challenge their validity, whereas defendants argue that requiring the parties to engage in expensive discovery and pre-trial litigation can be unfair in complex cases if there is a possibility that the plaintiffs lack evidence that is essential to their case and which they allegedly could obtain without formal discovery. When federal courts have been asked to decide whether they have authority to grant such orders, they typically have concluded that they do, of-

188. *See, e.g.*, Fiorentino v. Cabot Oil & Gas Corp., 750 F. Supp. 2d 506 (M.D. Pa. 2010); Harris v. Devon Energy Prod. Co., No. 4:10–CV–708, 2011 WL 2729242 (E.D. Tex. 2011).

189. *See, e.g.*, *Fiorentino,* 750 F. Supp. 2d at 506, 508; *Harris*, 2011 WL 2729242.

190. Lore v. Lone Pine Corp., No. 33606-85, 1986 WL 637507 (N.J. Super. Ct. Law Div., Nov. 18, 1986); Strudley v. Antero Res. Corp., No.2011CV2218, 2012 WL 1932470 (Col. Dist. Ct. Denver Cty., May 9, 2012) *rev'd* No. 12CA1251, 2013 WL 3427901 (Colo. App., July 3, 2013).

191. *See Strudley*, 2012 WL 1932470; Roth v. Cabot Oil & Gas Corp., 287 F.R.D. 293, 299-300 (M.D. Pa. 2012); Kamuck v. Shell Energy Holdings GP, No. 4:11-CV-1425, 2012 WL 3864954 at *7 (M.D. Pa. Sept. 5, 2012); Hagy v. Equitable Prod. Co., No. 2:10-cv-01372, 2012 WL 713778 at *4 (S.D.W. Va. Mar. 5, 2012).

ten citing Federal Rule of Civil Procedure 16 to support that conclusion.

The term "*Lone Pine* order" comes from a New Jersey case, *Lore v. Lone Pine Corp.*,[192] in which a large number of plaintiffs alleged that polluted waters from a landfill had caused them to suffer personal injuries and incur a decrease in property values. The court entered a case management order that required the plaintiffs to produce certain evidence that would be essential for plaintiffs to prevail at trial, including:

- facts of each plaintiff's exposure to alleged toxic substances from Lone Pine Landfill;
- reports of treating physicians or medical experts, supporting each plaintiff's claim of injury and causation;
- each plaintiff's address for the property alleged to have declined in value; and
- reports of real estate or other experts supporting each plaintiff's claim of diminution of property value, including the timing, amount, and cause of diminution.[193]

After the plaintiffs failed to submit the information requested, the court dismissed their claims with prejudice, explaining that the plaintiffs had failed to establish a "prima facie" case.[194]

Courts are now being called upon to consider whether they should enter *Lone Pine* orders in cases in which plaintiffs allege that hydraulic fracturing or other oil and gas activity has caused contamination. One such case from the West is *Strudley v. Antero Resources Corp.*,[195] which appears to be the first hydraulic fracturing contamination or personal injury claim to go to final judgment. In that case, which was litigated in a Colorado state court, a family alleged various health problems that they contended were caused by the defendants' activities relating to the exploration for and production of natural gas.[196] The court issued a *Lone Pine* order and dismissed the case with prejudice on May 9, 2012, after ruling that the plaintiffs had not made an adequate response.[197]

The appellate court reversed. Interestingly, the appellate court did not seem to conclude merely that a *Lone Pine* order was inappropriate under the facts at issue. Instead, the court seemed to

192. *Lore*, 1986 WL 637507 at *1-2.
193. *Id.* at *1-2.
194. *Id.* at *1.
195. *Strudley*, 2012 WL 1932470 (family alleging health problems from exposure to hydraulic fracturing and natural gas operations).
196. *Id.*, slip op. at 3.
197. *Id.*, slip op. at 7.

conclude that Colorado's version of rule 16 does not authorize *Lone Pine* orders. This conclusion stands in contrast to most federal courts' interpretation of Federal Rule of Civil Procedure 16.

Federal district courts have addressed the propriety of issuing a *Lone Pine* order in at least three recent cases in which plaintiffs allege that contamination resulted from hydraulic fracturing or other aspects of oil and gas activity.[198] In each, the district court denied the defendants' request for a *Lone Pine* order, though the courts did so based on the circumstances of the individual cases, rather than based on a conclusion that the court lacked authority to issue such an order.[199]

XI. THE ENDANGERED SPECIES ACT

The Endangered Species Act[200] does not regulate hydraulic fracturing or oil and gas activity specifically, but the Act's provisions for protection of habitat can result in restrictions on a wide variety of activities, including oil and gas development or the withdrawal of water from streams, and such restrictions can incidentally affect hydraulic fracturing. And recently there have been notable developments under the Endangered Species Act. In December 2010 the U.S. Fish and Wildlife Service proposed listing the dunes sagebrush lizard, which is found exclusively in Southeastern New Mexico and West Texas, as an endangered species under the Endangered Species Act.[201] But on June 19, 2012, the Fish & Wildlife Service withdrew its proposed rule to list the lizard as endangered for purposes of the Endangered Species Act,[202] citing "landmark" conservation efforts by private landowners and by state government that had resulted in eighty-eight percent of the lizard's habitat in New Mexico and Texas being placed under conservation agreements that would minimize the impacts of development, while not prohibiting oil and gas activity altogether.[203]

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198. Roth v. Cabot Oil & Gas Corp., 287 F.R.D. 293, 299-300 (M.D. Pa. 2012); Kamuck v. Shell Energy Holdings GP, No. 11-CV-1425, 2012 WL 3864954, at *6 (M.D. Pa. Sept. 5, 2012); Hagy v. Equitable Prod. Co., No. 10-cv-01372, 2012 WL 713778, at *4 (S.D.W. Va. Mar. 5, 2012).

199. *See, e.g.*, *Roth*, 287 F.R.D. at 295, 298 ("Although no federal rule expressly authorizes the use of Lone Pine orders, federal courts have interpreted Rule 16 of the Federal Rules of Civil Procedure as supplying the authority to enter Lone Pine orders in complex litigation, pursuant to district courts' broad discretion to administer the civil actions over which they preside. . . . Upon consideration, we agree with Plaintiffs that this case does not warrant the imposition of a Lone Pine order.") *Id.* at 295.

200. Endangered Species Act, 16 U.S.C. §§ 1531-44 (2012).

201. 75 Fed. Reg. 77801 (Dec. 14, 2010).

202. 77 Fed. Reg. 36872 (June 19, 2012).

203. *See* U.S. DEP'T OF THE INTERIOR, LANDMARK CONSERVATION AGREEMENTS KEEP DUNES SAGEBRUSH LIZARD OFF ENDANGERED SPECIES LIST IN NM, TX (2012), available at http://fws.gov/southwest/es/Documents/R2ES/NR_for_DSL_Final_Determination_13June20

In December 2012 the Fish and Wildlife Service proposed listing the lesser prairie chicken as a "threatened species."[204] The original comment period ran through March 11, 2013,[205] but the Fish and Wildlife Service recently reopened the comment period, which now runs through June 20, 2013.[206] As with the dunes sagebrush lizard, there have been voluntary conservation measures[207] that have been motivated in part by a desire to head-off onerous federal regulations. The Fish and Wildlife Service recently proposed certain rules regarding activities that would be permissible and those which would not be permissible in the lesser prairie chicken's range.[208]

It is also notable that at least three recent proposals by the U.S. Fish and Wildlife Service to list aquatic species as endangered or threatened have mentioned either "oil and gas drilling" or "hydraulic fracturing."[209] Those proposals did not single out oil and gas drilling or hydraulic fracturing, but listed one or the other of those as part of a long list of activities that can affect habitat. The proposals noted that sometimes companies withdraw water from streams for use in fracturing.[210]

XII. LOCAL GOVERNMENT REGULATION OF HYDRAULIC FRACTURING AND OIL AND GAS ACTIVITY

In many states, the state statutes and regulations that govern oil and gas activity are designed to provide a uniform statewide system of regulation.[211] In some jurisdictions, these state laws ex-

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12.pdf; *see also* U.S. DEP'T OF THE INTERIOR, CONSERVATION AGREEMENTS FOR THE DUNES SAGEBRUSH LIZARD (2012), *available at* http://doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=304405 (giving a brief overview of the agreements).

204. 77 Fed. Reg. 73828 (Dec. 11, 2012).

205. *Id.*

206. 78 Fed. Reg. 26302 (May 6, 2013).

207. *Lesser Prairie Chicken Initiative*, USDA, http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/home/?&cid=nrcsdev11_023912 (last visited Feb. 12, 2014).

208. 78 Fed. Reg. 26302 (May 6, 2013); *see also* U.S. FISH & WILDLIFE SERVS., QUESTIONS AND ANSWERS: REOPENING OF COMMENT PERIOD FOR LESSER PRAIRIE-CHICKEN, (2013), *available at* http://fws.gov/southwest/es/Documents/R2ES/LPC_Reopen_4d_FAQs_FINAL_6April2013.pdf.

209. 77 Fed. Reg. 43906, 43911 (July 26, 2012), (proposed endangerment listing for the diamond darter; referring to "oil and gas drilling"); 77 Fed. Reg. 14914, 14939 (Mar. 13, 2012), (final rule making endangered status listing for sheepnose and spectaclecase mussels; referring to "hydraulic fracturing"); 77 Fed. Reg. 8632, 8650 (Feb. 14, 2012) (final rule making endangered status determination for rayed bean and snuffbox mussels; referring to "hydraulic fracturing").

210. 77 Fed. Reg. 8632, 8650 (Feb. 14, 2012) (referring to water withdrawals for hydraulic fracturing).

211. *See, e.g.*, Ne. Natural Energy, LLC v. City of Morgantown, No. 11-C-411, slip op. at 6 (Cir. Ct. W. Va. Aug. 12, 2011). There are other articles that focus on the question of local regulation of oil and gas activity. *See, e.g.*, Keith B. Hall, *When Do State Oil and Gas or*

pressly preempt local ordinances that attempt to regulate oil and gas activity.[212] And in some jurisdictions where state oil and gas laws do not expressly preempt local ordinance, courts have held that the state law provides a comprehensive system of regulations that occupy the entire field, thereby implicitly preempting any local ordinances that purport to regulate oil and gas activity.[213] In addition, in many states, a local ordinance will be preempted if it directly contravenes state law.[214]

In some jurisdictions, certain types of local ordinances will be preempted, while other types will not be. In such jurisdictions, the typical rule will be that a true zoning or land use planning ordinance that specifies certain areas or zones where particular types of activity are allowed will not be preempted, while other ordinances that purport to regulate oil and gas activity will be preempted. By "true zoning or land use planning ordinance," this Article means that a local jurisdiction cannot immunize an ordinance from preemption by labeling it as "zoning" or "land use planning" if the ordinance goes beyond specifying where various types of activity are allowed and not allowed.

In recent years, many local jurisdictions have enacted ordinances that purport to regulate oil and gas activity and there have been numerous disputes regarding whether such ordinances are preempted. For example, the City of Morgantown, West Virginia enacted an ordinance that purported to prohibit hydraulic fracturing anywhere within the City's jurisdiction, as well as anywhere within one mile of its jurisdiction.[215] A state district court concluded that West Virginia's oil and gas laws provide a comprehensive regulatory scheme that occupies the entire field, leaving no room for operation of local regulations, and that the ordinance therefore was preempted.[216] The court's judgment striking down the ordinance became final when the City failed to appeal.[217]

Mining Statutes Preempt Local Regulations?, NAT. RES. & ENV'T., Winter 2013, at 13, 13 (2013).

212. *See, e.g.*, N.Y. ENVTL. CONSERV. LAW § 27-0303 (McKinney 2013); LA. REV. STAT. ANN. § 30:28 (2012).

213. *See, e.g.*, *Ne. Natural Energy, LLC*, No. 11-C-411, slip op. at 9 (Cir. Ct. W. Va. Aug. 12, 2011).

214. Huntley & Huntley, Inc. v. Borough Council of the Borough of Oakmont, 964 A.2d 855, 863, 863 n.6 (Pa. 2009).

215. *See, e.g.*, *Ne. Natural Energy, LLC*, No. 11-C-411, slip op. at 9 (Cir. Ct. W. Va. Aug. 12, 2011).

216. *Id.*

217. Keith B. Hall, *Judgment Striking Down Morgantown Fracturing Ban is Now Final After City Inadvertently Misses Appeal Deadline*, ENVTL. & ENERGY L. BRIEF (Sept. 28, 2011), http://environmentalandenergylawbrief.com/hydraulic-fracturing/judgment-striking-down-morgantown-fracturing-ban-is-now-final-1/.

In 2009, the Pennsylvania Supreme Court handed down two decisions on the same day, one holding that a local ordinance purporting to regulate oil and gas activity was preempted and the other decision holding that an ordinance regulating oil and gas activity was not preempted.[218] The court distinguished between the two local ordinances by noting that the Pennsylvania Oil and Gas Act expressly preempted most local ordinances but that it made an express exception for ordinances enacted pursuant to the Municipal Planning Code, and that the ordinance that was upheld was a zoning ordinance.[219]

Pennsylvania recently enacted a statute to further restrict the authority of local governments to regulate oil and gas activity.[220] Plaintiffs challenged the new restriction on local authority, and the trial court entered an order holding that a key portion of the statute was unconstitutional.[221] That judgment was upheld on appeal,[222] but the State is seeking further review of the decision.

Ohio's oil and gas statutes provide a comprehensive scheme of regulations, and purport to preempt local ordinances, with certain minor exceptions.[223] In *Morrison v. Beck Energy Corp.*, the Ohio Department of Natural Resources granted a permit to Beck Energy to drill on certain land that it had leased with the City of Munroe Falls.[224] The City brought suit to stop Beck from drilling, stating that local ordinance barred drilling unless the operator first: paid a $800 permit application fee to the City, obtained a drilling permit from the City, posted a $2000 performance bond, and obtained a conditional zoning certificate after a public hearing.[225] The trial court granted an injunction to bar Beck from drilling until it had complied with the City's ordinances.[226] The appellate court reversed. It stated that, standing alone, the Ohio legislature's intent to preempt local ordinances was not sufficient to preempt the City's ordinances.[227] But under the preemption analysis required under Ohio jurisprudence and the state constitution's home-rule

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218. Range Res.-Appalachia, LLC v. Salem Township, 964 A.2d 869, 877 (Pa. 2009) (holding that ordinance regulating surface development was preempted by the Pennsylvania Oil and Gas Act); *Huntley & Huntley Inc.*, 964 A.2d (Pa. 2009) (zoning ordinance not preempted by Pennsylvania Oil & Gas Act).

219. *Compare Range Resources*, 964 A.2d at 876-77, *with Huntley*, 964 A.2d at 864-6.

220. 58 PA. CONN. STAT. § 3303 (2013).

221. *See* Robinson Township v. Commonwealth, 52 A.3d 463, 468 (Pa. Commw. Ct. 2012).

222. *Id.* at 494.

223. Ohio Rev. Code Ann. § 1509.02 (West 2013); *See* State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85.

224. *See* State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶ 1.

225. *Id.* at ¶¶ 44-48.

226. *Id.* at ¶ 53.

227. *Id.* at ¶ 54.

provisions, the ordinances were preempted because they actually conflicted with state law and they were an exercise of police power, not merely an ordinance concerned with local self-governance.[228]

A New York oil and gas statute expressly preempts local ordinances that purport to regulate oil and gas activity.[229] The statute makes an exception for tax and road ordinances, but otherwise does not make any explicit exception.[230] Nevertheless, several local jurisdictions in New York have enacted ordinances to regulate oil and gas activity. The ordinances enacted by at least two of those jurisdictions—Dryden and Middlefield—have been challenged in court. Each town's ordinance bans oil and gas activity altogether within the town's jurisdiction. In both cases, the trial court upheld the ordinance, and the appellate court affirmed the decision.[231] The court reasoned that, even though the statute that preempts local ordinances does not contain an explicit exception for zoning ordinances, the statute was not intended to preempt zoning. Further, though some authorities have expressed skepticism regarding whether ordinances that ban an activity throughout a jurisdiction should qualify as zoning,[232] the New York courts that considered the challenges to the Dryden and Middlefield ordinances held that the ordinances were not preempted and instead were permissible as "zoning."[233]

In Colorado, like New York, several local governments have enacted ordinances that purport to regulate oil and gas activity. For example, the Longmont City Council enacted an ordinance in

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228. *Id.* at 96, 97-98; *see also* Natale v. Everflow E., Inc., 959 N.E.2d 602, 611 (Ohio Ct. App. 2011) (finding that local ordinance was preempted).

229. N.Y ENVTL. CONSERV. LAW § 23–0303(2) (McKinney 2013) ("The provisions of [New York's oil and gas law] shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law.").

230. *Id.*

231. Norse Energy Corp. USA v. Town of Dryden, 964 N.Y.S.2d 714, 724 (N.Y. App. Div. 2013); Cooperstown Holstein Corp. v. Town of Middlefield, 964 N.Y.S.2d 431, 432 (N.Y. App. Div. 2013).

232. Voss v. Lundvall Bros., 830 P.2d 1061, 1068-69 (Colo. 1992) (holding that "land use" ordinance that banned oil and gas activity throughout the jurisdiction was preempted, but suggesting that an ordinance would not be preempted if it prohibited oil and gas activity only in certain zones and the ordinance did not frustrate purpose of state oil and gas laws). *But cf.* Exton Quarries, Inc. v. Zoning Bd. of Adjustment, 228 A.2d 169, 179 (Pa. 1967) ("The constitutionality of zoning ordinances which totally prohibit legitimate businesses such as quarrying from an entire community should be regarded with particular circumspection; for unlike the constitutionality of most restrictions on property rights imposed by other ordinances, the constitutionality of total prohibitions of legitimate businesses cannot be premised on the fundamental reasonableness of allocating to each type of activity a particular location in the community."); Huntley & Huntley Inc. v. Oakmont, 964 A.2d 855, 862 (Pa. 2009) (ordinance cannot prohibit activity that state law authorizes).

233. *Norse Energy Corp. USA*, 964 N.Y.S.2d at 724; *Cooperstown Holstein Corp.*, 964 N.Y.S.2d at 432.

July 2012 purporting to strictly regulate oil and gas activities,[234] and in November 2012 the voters in Longmont enacted a proposal that purports to ban hydraulic fracturing.[235] The State of Colorado, acting through the Colorado Oil and Gas Conservation Commission, has sued Longmont, seeking a declaratory judgment that much of the new ordinance is preempted.[236] The Colorado Oil and Gas Association filed a separate suit, which the State later joined, seeking to overturn the ballot initiative that purports to ban hydraulic fracturing with the city limits.[237] Both lawsuits are still pending.

XIII. LOCAL INCONVENIENCE ISSUES

Once a well is put into production, the wellsite tends to be fairly quiet, but during the drilling process and again during the fracturing process the site can be very busy. Several hundred truckloads of equipment, personnel, water, sand, and other supplies must be delivered to the site. This can create traffic problems. The traffic can also exert significant wear and tear on roads, particularly if numerous wells are being drilled and fractured. Other potential aggravations for those living or working near the wellsite include noise and dust.[238] Also, for those living near a wellsite, light pollution can be an aggravation (the wellsite typically will be thoroughly lighted for worker safety because the operator likely will operate twenty-four hours a day during the drilling process).

The Louisiana Office of Conservation has issued Order No. U-HS to regulate noise, vibrations, lighting, fencing, minimum distances between wells and homes, and the general upkeep of drilling sites in urban areas.[239] Earlier this year, Utah adopted new provisions to protect the interests of surface owners.[240]

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234. Scott Rochat, *State Sues Longmont Over Oil and Gas Drilling Regulations*, TIMES-CALL (July 30, 2012), http://timescall.com/news/longmont-local-news/ci_21193961/colorado-files-lawsuit-against-longmont-oil-gas-drilling.

235. Scott Rochat, *Longmont's Fracking Ban Vote Crossed Party Lines*, TIMES-CALL (Nov. 17, 2012), http://timescall.com/news/longmont-local-news/ci_22018644/longmonts-fracking-ban-vote-crossed-party-lines.

236. Colo. Oil & Gas Conservation Comm'n v. City of Longmont, No. 2012-cv-702 (Dist. Ct. Boulder Cnty); Rochat, *supra* note 234.

237. Mark Jaffe, *Colorado Joins in Suit to Knock Down Longmont Fracking Ban*, THE DENVER POST (July 11, 2013), http://denverpost.com/breakingnews/ci_23643679/state-joins-suit-knock-down-longmont-fracking-ban.

238. Keith B. Hall, *Hydraulic Fracturing: What are the Legal Issues?*, 59 LA. B.J. 250, 252 (Dec. 2011/Jan. 2012).

239. OFFICE OF CONSERVATION, STATE OF LA., ORDER NO. U-HS (2009), a*vailable at* http://dnr.louisiana.gov/assets/docs/news/2009/U-HS.pdf.

240. UTAH ADMIN. CODE r. 649-3-38 (2013), *available at* https://oilgas.ogm.utah.gov/pub/Notices/Rule_Surface_Owner_Protection_R649-3-38.pdf.

The Colorado Oil and Gas Conservation Commission revised its regulations to increase setback distances and to impose various operating requirements relating to the operation of pits and the control of noise, dust, lighting, and odors whenever an operator proposes to drill within 1000 feet of an "occupied structure."[241] The regulations also increase an operator's "notice and outreach" obligations.[242] In a press release, the Colorado Oil and Gas Conservation Commission referred to the new setback requirements, stating: "The rules also set a new standard for the Rocky Mountain West as they exceed our neighboring states of Kansas, Wyoming, Utah, New Mexico, Nebraska, Arizona and Texas."[243] Director Matt Lepore was quoted as saying: "We believe these [new regulatory requirements] collectively amount to the strongest criteria for setbacks in the country, will hold industry to a new standard and represent a national model."[244]

XIV. BUREAU OF LAND MANAGEMENT PROPOSED REGULATIONS

In May 2012 the Bureau of Land Management released proposed regulations that would have provided certain rules relating to hydraulic fracturing operations performed on federal lands. The rules would have included provisions relating to the mandatory disclosure of hydraulic fracturing fluid composition, well construction standards, and disposal of flowback.[245] The BLM accepted comments on the proposed regulations through September 10, 2012.[246] On January 18, 2013, BLM announced that it was withdrawing its original draft and would issue a new draft that incor-

241. 2 COLO. CODE REGS. § 404-1:604 (2013). The other changes involve several regulations. An explanation of the changes, redline of the changes, and clean version of the revised regulations is available at *COGCC New Setback Rules*, COLO. OIL & GAS CONSERVATION COMM'N, http://cogcc.state.co.us/RR_HF2012/Setbacks/finalrules/FinalSetBack.Htm (last visited Feb. 12, 2014).

242. 2 COLO. CODE REGS. § 404-1:305 (2013).

243. *See* COLO. OIL & GAS CONSERVATION COMM'N, COGCC APPROVES SWEEPING NEW MEASURES TO LIMIT DRILLING IMPACTS, (2013), *available at* http://cogcc.state.co.us/RR_HF2012/Setbacks/COGCC_APPROVES_SWEEPING_NEW_SETBACK_RULES.pdf.

244. *Id.*

245. *See* BUREAU OF LAND MGM'T, U.S. DEP'T OF THE INTERIOR, INTERIOR RELEASES DRAFT RULE REQUIRING PUBLIC DISCLOSURE OF CHEMICALS USED IN HYDRAULIC FRACTURING ON PUBLIC AND INDIAN LANDS (May 4, 2012), a*vailable at* http://blm.gov/wo/st/en/info/newsroom/2012/may/NR_05_04_2012.html; *see also* 77 Fed. Reg. 27691 (May 11, 2012) (to be codified at 43 C.F.R. pt. 3160).

246. The original deadline for public comments was July 12, 2012, but BLM extended the public comment period by sixty days. *See* BUREAU OF LAND MGM'T, U.S. DEP'T OF THE INTERIOR, BUREAU OF LAND MANAGEMENT EXTENDS PUBLIC COMMENT PERIOD FOR PROPOSED HYDRAULIC FRACTURING RULE, (2012), *available at* http://blm.gov/wo/st/en/info/newsroom/2012/june/NR_06_25_2012.html; *see also* 77 Fed. Reg. 38024 (June 26, 2012).

porated significant revisions later in the year.[247] The BLM released the revised proposed regulations in May 2013[248] and, because of the significant revisions, opened the revised proposed regulations to a new round of public comment.

Some people in the industry had suggested that BLM should not adopt its own regulations and instead should let state regulations govern, but BLM rejected that suggestion.[249] There are several points worth highlighting in the proposal. First, in a change from the prior draft of proposed regulations, the revised proposal would apply only to hydraulic fracturing, not to other types of well stimulation, such as acidization.[250] The proposed regulations would require operators to provide BLM with a prediction of fracture lengths prior to BLM approving permits to perform hydraulic fracturing on federal lands, and it would require operators to disclose the composition of the fracturing fluid they use on a well-by-well basis to FracFocus.[251] BLM rejected some environmentalists' call for a baseline testing requirement.[252] BLM reasoned that the issue of baseline testing was best left to state regulation given that even if an oil or gas well that is to be hydraulically fractured is on federal lands, the nearby water supplies may not be.[253] The regulations generally will require companies to use cement evaluation logs on each well to verify the integrity of the cementing of the well.[254] But if a company conducts a cement evaluation log which demonstrates that a particular well has a satisfactory cement job, the company can designate that as a "type" well, and the company need not conduct evaluation logs on subsequent wells that use the same design and are located in a similar area as that in which the "type" is located.[255] The proposed regulation would allow use of lined pits for temporary storage of flowback, but the BLM expressly invited comment on whether it should require the use of closed containers for flowback.[256]

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247. Nick Snow, *BLM Pulls Proposed Fracing Rules, Works on New Version*, OIL & GAS J. (Jan. 21, 2013), *available at* http://ogj.com/articles/2013/01/blm-pulls-proposed-fracing-rules--works-on-new-version.html.

248. The proposed regulations appear at 78 Fed. Reg. 31636 (May 24, 2013) (to be codified at 43 C.F.R. pt. 3160), *available at* http://www.gpo.gov/fdsys/pkg/FR-2013-05-24/pdf/2013-12154.pdf.

249. *Id.* at 31643-44.

250. *Id.* at 31645.

251. *Id.* at 31640.

252. *Id.* at 31649.

253. *Id.*

254. *Id.* at 31675.

255. *Id.* at 31676.

256. *Id.* at 31655-56.

XV. WATER SOURCING AND USE

In hydraulic fracturing, water typically serves as the "base fluid" that is used to impose the hydraulic pressure that fractures the underground formation.[257] Although companies are relying on recycled water to serve as all or a portion of their base fluid more frequently than in the past, a large portion of water used in hydraulic fracturing still is "new" water that comes from underground or surface sources. The amount of water that is used will depend on various factors, including the length of the wellbore area where the formation will be fractured. Perhaps 50,000 gallons of water might be used to conduct a small-scale frac job on a shallow, vertical gas well, but three to six million gallons or more of water might be used to hydraulically fracture a horizontal well with a lateral that is a mile or more in length in a shale formation.[258] This is not an extraordinary amount of water when compared to other industrial and agricultural uses,[259] but when water is already in short supply, the added demand for water to provide a supply for fracturing can help put a strain on supplies.

The circumstances relating to water supply and the laws governing the rights to use groundwater and surface water will vary significantly from state to state, but two examples of developments in two states illustrate noteworthy points. First, in states where water supplies are short, companies will be pushed to treat and recycle flowback water (or other wastewater) for use in future fracturing in order to reduce the amount of freshwater required. Second, even in states that are viewed as water-rich, increased use of water can have impacts and raise legal issues.

The first example comes from Texas, which has been in a drought condition for a considerable time, and that at times has created tensions regarding water use. In March 2013 the Texas Railroad Commission adopted regulatory revisions that went into effect in April 2013 to encourage oil and gas operators to recycle flowback water by using it as part of the supply water for subsequent fracturing operations. The revisions, including significant revisions to title 16, section 3.8 of the Texas Administrative Code, are designed to encourage recycling by making it easier for compa-

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257. SHALE GAS PRIMER, *supra* note 2, at ES-4.

258. OFFICE OF OIL, GAS, & MINERALS, MICH. DEP'T OF ENVTL QUALITY, HYDRAULIC FRACTURING OF OIL AND GAS WELLS IN MICHIGAN 3 (2013), *available at* http://michigan.gov/documents/deq/Hydraulic_Fracturing_In_Michigan_423431_7.pdf.

259. One source states that five million gallons of water is about the amount of water typically used to irrigate about eight to ten acres of corn for one growing season. OFFICE OF GEOLOGICAL SURVEY, MICH. DEP'T OF ENVT'L QUALITY, HYDRAULIC FRACTURING OF NATURAL GAS WELLS IN MICHIGAN 2 (2011), *available at* http://www.michigan.gov/documents/deq/Hydrofrac-2010-08-13_331787_7.pdf.

nies to satisfy any regulatory requirements that would have to be met in order to recycle (for example, by allowing certain recycling and certain storage for recycling to be done without the necessity of a permit).

The second example comes from Louisiana. In the Haynesville Shale in northwestern Louisiana, operators use about four to five million gallons for fracturing a typical horizontal well.[260] When companies first began fracturing wells in the Haynesville Shale in 2008, they used groundwater to supply most of their water.[261] The groundwater often came from the Carrizo-Wilcox aquifer, the same aquifer that many landowners use to supply their domestic water needs.[262] The Louisiana Office of Conservation ("Conservation") soon began receiving complaints from landowners that their private water wells were "going dry," and many people blamed the problem on the extensive use of groundwater for hydraulic fracturing.[263]

Under traditional Louisiana rules regarding use of groundwater, if the companies performing the fracturing owned a water well, or had permission to use someone else's well, they would be entitled to pump as much water as they wished, even if their usage disadvantaged others by causing the aquifer's level to drop.[264] That rule was modified slightly by legislation enacted in 2003 that gives the Office of Conservation some limited authority to restrict usage.[265]

On October 16, 2008, Commissioner of Conservation, James H. Welsh, issued a memorandum "encourag[ing]" oil and gas operators to use water from surface sources (such as streams and ponds) for their fracturing "where practical and feasible."[266] Further, if that was not feasible, Commissioner Welsh "recommended" that they use water from the Red River Alluvial aquifer, which has water that is less suitable for domestic use than the water in the Carrizo-Wilcox aquifer. Most operators complied with Welsh's request that they switch to using surface water. Statistics show that, from

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260. Comm'r Jim Welsh, Remarks at EPA Workshop on Water Resources Management 4 (Mar. 29, 2011) (transcript available at http://dnr.louisiana.gov/assets/docs/conservation/documents/EPAWors.pdf).

261. *Id.*

262. *Id.*

263. *Id.*

264. Adams v. Grigsby, 152 So. 2d 619 (La. Ct. App. 1963), *writ refused*, 153 So. 2d 880 (La. 1963); LA. REV. STAT. ANN. §§ 31:4, :14 (2013).

265. LA. REV. STAT. ANN. § 38:3097.1-.8 (2013).

266. The statement is available at *Ground Water Use Advisory: Commissioner of Conservation Recommends Wise Water Use Planning in the Haynesville Shale*, DEP'T OF NATURAL RES., STATE OF LA. (Oct. 16, 2008), http://dnr.louisiana.gov/index.cfm?md=newsroom&tmp=detail&aid=509. A PDF version is available at http://dnr.louisiana.gov/assets/docs/conservation/groundwater/Appendix_L.pdf.

October 2009 through January 2011, surface water supplied more than seventy percent of the water used for fracturing wells in the Haynesville.[267] The operators' voluntary response avoided the need for regulation.

But the switch to surface water raised another issue: namely, whether Louisiana law prohibits the state from allowing companies to use surface water free of charge. Article 450 of the Louisiana Civil Code provides that the waters in running streams and navigable water bodies are "public things" that belong to the state.[268] Article 452 of the Louisiana Civil Code states that "[p]ublic things . . . are subject to public use in accordance with applicable laws and regulations,"[269] and section 9:1101 of the Louisiana Revised Statutes states that there will be no charge for anyone using such surface water for "municipal, industrial, agricultural or domestic purposes."[270] But article VII, section 14(a) of the Louisiana Constitution prohibits the donation of state property.[271] In 2010, the Louisiana Attorney General issued an opinion stating that if the state allows a company to use surface waters without charge, the state effectively is making a tacit donation of state-owned property in violation of the constitution.[272] The legislature responded by enacting legislation that authorizes the Department of Natural Resources (DNR) to enter cooperative endeavor agreements that allow companies to use surface water.[273] The agreements must be in writing, and companies must pay "fair market value" for the water.[274] Since then, DNR has entered a number of such agreements.[275]

XVI. STATE WELL CONSTRUCTION STANDARDS AND OTHER REGULATIONS

Various states have enacted or revised a variety of other regulations, including well construction standards. For example, Utah

267. James H. Welsh, Sustaining Louisiana's Freshwater Aquifers: A Case Study in Bringing Community and Industry Together 10 (Mar. 29, 2011) (unpublished presentation), *available at* http://www2.epa.gov/sites/production/files/documents/08_Welsh_-_Aquifers_LA_508.pdf.

268. LA. CIV. CODE ANN. art. 450 (2013).

269. LA. CIV. CODE ANN. art. 452.

270. LA. REV. STAT. ANN. § 9:1101 (2013).

271. LA. CONST. art. VII, pt. XIV(a).

272. La. Att'y Gen. Op. No. 10-0173 (Nov. 23, 2010).

273. Act No. 955, 2010 La. Acts 3315 (codified as amended at La. Rev. Stat. Ann. § 30:961-63 (2013)).

274. LA. REV. STAT. ANN. § 30:961(B).

275. A list of Cooperative Endeavor Agreements entered form 2010 through 2012 can be found on the Louisiana Department of Natural Resources website, available at http://dnr.louisiana.gov/assets/docs/conservation/groundwater/Appendix_D.pdf.

adopted regulations that were effective November 12, 2012, relating to wellbore integrity, well control, surface operations, and management of flowback.[276] North Dakota revised regulations relating to pits, disposal of wastes, and well construction, effective April 1, 2012.[277] Other states, including Illinois, Ohio, Pennsylvania, and West Virginia have also enacted or revised statutes and regulations.

The United States Occupational Safety and Health Administration has cautioned that levels of airborne silica (from sand) are too high at some hydraulic fracturing sites and that care should be taken to control dust and protect workers in order to minimize the risk of silicosis.[278]

In May 2012 Vermont banned hydraulic fracturing,[279] but the ban has only symbolic importance. Vermont has no ongoing oil and gas activity and has had almost no such activity in the past. The Vermont Geological Survey indicates that there never has been a productive oil or gas well in Vermont, that there have been only a few attempts to drill an oil or gas well in the state, and that the last attempt was nearly thirty years ago.[280]

XVII. CONCLUSION

In the last few years, hydraulic fracturing has drawn considerable public attention. The process raises numerous legal issues, several of which relate to potential impacts on the environment. Federal, state, and local governments have responded with a large number of new regulations to address these issues, and there continue to be frequent developments relating to the regulation of hydraulic fracturing. In addition, parties have litigated several issues relating to private rights that have arisen in connection with hydraulic fracturing activities. It appears likely that, for the foreseeable future, there will continue to be ongoing change and development in the law of hydraulic fracturing.

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276. UTAH ADMIN. CODE r. §§ 649-3-39 (2013).

277. N. D. INDUS. COMM'N ORDER NO. 18123, CASE NO. 15869, IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE ADOPTING NEW RULES AND AMENDMENTS TO THE "GENERAL RULES AND REGULATIONS FOR THE CONSERVATION OF CRUDE OIL AND NATURAL GAS" CODIFIED AS ARTICLE 43-02 NORTH DAKOTA ADMINISTRATIVE CODE (Jan. 23, 2012) (revising N.D. ADMIN. CODE 43-02-03-19, -19.1, -19.3, -21).

278. *Worker Exposure to Silica During Hydraulic Fracturing*, U.S. DEP'T OF LABOR, https://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.html (last visited Feb. 12, 2014).

279. 29 VT. STAT. ANN. tit. 29, § 571(a) (2013).

280. *Earth Resources - Oil & Gas,* VT. GEOLOGICAL SURVEY, http://anr.state.vt.us/dec/geo/oilandgas.htm (last updated Mar. 29, 2012).

THE STATE OF STATE AND LOCAL GOVERNMENTAL RELATIONS AS IT IMPACTS THE REGULATION OF OIL AND GAS OPERATIONS: HAS THE SHALE REVOLUTION REALLY CHANGED THE RULES OF THE GAME?

BRUCE M. KRAMER*

I. BASIC PRINCIPLES

One of the basic tenets of state and local government law has been given the inelegant name "creature theory." By this moniker, a teacher of state and local government law can impress upon the minds of his students the fact that sub-state units[1] exist at the pleasure of the state. Plenary control over sub-state units, for many years, resided with the state.[2] Sub-state units were rarely, if ever, given the right to raise federal constitutional claims against

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1. For purposes of this article, I refer to units of government beneath that of the state as sub-state units. Such units obviously include counties and municipalities but may include any of the thousands of other sub-state units that arise in the fifty states, including such units as towns, townships, boroughs, special districts, improvement districts, tax abatement districts, etc. This article will focus on those sub-state units that exercise general police power which, for the most part, are municipalities, counties, at least in some states, towns, townships and boroughs.

2. *See, e.g.*, City of Trenton v. New Jersey, 262 U.S. 182 (1923); City of Covington v. Kentucky, 173 U.S. 231 (1899); State v. City of Boca Raton, 172 So.2d 230 (Fla. 1965); Opinion of the Justices, 79 N.E.2d 889 (1948); People *ex rel.* Drake v. Mahaney, 13 Mich. 481 (1865).

actions by the state.[3] Thus, whatever limits there are on the exercise of that plenary authority, they must arise from State constitutions.[4] There are a wide variety of such state constitutional limitations running the gamut from such minor issues as not granting street franchises to such major issues as not enacting special or local laws or using local taxes for state purposes.[5]

There is one aspect of the creature theory that has changed over the past 150 years and that is the source of sub-state unit power. It used to be that sub-state units had to look for a specific state enabling act before it could exercise any police power, including the power to zone or otherwise regulate land use. The "home rule" movement is generally believed to have been initiated with amendments to the Missouri Constitution in 1875.[6] Under home rule, sub-state units that are given, or can opt into, home rule status have all of the powers of the state unless specifically prohibited by state statute. That is the reverse of the creature theory model, which is that sub-state units have no police power unless such power is expressly delegated to them by the state.[7] But not all sub-state units are home rule units. Many still remain "general law" sub-state units which must rely on state legislative grants of power to act. The reality, however, is that most sub-state units that exercise general governmental powers, be they general law or home rule units, have the authority to act unless the state has taken away that authority. While 100 years ago the argument that sub-state units which were regulating oil and gas operations were

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3. *See, e.g.*, Hunter v. City of Pittsburgh, 207 U.S. 161 (1907) (Contract Clause); Williams v. Mayor of Balt., 289 U.S. 36 (1933) (Privileges & Immunities Clause); City of Newark v. New Jersey, 262 U.S. 192 (1923) (Equal Protection Clause); *City of Trenton*, 262 U.S. 182 (Due Process Clause). Where interests of individuals are involved, however, those individuals may assert that their constitutional rights are being violated where the state is exercising plenary authority over sub-state units. *See, e.g.*, Wolff v. New Orleans, 103 U.S. 358 (1880) (bondholders may assert Contract Clause claims against state statute); Gomillion v. Lightfoot, 364 U.S. 339 (1960) (black citizens may challenge re-setting of municipal boundaries based on racial considerations under the Equal Protection Clause).

4. Thus until recently, state constitutional Due Process clauses were not seen as applying to sub-state units unless the sub-state unit was operating in a proprietary and not a governmental manner. *See, e.g.*, Shirk v. City of Lancaster, 313 Pa. 158 (Pa. 1933). The recent Pennsylvania Commonwealth Court decision dealing with Act 13, which purported to re-balance the powers of state and sub-state units when it came to regulating oil and gas operations, *Robinson Twp. v. Commonwealth*, 52 A.3d 463 (Pa. Commw. Ct. 2012), *notice of appeal quashed*, 2013 Pa. LEXIS 1632 (July 25, 2013), did invalidate the statute on State due process grounds. On appeal, a plurality of the Pennsylvania Supreme Court affirmed the result but on different grounds, although a concurring justice would have affirmed on the basis of the Commonwealth Court's due process rationale. Robinson Twp. v. Commonwealth, 83 A.3d 901 (Pa. 2013). The Robinson Township case is discussed *infra* text accompanying notes 140-167.

5. These restrictions are analyzed in OSBORNE M. REYNOLDS, JR., LOCAL GOVERNMENT LAW §§ 28-34 (2d ed. 2001) [hereinafter REYNOLDS].

6. REYNOLDS, *supra* note 5, at § 106.

7. REYNOLDS, *supra* note 5, at § 35.

acting *ultra vires* (without authority), today's jurisprudential issues revolve around the related, but different, preemption doctrine.

In many fields, including the regulation of oil and gas operations, the judiciary has taken a reasonably "activist" approach in applying traditional state and local governmental preemption doctrine to, in essence, protect the creature sub-state units from the actions of the creator states. As will be explored in depth in the article that follows, state courts regularly intervene in the power struggle between state and sub-state units either through the use of the two implied preemption doctrines or through their "creative" interpretation of state statutes that purport to preempt sub-state units.

II. A HISTORICAL PERSPECTIVE

The issues relating to sub-state unit regulation of oil and gas operations are neither new nor revolutionary, notwithstanding the general public's perception that these issues have never been debated, discussed, or resolved until today. In fact, sub-state regulation of oil and gas operations is over eighty-five years old. In February 1927, the City of Winfield, Kansas, adopted a municipal ordinance that imposed a permit requirement prior to the drilling of any well within the city limits and further required that the permit applicant show that they had valid oil and gas leases covering an area of not less than 90,000 square feet if the well was being located on unimproved acreage and not less than 300,000 square feet if the well was to be located on improved property.[8] This was followed by the enactment of a similar ordinance by the City of Oxford, Kansas, that was unsuccessfully challenged by oil and gas lessees.[9] Similar ordinances were enacted in Oklahoma City and other municipalities impacted by the discovery of large oil reservoirs in the mid-continent region in the early 1930s.[10] When compared to modern sub-state regulatory ordinances, it is important to note that both of these ordinances' principal regulatory focus was

8. ABA, LEGAL HISTORY OF CONSERVATION OF OIL AND GAS 55-56 (1938) [hereinafter 1938 ABA HISTORY].

9. Marrs v. City of Oxford, 24 F.2d 541 (D. Kan. 1928), *aff'd* 32 F.2d 134 (8th Cir. 1929), *cert. denied* 280 U.S. 573 (1929). The major difference between the Winfield and Oxford ordinances was that Winfield required the lessee to show that the royalty interests were pooled within the spacing unit prior to the receipt of the drilling permit, while Oxford only required the lessee to show that the acreage was pooled after the drilling permit was issued. 1938 ABA HISTORY, *supra* note 8, at 55-56.

10. ABA, CONSERVATION OF OIL AND GAS: A LEGAL HISTORY 391-97 (Murphy, ed. 1948). The City of South Houston, Texas ordinance is described in *Tysco Oil Co. v. R.R. Comm'n of Tex.*, 12 F. Supp. 195, 202 (S.D. Tex. 1935) and the City of Post, Texas ordinance is described in *Rainwater v. Mason*, 283 S.W.2d 435 (Tex. Civ. App. 1955).

on "sub-surface" actions: namely, preventing waste and protecting correlative rights rather than on the surface externalities problem. One of the explanations for the sub-state unit involvement in "conservation" and sub-surface issues is that at the time these ordinances were enacted, there were no statewide compulsory pooling or unitization laws in existence although states did regulate other aspects of the oil and gas industry.[11]

There was some sub-state regulation of extractive industries prior to the Oxford and Winfield ordinances that mostly involved non-comprehensive single-use regulatory ordinances that impacted the extractive industries.[12] At the same time that Oxford and Winfield were enacting their conservation ordinances, there was the onset of the zoning and land use regulation revolution.[13] Prior to the promulgation of the Standard Zoning Enabling Act (SZEA) and the Standard Planning Enabling Act (SPEA) by the United States Department of Commerce in the 1920s,[14] few sub-state units engaged in either zoning or planning regulation. When the SZEA and SPEA became the template for state legislatures to enact enabling legislation, the widespread adoption of such legislation quickly followed. A second event triggered the rapid ascension of zoning and planning ordinances, certainly within municipalities, and that was the Supreme Court's approval of zoning in the face of various constitutional challenges in the landmark decision of *Village of Euclid v. Ambler Realty Co.*[15] Both the imprimatur of constitutional validity by the Supreme Court and the elimination of the ultra vires argument led to the widespread adoption of very similar zoning and land use ordinances throughout the United States.

Traditional Euclidean zoning regulation had both organizational and functional similarities. Typically there would be a Planning Commission or a Planning and Zoning Commission, com-

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11. BRUCE M. KRAMER & PATRICK H. MARTIN, THE LAW OF POOLING AND UNITIZATION § 3.02(1) (3d. ed. 2013) [hereinafter POOLING AND UNITIZATION]. The first statewide compulsory pooling was adopted in New Mexico in 1935 and quickly followed by a similar statute in Oklahoma. *Id.*

12. *See, e.g.*, Hadachek v. Sebastian, 239 U.S. 394 (1915); Pierce Oil Co. v. Hope, 248 U.S. 398, 399 (1919). *Hadachek* involved an ordinance prohibiting the use of the land for brick making operations. Such operations were located where the clay for the brick was being mined, and the prohibition substantially diminished the value of the land because the clay could not easily be transported to a distant location for processing. The Supreme Court nonetheless upheld the validity of the ordinance while noting that it did not involve a direct prohibition against clay mining. *Pierce Oil* dealt with a technique that is currently in vogue for sub-state regulation: namely, a setback of 300 feet between any residence and any oil storage facilities.

13. The following several paragraphs are taken from Bruce M. Kramer, *Local Land Use Regulation of Extractive Industries: Evolving Judicial and Regulatory Approaches*, 14 UCLA J. OF ENVTL L. & POL'Y 41, 42-44 (1996).

14. DANIEL MANDELKER, LAND USE LAW §§ 1.02, 3.05, 4.15 (5th ed. 2003).

15. Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926).

prised of laypersons that would be required to develop either or both of the comprehensive plan or the zoning ordinance. The ordinance itself would be enacted by the local legislative body. After enactment the implementation of the ordinance is usually accomplished through a variety of administrative bodies along with the legislative body. The Commission would have a role in rezoning applications and subdivision plat approvals while a separate administrative body, typically called the Board of Adjustment or the Zoning Board of Adjustment, would deal with requests for variances from the application of the ordinance's requirements.

Traditional zoning ordinances have two or three types of regulatory emphases: location restrictions, area and/or bulk restrictions, and what I label performance standards such as landscaping, noise, screening, or other types of restrictions.[16] Within the realm of location restrictions, many zoning ordinances provide for two kinds of uses within each zoning district. The first will be "as of right" uses for which an applicant need only seek a building permit showing compliance with the area and bulk regulations. The second will be "discretionary" uses for which a special use permit, a conditional use permit, or a special permit will be required before a building permit will issue. These discretionary uses require administrative hearings and, under certain circumstances, may require legislative body approval before they may be issued. In almost all cases a public hearing will be mandatory prior to the issuance of a discretionary permit. It is also typical that conditions may be placed on the discretionary permit that are otherwise not required of all uses within that particular zoning district.

Locational restrictions have been the heart and soul of zoning since the turn of the 20th century. Since most uses are fungible in that they can physically operate anywhere, locational restrictions by themselves do not raise substantial constitutional issues.[17] But mineral extraction operations have to take place where the minerals are located, which creates a substantial tension between locational restrictions and such operations.[18] Area or bulk restrictions are typically not involved with oil and gas exploration and/or drill-

16. *See generally* ANTIEAU ON LOCAL GOVERNMENT LAW (Matthew Bender 2d ed. 2009).

17. The one exception to this general rule relates to the zoning for adult entertainment facilities or sexually-oriented businesses due to the impact of the First Amendment on restricting such uses. *See, e.g.*, City of L.A. v. Alameda Books, Inc., 535 U.S. 425 (2002); City of Renton v. Playtime Theatres, Inc., 475 U.S. 41 (1986); Young v. American Mini-Theatres, Inc., 427 U.S. 50 (1976).

18. The use of horizontal drilling techniques with laterals that may extend for several miles has changed this proposition somewhat but has not eliminated it since a person who owns the minerals under Blackacre may not use the surface of Whiteacre in order to access the Blackacre minerals. PATRICK H. MARTIN & BRUCE M. KRAMER, WILLIAMS & MEYERS OIL AND GAS LAW § 218.4 (2013).

ing operations, although they may be involved in mid-stream operations such as pipelines, compressors, storage tanks and the like. Increasingly, sub-state units are seeking to impose performance standards on the physical oil and gas exploration and drilling operations, including hour of operation limitations, noise restrictions, fencing requirements, landscaping requirements, and reclamation requirements.

Litigation involving the application of zoning ordinances to oil and gas operations for several decades was merely a subset of general zoning and/or land use litigation. A series of cases relating to the Oklahoma City zoning ordinance all upheld the general validity of the zoning ordinance as well as the specific application of the ordinance and/or its variance provisions against oil and gas operators seeking permits under the ordinance.[19] The Oklahoma City ordinance contained locational restrictions along with setback requirements that were routinely upheld by the courts even where variances were denied that effectively prevented the drilling of a well.[20] Yet there were some circumstances where the sub-state unit decisions relating to oil and gas operations, including the issuance of variances from locational restrictions were overturned.[21]

Total prohibitions against oil and gas drilling within certain types of use districts have also been the subject of some early decisions. In *Beveridge v. Harper & Turner Oil Trust*,[22] an oil and gas lessee challenged the validity of the zoning district boundary that placed its lease in a zoning district where oil and gas operations were specifically prohibited. The lessee argued that the proposed well location was only 900 feet from the zoning district boundary line.[23] The abutting zoning district allowed oil and gas operations.[24] Furthermore, the lessee asserted that the proposed well location was only 600 feet from an area whereby it would be included in a pooled unit so that it could share in the production

19. *See, e.g.*, Gruger v. Phillips Petro. Co., 135 P.2d 485 (Okla. 1943); Van Meter v. Westgate Oil Co., 32 P.2d 719 (Okla. 1934); Anderson-Kerr v. Van Meter, 19 P.2d 1068 (Okla. 1933); In re Dawson, 277 P. 226 (Okla. 1928). Similar results are reached in a series of California cases. *See, e.g.*, Marblehead Land Co. v. City of L.A., 47 F.3d 528 (9th Cir.), *cert. denied* 284 U.S. 634 (1931); Bernstein v. Smutz, 188 P.2d 48 (Cal. Dist. Ct. App. 1947). *But cf.* Pacific Palisades Assoc. v. City of Huntington Beach, 237 P. 538 (Cal. 1925). *Pacific Palisades* invalidates the application of a zoning ordinance's prohibition against drilling in residentially zoned districts after taking a hard look at the area and essentially second-guessing the City's decision.

20. *See* Eason Oil Co. v. Uhls, 518 P.2d 50 (Okla. 1974), *disapproved on other grounds*, Bankoff v. Bd. of Adjustment, 875 P.2d 1138 (Okla. 1994).

21. *See, e.g.*, Pelican Prod. Corp. v. Mize, 573 P.2d 703 (Okla. 1977); Clouser v. City of Norman, 393 P.2d 827 (Okla. 1964).

22. Beveridge v. Harper & Turner Oil Trust, 35 P.2d 435 (Okla. 1934), *overruled on other grounds*, Oklahoma City v. Harris, 126 P.2d 988 (Okla. 1941).

23. *Beveridge*, 35 P.2d at 438.

24. *Id.*

from a pooled unit well that would be located outside of the zoning district.[25] The Oklahoma Supreme Court, however, refused to second guess the district boundary line decisions of the city which effectively created a 300 foot buffer zone within the district where no oil and gas drilling operations could be permitted.[26] The court made the following observations about the public policy undergirding local regulation and limited locational prohibitions on oil and gas exploration and drilling operations:

> Fire hazard and danger alone is not the only effect that an oil field extension may have upon property. When the possible effects of oil drilling extension are considered, one who seeks to foresee the effect thereof must consider oil derricks as possible substitutes for shade trees in residence sections; slush pits as possible substitutes for ornamental fishponds in the back yards; the rythmatic [sic] but somewhat harsh pulsation of a rotary drilling rig as a substitute for the gentle sigh of balmy Oklahoma breezes passing through the foliage of landscaped yards; the odor of escaping gasses and flowing crude oil as substitutes for the fragrance of residential rose gardens; oil well appliances and machinery as competitors of the playground apparatus usually provided for the neighborhood children; the rumble of oil field trucks as a substitute for the tinkling bell of the ice cream vendor; and the worry and apprehension that springs from the knowledge of the increased fire hazard, be it great or small, as a substitute for the feeling of security which permeates the household removed from the oil field.[27]

It would be hard to find a more supportive judicial decision for the regulation of oil and gas operations by sub-state units.[28]

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25. *Id.*

26. *Id.* at 440-42.

27. *Id.* at 439; *accord* Anderson-Kerr, Inc. v. Van Meter, 19 P.2d 1068 (Okla. 1933), *overruled on other grounds*, Oklahoma City v. Harris, 191 Okla. 125, 126 P.2d 988 (Okla. 1941) (denial of a variance to lessee to drill within buffer zone upheld even though claim was made that oil will be drained to adjacent tract outside of the no-drill buffer zone).

28. *Beveridge* is indicative of what I call the "soft glance" approach to judicial review of local land use decisions. The genesis of this approach comes from *Euclid*, where the court said that boundary line decisions relating to zoning ordinances should be upheld even if they are "fairly debatable." While the Supreme Court of the United States intimated shortly after *Euclid*, in *Nectow v. City of Cambridge*, 277 U.S. 183 (1928), that courts were justified in giving a "hard look" to individual decisions relating to the application of zoning district boundary lines to specific tracts of land, the "hard look" scope of judicial review has never been the predominant rule in most states. *See generally* Bruce M. Kramer, *Local Land Use Regulation of Oil and Gas Development: Pumpjacks and Preemption*, 2009 LA. MIN. L.INST. 198, 204-06.

In addition to the enactment of ordinances through the initiative process or the repeal of ordinances through the referendum process, should either or both be available, direct citizen approval of oil and gas permits or zoning decisions has been the subject of some litigation. A permit or zoning decision may be subject to a vote of the entire population or to a narrower sub-set of citizens such as neighbors or abutting owners. In *Peter Henderson Oil Co. v. City of Port Arthur*,[29] an oil and gas operator was required to seek a discretionary permit under the City's zoning ordinance prior to drilling. The discretionary permit would only be granted if the adjacent landowners consented to the drilling of the well.[30] Upon its failure to receive the required consent the oil and gas operator sued to overturn the consent requirement and have the City issue the permit based on various constitutional theories.[31] Without commenting on the substantive consent or waiver issue, the court dismissed the action on statute of limitations grounds.[32] The well-regarded City of Fort Worth oil and gas zoning ordinance provides that for one of its three categories of oil and gas well permits, either the applicant must get permission from the City Council or show waivers from all "protected use property owners" within 600 feet of the proposed drill site.[33] In a challenge to a well permit that was applied for as an urban gas permit but ended up being approved as a high impact permit requiring a waiver by surface owners or consent of the City Council, the court of appeals did not get to the substantive issue finding instead that the plaintiff lacked standing to challenge the permit.[34]

One case from the early 1990s is a precursor to the type of litigation that may be forthcoming with the recent spate of sub-state unit regulation of oil and gas operations. In *Mid Gulf Inc. v. Bish-*

29. Peter Henderson Oil Co. v. City of Port Arthur, 806 F.2d 1273 (5th Cir. 1987).

30. *Id.* at 1274.

31. The Supreme Court of the United States has not applied a consistent rule to "consent" provisions contained in zoning ordinances. *Compare* Washington *ex rel.* Seattle Title Trust Co. v. Roberge, 278 U.S. 116 (1928), *and* Eubank v. City of Richmond, 226 U.S. 137 (1912), *with* Thomas Cusack Co. v. City of Chi., 242 U.S. 526 (1917). *See also* MANDELKER, *supra* note 14, at § 6.04.

32. Another Texas-based case also avoided the issue of deciding whether consent or waiver requirements are valid in the context of oil and gas operations after the City amended its ordinance by repealing the provision requiring the consent of any surface owner within 500 feet of the proposed drill site. Shelby Operating Co. v. City of Waskom, 964 S.W.2d 75 (Tex. App. 1997).

33. Kohout v. City of Ft. Worth, 292 S.W.3d 703 (Tex. App. 2009). The three categories are rural gas permit, which is a use "as of right" if no operations are conducted within 1000 feet of a defined protected use on a twenty-five acre tract, a high impact permit that is defined as a drill site within 600 feet of a protected use, and an urban permit which includes all other permits.

34. *Id.* at 711.

op,[35] the owner of both the surface and mineral estate sought a discretionary permit from the City to drill a well. At the time the permit was sought there was no existing drilling ordinance in place. Two days after receiving the permit application, the City Council enacted a ninety-day moratorium on the issuance of discretionary permits for oil and gas drilling operations.[36] After several public hearings the City adopted a drilling ordinance that imposed upon drilling permit applicants the following mandatory conditions: (1) obtaining a $100,000 surety bond; (2) obtaining a $2,000,000 general liability insurance policy; (3) prohibiting maintenance of any tank or tank battery within city limits; (4) limiting noise to certain defined levels; and (5) limiting activities on the drill site between the hours of 8:00 PM and 8:00 AM.[37] The City then conditionally approved the permit upon compliance with the conditions listed above, but Mid Gulf filed suit in state court asserting that compliance would make extraction of the minerals economically unfeasible.[38] This type of scenario is being replicated throughout the United States wherever oil and gas operations are occurring within the boundaries of sub-state units that have the power to zone.

III. THE SCOPE AND EXTENT OF SUB-STATE REGULATION

As one would expect given the disparate nature of sub-state units and their constituencies, there is no single way to describe how such units regulate oil and gas operations.[39] An increasingly

35. *See* Mid Gulf, Inc. v. Bishop, 792 F. Supp. 1205 (D. Kan. 1992). *See also* Mid Gulf, Inc. v. Bishop 1992 U.S. Dist. LEXIS 14127 (D. Kan. 1992).

36. The general issue of the use of moratorium ordinances is discussed in MANDELKER, *supra* note 14, at §§ 6.06-6.12. In *Tahoe-Sierra Preservation Council v. Tahoe Regional Planning Agency*, the Supreme Court upheld the constitutional validity of a moratorium ordinance. Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency, 535 U.S. 302 (2002). The post-application enactment of the zoning ordinance also raises vested rights issues. *See* MANDELKER, *supra* note 14, at §§ 6.12-6.22. Several states have adopted statutes that create a vesting of rights to be treated under the terms of the ordinance in existence at the time the initial permit application is filed. *See, e.g.*, TEX. LOC. GOV'T CODE ANN. § 245 (West 2013).

37. *Mid Gulf*, 1992 U.S. Dist. LEXIS 14127, at *7-8.

38. Mid Gulf lost its lease and the federal court litigation was essentially a regulatory takings/inverse condemnation claim. There is no reported decision on the state court litigation challenging the validity of the ordinance. On the inverse condemnation claim, Mid Gulf lost because of its ownership of the surface. While the value of the mineral estate had been substantially diminished, if not zeroed out, Mid Gulf still owned the surface estate whose value was unaffected by the drilling ordinance. For a general discussion of the cases asserting regulatory takings/inverse condemnation claims in the context of regulating oil and gas operations, see POOLING AND UNITIZATION, *supra* note 11, at §§ 4.05(2)(a), 24.01(2).

39. The Barnett Shale Energy Education Council provides on its web site a link to the oil and gas-related ordinances of twelve North Texas cities. The web address is www.bseec.org/stories/legislation.

popular means of regulation is through an ordinance that totally prohibits oil and gas operations anywhere within the boundaries of a sub-state unit.[40] In the absence of a total prohibition, however, sub-state units have adopted regulations that impact oil and gas operations in a myriad of ways.[41]

A by-product of using the zoning and land use regulatory model for oil and gas operations is the requirement that the operator receive one or more permits before it can engage in pre-drilling or drilling activities.[42] These may include the basic use permit, grading permits, excavation permits, and other permits required of any land disturbing activity. Typically persons seeking such permits under the zoning ordinance will need to consent to inspection of the premises during the construction operations and will also likely be required to disclose information to the sub-state unit. The permit or permit applications will be accompanied by the imposi-

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40. *See, e.g.*, Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722 (N.Y. App. Div. 2012), *aff'd* 964 N.Y.S.2d 431 (N.Y. App. Div, 2013), *leave to appeal granted*, 995 N.E.2d 851 (Aug. 29, 2013). The appellate division affirmed the trial court's decision, finding no preemption for reasons stated more fully in the appeal of the Dryden ordinance; s*ee* Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458 (N.Y. Sup.Ct. 2012), *aff'd sub nom.*, Norse Energy Corp. v. Town of Dryden, 964 N.Y.S.2d 714 (2013), *leave to appeal granted*, 995 N.E.2d 851 (Aug. 29, 2013); Ne. Natural Energy, LLC v. City of Morgantown, No. 11-C-411, 2011 WL 3584376 (W. Va. Cir. Ct. Aug. 12, 2011). The citizens of the City of Longmont, Colorado, enacted, by an initiative election, an ordinance that prohibits the use of hydraulic fracturing to extract oil or gas and prohibits the use of open pits or disposal of solid or liquid wastes created in connection with the hydraulic fracturing process. The initiative election results are analyzed in Jack Healy, *With Ban on Drilling Practice, Town Lands in Thick of Dispute*, N.Y. TIMES, Nov. 25, 2012, http://www.nytimes.com/2012/11/26/us/with-ban-on-fracking-colorado-town-lands-in-thick-of-dispute.html, and the complaint filed by Plaintiff, *Colorado Oil & Gas Ass'n v. City of Longmont*, No. 2012CV 00960, 2012 WL 6652789 (Colo. Dist. Ct. Dec. 17, 2012). In the November 2013 election cycle, three more Colorado sub-state units enacted ordinances prohibiting hydraulic fracturing operations. Carol Proctor, *Colorado's New Frack Bans May be on Shaky Legal Grounds*, DENVER BUS. J., Nov. 13, 2013, http://bizjournals.com/denver/blog/earth_to_power/2013/11/colorados-new-frack-bans-may-be-on.html?ana=RSS&s=article_search; Edward McCallister, *Colorado's Fracking Ban Could Fall Before Courts*, REUTERS NEWS SERVICE, Nov. 7, 2013, http://reuters.com/article/2013/11/07/colorado-fracking-bans-idUSL2N0IS2CP20131107.

41. While it is a state regulation, Statewide Order No. U-HS issued by the Louisiana Commissioner of Conservation to deal with oil and gas operations within an "urban area" as defined by the Order, encompasses most of the areas covered by sub-state unit ordinances. OFFICE OF CONSERVATION, STATE OF LA., ORDER NO. U-HS (2009), *available at* http://dnr.louisiana.gov/assets/OC/eng_div/20090806-U-HS.pdf. The Order requires: (1) a 500 foot setback from residences, religious institutions, public buildings or public parks (exceptions are created where the surface owner is also the oil and gas lessor); (2) a six foot high security fence; (3) maintenance of the drill site; (4) minimization of dust, vibration and odors; (5) lighting restrictions; (6) muffling exhaust; (7) minimizing the venting and flaring of gas; (8) limitations on work hours and truck deliveries to daylight hours; (9) noise abatement practices and limitations on noise leaving the drill site; and (10) a notification must be given to sub-state unit officials about streets that will be used to access the drill site.

42. In all states, oil and gas operators have to get a drilling permit from the state oil and gas conservation agency showing compliance with the state's spacing requirements, if applicable, and other performance standards, including the filing of a bond, compliance with well integrity standards, and the licensing of the party doing the drilling as an oil and gas operator.

tion of a regulatory fee designed to reimburse the sub-state unit for the cost of the regulatory program. Those fees may be quite high when compared to the usual zoning permit fees. With oil and gas-related ordinances, the sub-state unit may seek to impose the costs of hiring experts in the field of oil and gas drilling operations upon the permit applicant.[43] Finally, there may be restrictions on the transferability of the permit once received by the applicant.

The most ubiquitous type of regulation is the locational restrictions generally imposed by a zoning ordinance. Thus oil and gas operations will be a use that is allowed in some zoning districts and not allowed in other zoning districts. As shown earlier, the Oklahoma City ordinance first enacted in the 1930s followed this approach along with the concept of a buffer zone to restrict the location of drill sites.[44] Within the locational restrictions will usually be the classification of oil and gas operations as being a use "as of right" or a use requiring a discretionary permit. In most cases, oil and gas operations will trigger the discretionary permit procedure. The discretionary permit procedure in many cases is time consuming and may entail either approval by the local legislative body or an appeal to the local legislative body from the administrative body that issues the permit. As noted above, a discretionary permit is often made subject to specific conditions which must be met before the permit owner is entitled to engage in oil and gas operations. Where an oil and gas operator seeks to drill in a zoning district where such uses are not allowed, the operator has two choices: seek an administrative variance or seek to have the tract rezoned to a district that allows oil and gas drilling operations.[45] Both of these procedures are time-consuming and indefinite as to the outcome. It would not be unusual for variance applications and/or rezoning requests to take several months at a minimum before a decision would be reached by the relevant legislative and/or administrative body.

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43. The Santa Fe County oil and gas ordinance has such provisions given the likelihood that sub-state units will not have drilling engineers on staff that can provide the expertise needed to review permit applications. *See* Robert H. Freilich & Neil M. Popowitz, *Oil and Gas Fracking: State and Federal Regulation Does Not Preempt Needed Local Government Regulation*, 44 URB. LAW. 533 (2012). The author of this article was on the team of lawyers and planners, led by Dr. Freilich in the drafting of the several different ordinances that make up the complete regulatory scheme for oil and gas operations within Santa Fe County.

44. *See supra* notes 21-22.

45. The law of variances and judicial review thereof is beyond the scope of this article. *See generally* MANDELKER, *supra* note 14, at §§ 6.39-6.52. Use variances, rather than area or bulk variances have been frowned upon as essentially amounting to a de facto rezoning of the tract of land. *See id.* For a case upholding a municipality's decision to deny a variance, see *Eason Oil Co. v. Uhls*, 518 P.2d 50 (Okla. 1974), but compare with *Pelican Production Corp. v. Mize*, 573 P.2d 703 (Okla. 1977).

Today, the most favored type of sub-state land use regulation, whether as a part of an extant zoning ordinance or as a stand-alone regulation, is the concept of setback requirements. In that regard, oil and gas operators and operators of adult entertainment facilities have something in common, albeit the oil and gas operator is without the protections of the First Amendment. Setback requirements, albeit easy to understand, are not that easy to apply and usually entail multiple variables. The ordinance needs to define the uses from which the drill site must have the setbacks. In the Fort Worth ordinance, protected uses from which the setback is to be measured include a residence, religious institution, public building, hospital building, school, or public park.[46] That would be seemingly simple to apply except for some latent ambiguities, such as: Is a residence one that is being occupied or can it be vacant? Would a religious institution include outreach efforts such as soup kitchens, homeless shelters, recreational buildings, or camp retreats?

Once the protected uses are properly defined and identified, the next issue relates to the length of the setback. It can range from 100 feet to 1500 feet or may vary in length depending on which of the protected uses is involved. This leads to another issue that should be addressed in setback ordinances: How does one measure the setback? Is it from the property line? The actual well bore? The drill site? The building line? If there are intervening public rights-of-way, are they included within the setback distance?

It is also typical that multiple setbacks will apply to any particular drill site chosen by the oil and gas operator. How these multiple setbacks operate may preclude drilling even on large tracts owned by the oil and gas operator. Furthermore, it raises the question of whether an oil and gas operator can emulate the practices of the adult entertainment facility operator by having a planning professional prepare a map of the community with an overlay of the setback requirements for the purpose of showing that few, if any, actual drill sites would be allowed. Normally courts do not inquire about the motives of the legislative body, but drafting an ordinance with setback requirements that preclude the location of any drill site would probably not be that difficult, especially in suburban communities that are largely zoned for residential uses.

Because many sub-state unit zoning ordinances have large setbacks, it is commonplace for there to be waivers and/or variances that are available to lessen the setback requirements. In most cases, the extent to which the administrative or legislative body may

46. Kohout v. City of Ft. Worth, 292 S.W.3d 703, 705 (Tex. App. 2009).

waive the requirements will be limited in one or two ways. There may be restrictions as to the percentage of the setback that may be waived, such as twenty-five or fifty percent. There also may be minimum setback limits that cannot be waived so that under no circumstances would a drill site be permitted within, for example, 500 feet of a residence or a hospital. The processes by which these waivers or setbacks may be granted differ widely regarding such matters as which entity will make the decision, notice requirements for the variance/waiver request, and whether there are administrative appeals that must be followed prior to seeking judicial review of the decision.

Many zoning ordinances contain performance standards relating to noise levels. The most typical type of regulation sets a decibel limit at a specified distance from either the property line or the wellbore. It is important that the ordinance specify how the distance is to be measured, just as it is for the setback requirement. Typically the ordinance will set a decibel limit of between seventy and ninety dBA at distances ranging from 300 to 500 feet from the source of the noise. Other types of noise-related regulations include setting a maximum decibel level above the ambient noise level at the site prior to the drilling operations. The permit applicant would be expected to submit information on preexisting ambient noise levels against which increases are to be judged. Finally, sub-state units are imposing noise mitigation measures including the installation of sound baffling equipment and/or structures, especially during the actual drilling process when the noise level will undoubtedly be louder than during the production phase of the development.

Because oil and gas operations typically involve the movement of heavy trucks and/or machinery over sub-state unit's streets, many of such units attempt to impose some type of road maintenance agreement or payment requirement as a condition to receipt of the permit. The use of hydraulic fracturing operations and their need for substantial amounts of water and sand exacerbates the road-use impact. A number of states limit sub-state units' ability to impose what have traditionally been labeled as "exactions" during the subdivision process, so in many circumstances the ordinance will call for the execution of some type of voluntary agreement dealing with this issue.[47] These agreements may deal with such matters as payments that will need to be made and may include a schedule for individual repairs, such as potholes, that the operator will have to reimburse to the sub-state unit. The voluntary agree-

47. *See, e.g.*, 605 ILL. COMP. STAT. ANN. 5/5-901 to -919; N. M. STAT. ANN. §§ 5-8-1 to -43; TEX. LOC. GOV'T CODE ANN. §§ 395.001-.080.

ment may also include a bond requirement, ranging anywhere from $50,000 to $200,000 for road maintenance purposes, much like a residential subdivider will have to post a bond for the public improvements that it has agreed to include as part of the subdivision plat approval process. Some sub-state units do not impose an agreement requirement but instead impose bond requirements to reimburse the unit for expenses that are incurred as a result of the use of the streets by the oil and gas operator.

Many sub-state units impose nuisance-type requirements on oil and gas operators. These requirements may include dust suppression activities, odor suppression activities, and green completion requirements. Green completion requirements, which may also be imposed by the state oil and gas conservation agency, relate to the emission of natural gas and other hydrocarbons during the hydraulic fracturing and well completion operations. A very common type of regulation is to limit drilling operations to certain hours, typically from 8:00 AM to 7:00 PM, so as to minimize the impact on the neighbors. Likewise, because shale gas development will typically entail the use of compressors which may be very noisy and emit air pollutants, a number of sub-state units regulate the hours that a compressor may operate.

Similar to nuisance-type requirements, many sub-state units impose screening, landscaping, and fencing requirements on oil and gas operators. The most widespread requirement is that there be a solid wall or masonry wall surrounding the wells and tanks, typically at a height of eight feet so as to block the drill site from the public vista. Landscaping requirements have similar objectives and may depend on the location of the drill site and the nature and extent of the native vegetation in the area.

Many sub-state units also require the permit applicant to submit an emergency response plan in the event of a catastrophic event at the drill site. Similar to an emergency response plan, a number of ordinances require the operator to have a hazardous materials plan, for both storage and transportation, so that local emergency responders have some idea as to what is on site in the event of a spill or other event. Similarly, ordinances may include soil sampling and air monitoring requirements both before and after the actual drilling operations have commenced. In some isolated cases, mini-environmental impact reports, drainage reports, and ground water control measures have also been part of the oil and gas regulatory ordinance.[48]

48. The Santa Fe County ordinance is probably the most rigorous regulatory regime regarding what is needed to apply for and then receive permission to engage in oil and gas operations. *See* Freilich & Popowitz, *supra* note 43, at 548.

Finally sub-state unit ordinances may deal with several financial issues such as bonding, insurance, and indemnity agreements. Insurance requirements may be quite generic in nature, such as merely requiring a minimum amount of commercial general liability coverage, or can be quite specific dealing with different types of insurance, such as environmental pollution coverage, well control coverage, auto/truck liability coverage, and workers' compensation coverage. The amounts required may range from $100,000 to $25,000,000. Indemnity agreements may be required to protect the sub-state unit from any damages, injury, or death arising out of the work done pursuant to the payment. Bonding requirements, as mentioned above in connection with road agreements, are there to ensure that work required of the permit holder be accomplished pursuant to the requirements of the ordinance.

Because sub-state units outside of the Mid-Continent area are engaging in regulatory ordinances impacting oil and gas operations for the first time, it is important that the ordinance contain the necessary definitions so that time-consuming litigation is avoided. The recent case of *In re Township of Bradford*[49] illustrates some of the difficulties in applying traditional zoning ordinances to oil and gas operations. An oil and gas lessee sought to construct a compressor station in order to move the natural gas it was producing from the wellhead to the market.[50] The Township's zoning ordinance regulated oil and gas operations by placing locational restrictions on them.[51] The well was properly located in a zoning district that allowed such uses.[52] But when requested to approve the building permit for the compressor station, also located on the drill site, the township zoning enforcement official interpreted the ordinance so that compressors were not part of the oil and gas production process, which was how the ordinance defined an allowed use.[53] The oil and gas lessee appealed to the Zoning Hearing Board (ZHB) which reached two conclusions: (1) the compressor station was a building because it was covered by a tarpaulin, and (2) the compressor was a processing, and not a production, facility.[54] Without giving any deference to the ZHB's interpretation of its own ordinance, the Pennsylvania Commonwealth Court concluded that the gas cannot be marketed without the compressor and thus it was an integral part of the production process.[55] It was an al-

49. *In re* Twp. of Bradford, 43 A.3d 544 (Pa. Commw. Ct. 2012).
50. *Id.* at 546-47.
51. *Id.*
52. *Id.* at 546.
53. *Id.* at 548-49.
54. *Id.* at 548.
55. *Id.* 551-53.

lowed use because it was part of the production process.[56] The court bolstered its decision by applying a canon of construction that narrowly construes zoning ordinances in order to achieve the public policy objective of the free use of land.[57]

IV. THE PREEMPTION DOCTRINE— A BRIEF OVERVIEW

As noted in Section II earlier, sub-state units no longer have to worry about the ultra vires issue regarding their power to regulate oil and gas operations. Instead, sub-state units may regulate oil and gas operations that take place within their boundaries unless the state has preempted such power. Mirroring the federal approach to preemption,[58] almost all states follow a tri-partite approach to the preemption issue. In general, there are three different ways by which a state may preempt sub-state unit power: (1) express preemption, (2) implied preemption by occupation of the field, and (3) implied preemption by conflict.[59] The two implied preemption doctrines are *ex necessitate* common-law or judge-made doctrines that assign, or some might say, arrogate, to the judiciary the duty to resolve inter-governmental conflicts in the absence of express statutory language preempting sub-state unit's exercise of regulatory power over oil and gas operations. But even where there is express preemption, the courts' role is not truly a passive one since statutory language may require the courts to interpret such language to ascertain the scope and/or extent of the preemption doctrine. In a perfect world, one might expect that, given the opportunity, the state legislature would make the basic public policy choice as to which levels of government may exercise regulatory

56. *Id.* at 553.

57. The court did not answer the hypothetical question of what would happen if the Township went back and amended its zoning ordinance to specifically define compressors as being not part of the production process. While probably not being applicable to this lessee under a vested rights or law of the case theory, would such an express definition preclude the court from treating processors as being part of the production process?

58. *See generally,* POOLING AND UNITIZATION, *supra* note 11, at § 24.04; *see also* Pacific Gas & Electric Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190 (1983); Hines v. Davidowitz, 312 U.S. 52 (1941). In addition to the policy arguments being raised as between state and sub-state unit regulation of unconventional hydrocarbon resource development, there is a similar policy argument as to whether the federal government or the states should be the principal regulator. *See, e.g.*, Bruce M. Kramer, *Federal Legislative and Administrative Regulation of Hydraulic Fracturing Operations*, 44 TEX. TECH L. REV. 837 (2012); Thomas W. Merrill, *Four Questions About Fracking*, 63 CASE WEST. L. REV. 971 (2013); David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production,* 161 U. PA. L. REV. 431 (2013). While federal preemption is based on the Supremacy Clause of the United States Constitution, state preemption results from state constitutional and statutory provisions as well as the rejection of the concept that sub-state units have some inherent powers not derived from the state.

59. POOLING AND UNITIZATION, *supra* note 11, at § 4.05(2)(b).

power over the oil and gas industry. Legislation could totally and expressly preempt some or all of the areas of regulation that would impact the oil and gas industry. Legislation, on the other hand, could clearly divide areas where state regulation would prevail, areas where state and local regulation would co-exist, or areas where local regulation would prevail. Unfortunately, we do not live in a perfect world so that legislatures rarely, if ever, make clear such basic policy choices. Instead, our system has allowed the judiciary to police the inter-governmental relationships between states and sub-state units.

V. THE MYTH OF EXPRESS PREEMPTION

There are a number of states which have attempted to expressly preempt sub-state regulation of oil and gas operations. The legislation may attempt to encompass a total preemption of any sub-state regulation or may attempt to only partially preempt sub-state regulation by identifying areas or subject-matters for which sub-state regulation will be prohibited. An example of an attempt at total preemption is represented by a Louisiana statute that provides:

> The issuance of the permit by the commissioner of conservation shall be sufficient authorization to the holder of the permit to enter upon the property covered by the permit and to drill in search of minerals thereon. No other agency or political subdivision of the state shall have the authority, and they are hereby expressly forbidden, to prohibit or in any way interfere with the drilling of a well or test well in search of minerals by the holder of such a permit.[60]

It is difficult to perceive of a clearer statement of express preemption of sub-state regulation of oil and gas operations. There are no Louisiana Supreme Court opinions dealing with section 30:28(F) of the Louisiana Revised Statutes, but the Fifth Circuit, in dealing with a preemption claim made by an oil and gas operator against the City of Shreveport, which had adopted an ordinance prohibit-

60. LA. REV. STAT. ANN. § 30:28(F). In the absence of clear statements of preemptive intent, the Louisiana courts follow a slightly modified version of the tri-partite preemption doctrine. *See* Palermo Land Co. v. Planning Comm'n, 561 So.2d 482, 497 (La. 1990). ("Local power is not preempted unless it was the clear and manifest purpose of the legislature to do so, or the exercise of the dual authority is repugnant to a legislative objective; if there is no express provision mandating preemption, the courts will determine the legislative intent by examining the pervasiveness of the state regulatory scheme, the need for state uniformity, and the danger of conflict between the enforcement of local laws and the administration of the state program.").

ing the location of a well within 1000 feet of a city-owned lake, still managed to cloud the issue by talking about the need for uniformity of state law and the conflict between the state and municipal regulations.[61] These are not relevant considerations where the legislature has clearly spoken. In cases involving express preemption, the sole issue before the court relates to statutory interpretation, not whether or not there is a conflict between the local and state regulatory programs.[62]

The legislature has made the basic policy choice to expressly preempt local regulation and need not justify its decision based on the existence of a need for uniformity of state law or any real or potential conflicts. Nonetheless, another federal court has interpreted the extent of state preemption solely on the question of whether the 1000 foot buffer zone was valid and not to other areas of regulation.[63] Further evidence that, even where the legislature has spoken clearly, sub-state units will still attempt to avoid the effects of preemption is shown by various sub-state units in Louisiana, enacting various ordinances regulating oil and gas operations that resulted from the rapid development of the Haynesville Shale play.[64] Sub-state units impacted have enacted a series of ordinances dealing with the externalities of oil and gas operations.[65]

Another example of what appears to be a total preemption of county regulation of oil and gas operations is found in the following Kansas statute:

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61. Energy Mgmt. Corp. v. City of Shreveport, 397 F.3d 297, 303-04. (5th Cir. 2005). *See also* Energy Mgmt. Corp. v. City of Shreveport, No. 97-2408, 2006 U.S. Dist. LEXIS 80925 (W.D. La. Nov. 6, 2006), *aff'd as modified*, 467 F.3d 471 (5th Cir. 2006).

62. It is not only state courts that look for conflicts rather than express preemption. The recent case of *National Fuel Gas Supply Corp. v. Town of Wales*, No. 12-CV-034S, 2013 U.S. Dist. LEXIS 151916 (W.D. N.Y. Oct. 21, 2013) talks about both express preemption under the Natural Gas Act and the conflict between the FERC and Town permits as they related to noise standards.

63. Holland v. Questar Exploration & Prod. Co., No. 03-0287, 2006 U.S. Dist. LEXIS 9492 (W.D. La. Feb. 23, 2006).

64. In addition to title 30, section 28(F) of the Louisiana Revised Statutes, the Commissioner of Conservation has issued Statewide Order U-HS, which regulates oil and gas operations in urban areas. OFFICE OF CONSERVATION, STATE OF LA., ORDER NO. U-HS (2009), *available at* http://dnr.louisiana.gov/assets/OC/eng_div/20090806-U-HS.pdf.

65. A full list of the ordinances enacted by the cities and parishes (counties) are given in a power point presentation made by Jerry N. Jones at the Second Conference on the Law of Shale Plays sponsored by the Center for American and International Law's Institute for Energy Law and held in Ft. Worth, Texas on September 7-8, 2011. CAIL, Second Conference on the Law of Shale Plays, Paper 15 (Sept. 2011). Some of these Louisiana ordinances deal with road and bridge use, such as Bossier Parish, La., Ordinance 4329 (2010); Bossier Parish, La., Ordinance 4287, 4311 (2009); Caddo Parish, La., Ordinance 4,967 (2010); De Soto Parish, La., Ordinance 15 (2009); De Soto Parish, La., Ordinance 7, 8 (1986); while others deal with general oil and gas well regulations. *See* City of Bossier City, La., Ordinance 40 (2009); City of Shreveport, La., Ordinance 66 (2009).

> Counties may not regulate the production or drilling of any oil or gas well in any manner which would result in the duplication of regulation by the state corporation commission and the Kansas department of health and environment pursuant to chapter 55 and chapter 65 of the Kansas Statutes Annotated, and amendments thereto, and any rules and regulations adopted pursuant thereto. Counties may not require any license or permit for the drilling or production of oil and gas wells. Counties may not impose any fee or charge for the drilling or production of any oil or gas well.[66]

While the language is certainly broad enough to encompass a total preemption of county regulation of oil and gas operations, the language also restricts preemption to matters relating to drilling and production. Are completion operations, such as hydraulic fracturing operations, part of the drilling or production process? If the Kansas Corporation Commission does not regulate hydraulic fracturing, would counties be able to regulate such operations given the fact that under the terms of the statute there would not be any duplication of regulatory effort? Those questions have not been judicially resolved to date. Given the Louisiana experience, there is at least some wiggle room left for county regulation so long as there is neither regulation of drilling and production activities nor a duplication of state regulatory efforts.

Ohio is another state that has an express preemption provision that appears to be reasonably comprehensive in the scope and extent of sub-state preemption. In 2004, the legislature amended its conservation statute, deleting the existing preemption provision and replacing it with the following:

> The division has sole and exclusive authority to regulate the permitting, location, and spacing of oil and gas wells and production operations within the state, excepting only those activities regulated under federal laws for which oversight has been delegated to the environmental protection agency and activities regulated under sections 6111.02 to 6111.028 of the Revised Code. The regulation of oil and gas activities is a matter of general statewide interest that requires uniform statewide regulation, and this chapter and

66. KAN. STAT. ANN. § 19-101a(a)(19). That statutory section otherwise grants home rule authority to counties with a laundry list of exceptions to the grant of such authority. Cities, on the other hand, are not covered by the express preemption provision and have been regulating oil and gas operations since the 1920s. *See* Marrs v. City of Oxford, 24 F.2d 541 (D. Kan. 1928); Boher v. Ramsey Petroleum Co., 44 P.2d 239 (Kan. 1935).

> rules adopted under it constitute a comprehensive plan with respect to all aspects of the locating, drilling, well stimulation, completing, and operating of oil and gas wells within this state, including site construction and restoration, permitting related to those activities, and the disposal of wastes from those wells. . . .[67]

Unlike the Louisiana provision, Ohio not only has some exceptions from express preemption but also provides the legislative purposes or objectives in preempting sub-state regulation.

In *State ex rel. Morrison v. Beck Energy Corp.*,[68] the City of Munroe Falls sought to prevent an oil and gas operator who had received a state permit from engaging in drilling operations until such time as the City's various regulatory ordinances were complied with.[69] Under Ohio law, if the subject matter of the municipal home rule unit's ordinance relates to the exercise of the powers of local self-government, the state is powerless to deprive the home rule unit of such powers.[70] While in theory, the issue with non-preemptible home rule should focus on whether or not the subject matter of the regulation relates to matters of local or statewide concern, Ohio blends in the traditional tri-partite preemption analysis to resolve the issue.[71] Thus the court embarked on a three-step analysis: (1) Determine whether the ordinance is an exercise of local self-government. (2) If the ordinance is an exercise of police power, then apply general law analysis. (3) Examine wheth-

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67. OHIO REV. CODE ANN. § 1509.02 (LexisNexis 2013). Since the enactment of section 1509.02 in 2004, the preemption provision has been expanded to include other types of activities relating to oil and gas drilling and production operations. *See* State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶¶ 22-23, *appeal docketed*, No. 2013-0465 (Ohio 2013). The exceptions to express preemption deal with wetlands regulation, street regulation, and a now-repealed provision relating to the regulation of certain types of heavy trucks. The earlier express preemption was only a limited preemption. The cases interpreting the earlier statute are collected and analyzed in POOLING AND UNITIZATION, *supra* note 11, at § 4.05(2)(b)(xi).

68. State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶ 1.

69. The operator had received an Ohio Department of Natural Resources, Division of Mineral Resources Management permit to drill that had twenty-nine conditions imposed thereon, due in large part to the fact that the drilling was going to occur in an urbanized area. State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶¶ 1-2. As distilled by the court, the City was claiming that no activities could take place until the operator "(1) obtain a drilling permit, a 'conditional' zoning certificate, and a zoning certificate; (2) appear before the city's planning commission in a public hearing and obtain its approval; (3) pay the necessary fees and post the requisite performance bond; and (4) obtain a rights-of-way construction permit and pay the required fees." *Id.* at ¶ 51.

70. Ohio has a form of non-preemptible home rule that insulates certain areas from state regulation. OHIO CONST. art. XVIII, § 3. California and Colorado are other states with non-preemptible home rule provisions. CAL. CONST. art XI, § 5(a); COLO. CONST. art XX, § 6. *See generally* REYNOLDS, *supra* note 5, at §§ 37-38.

71. *See* Ohioans for Concealed Carry, Inc. v. City of Clyde, 120 Ohio St.3d 96, 2008-Ohio-4605, 896 N.E.2d 967.

er the local ordinance conflicts with state law.[72] The court obviously found that the ordinance is not an exercise of local self-government because the subject matter of the regulation has extraterritorial effects outside of the sub-state unit and does not deal with the internal affairs of the sub-state unit.[73] The second step is merely a determination as to whether the state statute that is allegedly preempting the sub-state regulation is a general law that applies to all parts of the state.[74] It is clear that the oil and gas conservation statute is a general law. The third step takes us back to the implied preemption by conflict leg of traditional preemption analysis which seemingly ignores the express preemptive language used by the legislature in amending the conservation law.[75] The court gave no weight at all to the express preemption provisions depriving the legislature of the power to preempt sub-state units from exercising powers not relating to the internal affairs of the sub-state unit. The court then went on to apply traditional conflict preemption theory, as will be discussed in Section VI *infra* to uphold some portions of the City's ordinances while striking down other portions.[76] In my opinion, the court ignored the statutory language and engaged in the ad hoc "operational conflicts" analysis that creates substantial uncertainty about the validity of almost any type of sub-state unit regulatory program. As contrasted with the Colorado approach to express preemption provisions discussed *infra*, the Ohio court did not treat an express preemption issue as one involving statutory interpretation, instead treating it as a common law implied preemption by conflict matter.

A Wyoming statute appears to limit a county's zoning authority over oil and gas operations by providing in part: "[N]o zoning resolution or plan shall prevent any use or occupancy reasonably necessary to the extraction or production of the mineral resources in or under any lands subject thereto."[77] The language is ambiguous in terms of the exact scope and extent of the preemption of county zoning authority since it merely preempts the prevention of any use and does not prohibit any regulation of such uses through the imposition of performance standards or permit requirements. The only judicial interpretation of this statute concluded that it was inapplicable to sand and gravel operations, which were the subject of the litigation, and thus the court did not apply the express

72. *Id.* at ¶¶ 24-26
73. *Id.* at ¶ 35.
74. *Id.* at ¶¶ 38-48.
75. *Id.* at ¶¶ 49-53.
76. *Id.* at ¶¶ 52-53.
77. WYO. STAT. ANN. § 18-5-201 (2013).

preemption provision but instead used traditional implied preemption by conflict principles to resolve the issues.[78]

Colorado has an express preemption provision that is quite limited in scope. The statute provides in part:

> No local government may charge a tax or fee to conduct inspections or monitoring of oil and gas operations with regard to matters that are subject to rule, regulation, order, or permit condition administered by the commission. Nothing in this subsection (15) shall affect the ability of a local government to charge a reasonable and nondiscriminatory fee for inspection and monitoring for road damage and compliance with local fire codes, land use permit conditions, and local building codes.[79]

This provision was applied in *Town of Millken v. Kerr-McGee Oil & Gas LP*.[80] The Town enacted various oil- and gas-related ordinances both before and after the express preemption provision was enacted in 1996.[81] The ordinances imposed a $400 fee on all non-plugged and abandoned wells.[82] The fee was alternatively labeled an inspection fee and a security inspection fee.[83] The last town ordinance changed the name of the fee to a "security fee" and required inspections in order to show compliance with the town's fire and building codes as well as any town-imposed conditions on land use permits.[84] The Town filed this action seeking to collect the annual fees from several oil and gas operators who had never paid the fee under any of its iterations.[85]

The court properly viewed the issue as involving statutory interpretation, namely whether the express preemption provisions applied to the various Town ordinances imposing the fee.[86] The court noted that section 34-60-106(15) only provides for partial preemption and expressly denies an intent to preempt sub-state unit safety and security inspections.[87] The Town did not claim that the various fees charged dealt with road damage, fire or building

78. River Springs LLC. v. Bd. of Cnty. Comm'rs, 899 P.2d 1329, 1332-33 (Wyo. 1995).

79. COLO. REV. STAT. § 34-60-106(15) (2013). There is also a preemption provision relating to the underground natural gas storage caverns that is seemingly a total preemption of sub-state unit power. *Id.* § 34-60-106(17).

80. Town of Milliken v. Kerr-McGee Oil & Gas Onshore LP, No. 12CA1618, 2013 WL 1908965 (Colo. App. May 9, 2013).

81. *Id.* at *1, ¶ 3.

82. *Id.* at *1, ¶ 4.

83. *Id.* at *1, ¶¶ 4-5.

84. *Id.* at *2, ¶ 6.

85. *Id.*

86. *Id.* at *2-3, ¶¶ 12-14.

87. *Id.* at *3, ¶ 15.

code compliance or compliance with conditions imposed on land use permits.[88] Had the fees been tied to any of those activities, the express preemption provision would not have been held applicable.[89] Instead, the court focused on the statutory preemption language dealing with matters that the Colorado Oil and Gas Conservation Commission regulated.[90] The security and safety concerns proffered by the Town as justification for the imposed fees fall within the express statutory and rulemaking authority delegated to the Commission.[91] Thus the ordinances were expressly preempted.[92]

In 2011, Idaho enacted a partial, express preemption statute that acknowledged the need to balance the interests of the state and the interests of the sub-state units. The statute provided in part:

> (9) It is the intent of the legislature to occupy the field of the regulation of oil and gas exploration and production with the limited exception of the exercise of planning and zoning authority granted cities and counties pursuant to chapter 65, title 67, Idaho Code.
> (10) To implement the purpose of the oil and gas conservation act, and to advance the public interest in the orderly development of the state's oil and gas resources, while at the same time recognizing the responsibility of local governments to protect the public health, safety and welfare, it is herein provided that:
>
> (a) The commission will notice the respective city or county with jurisdiction upon receipt of an application and will remit, electronically, a copy of all application materials.
>
> (b) No ordinance, resolution, requirement or standard of a city, county or political subdivision, except a state agency with authority, shall actually or operationally prohibit the extraction of oil and gas; provided however, that extraction may be subject to reasonable local ordinance provisions, not repugnant to law, which protect public health, public safety, public order or which prevent harm to public infrastructure or degradation of the value, use and enjoyment of private property. Any ordinance regulating extraction enacted pursuant to chapter

88. *Id.*
89. *Id.* at *3, ¶ 14.
90. *Id.* at *3, ¶ 16.
91. *Id.*
92. *Id.*

> 65, title 67, Idaho Code, shall provide for administrative permitting under conditions established by ordinance, not to exceed twenty-one (21) days, unless extended by agreement of the parties or upon good cause shown.
> (c) No ordinance, resolution, requirement or standard of a city, county or political subdivision, except a state agency with authority, shall actually or operationally prohibit construction or operation of facilities and infrastructure needed for the post-extraction processing and transport of gas and oil. However, such facilities and infrastructure shall be subject to local ordinances, regulations and permitting requirements, not repugnant to law, as provided in chapter 65, title 67, Idaho Code.[93]

As with any statute seeking to balance competing policies, there are evident compromises that provide conflicting signals and create some uncertainty as to the scope of the express preemption. The statute codifies the implied preemption by occupation of the field doctrine in paragraph (9), something that a simple statement of express preemption would otherwise accomplish, but then carves out an exception from the field that has been occupied so that sub-state units may apply their zoning and land use ordinances to oil and gas operations so long as they do not prohibit such operations. The use of the adjective "operationally" in the statute adds some uncertainty and invites a court when interpreting it to borrow from the implied preemption by conflict doctrine which, in my opinion, is not a desirable outcome. Would a statute that prohibited oil and gas operations within a zoning district be preempted? It may depend on the size of the zoning district and the ability of the oil and gas operator to develop the hydrocarbon resources using horizontal or slant drilling techniques. What may tip the scales in favor of finding preemption of district prohibitions is the overall statutory language evincing an intent to preclude local regulation except for limited circumstances. But countering that indicator of an intent to preempt is the concept that zoning ordinances impose locational restrictions on all uses. Thus, by authorizing local ordinances to co-exist, the legislature must have intended to allow some prohibitions so long as they do not "actually or operationally" prohibit oil and gas drilling and production operations.

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93. IDAHO CODE ANN. §§ 47-317(9)-(10)(c) (2013). This provision is similar to the pre-2012 Pennsylvania statute, which exempted sub-state unit regulation of oil and gas operations undertaken pursuant to either the zoning and planning enabling act or a wetlands regulation enabling act. See title 58, section 601.602 of the Pennsylvania Statutes (repealed), analyzed in POOLING AND UNITIZATION, *supra* note 11, at § 4.05(2)(b)(xiii).

Michigan has a simple statutory provision that totally preempts some sub-state units from regulating oil and gas operations. The statute provides:

> A county or township shall not regulate or control the drilling, completion, or operation of oil or gas wells or other wells drilled for oil or gas exploration purposes and shall not have jurisdiction with reference to the issuance of permits for the location, drilling, completion, operation, or abandonment of such wells.[94]

This is quite similar to the Louisiana statute and appears on its face to preclude any regulation by counties or townships of oil or gas drilling or production activities.[95]

The New York express preemption provision has been the subject of substantial litigation, notwithstanding New York's moratorium on oil and gas development using hydraulic fracturing.[96] The statute provides: "The provisions of this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law."[97] On its face, the statute envisions a total preemption of local "regulation" with two stated exceptions. Nonetheless, the New York courts have interpreted this statutory provision as not preempting local ordinances, even where such ordinances totally prohibit oil and gas drilling and production activities. An early case, *Envirogas, Inc. v. Town of Kiantone*,[98] interpreted the express preemption statute as applying to a town ordinance that imposed a bond and permit fee requirement for oil and gas operations.[99] While the Town argued that the bond was related to the maintenance of the local roads, the court noted that rather expansive and all-encompassing language of the

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94. MICH. COMP. LAWS. § 125.3205(2) (2013).

95. In *Dart Energy Corp. v. Iosco Twp.*, 206 Mich. App. 311, 520 N.W.2d 652 (Mich. Ct. App. 1994), the court interpreted an earlier express preemption provision (section 125.271(1) of the Michigan Compiled Laws) in a way inconsistent with the express preemption doctrine by utilizing an implied preemption by occupation of the field theory to invalidate the township's ordinance.

96. The New York statute and the cases interpreting it are more fully discussed in Michelle L. Kennedy, *The Exercise of Local Control Over Gas Extraction*, 22 FORDHAM ENVTL. L. REV. 375 (2011), and John R. Nolon & Steven E. Gavin, *Hydrofracking: State Preemption, Local Power, and Cooperative Governance*, 63 CASE W. RES. L. REV. 995 (2013).

97. N.Y. ENVTL. CONSERV. LAW § 23-0303(2) (McKinney 2013).

98. Envirogas, Inc. v. Town of Kiantone, 447 N.Y.S.2d 221 (N.Y. Sup. Ct 1982), *aff'd*, 454 N.Y.S.2d 694 (N.Y. App. Div. 1982), *leave to appeal denied*, 444 N.E.2d 1013 (1982).

99. *Envirogas*, 447 N.Y.S.2d at 223.

statute as clearly evincing a legislative intent to preempt local regulation.[100]

But, five years later, the New York Court of Appeals interpreted an analogous preemption provision contained in the Mined Land Reclamation Law[101] as not encompassing the application of a sub-state unit's zoning ordinance.[102] The court's statutory analysis was based on its look at the plain language of the statute, the statute's legislative history, and finally the statute's purpose and intent.[103] While a layperson might look at what an earlier court concluded regarding the statutory language as being broad and all-encompassing, except for the stated exceptions, the court of appeals refused to give effect to that plain language and therefore explored the netherworld of legislative intent.[104]

As a result of the potential expansion of shale oil or gas development into western New York, a number of sub-state units enacted ordinances that totally prohibited oil and gas operation within their boundaries. Two separate cases were filed that challenged those ordinances on preemption grounds. In *Cooperstown Holstein Corp. v. Town of Middlefield*,[105] the Town adopted as part of its zoning ordinance a total prohibition of "all oil, gas or solution mining and drilling."[106] The plaintiff, who had leased its mineral estate several years prior to the ordinance amendment, challenged the validity of the ordinance on preemption grounds relying on the express language of section 23-0303(2).[107] Following the lead of the New York Court of Appeals, the court ignored the express preemption language and instead explored the legislative history and the purposes of the statute. Of particular importance to the court was the state's focus on conservation regulation and the prevention of waste, which were matters the court believed are not the focus of local zoning ordinances. The supreme court took a very narrow approach to interpreting express preemption statutes.[108] A sub-state

100. *Id.* at 222.

101. N.Y. ENVTL. CONSERV. LAW § 23-2703(2).

102. *See* Frew Run Gravel Prods., Inc. v. Town of Carroll, 518 N.E.2d 920, 924 (N.Y. 1987).

103. *Id.* at 922-23.

104. *Id.*

105. Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722 (N.Y. Sup. Ct. 2012). On appeal, the appellate division affirmed the trial court's decision finding no preemption for reasons stated more fully in the appeal of the Dryden ordinance. Cooperstown Holstein Corp. v. Town of Middlefield, 964 N.Y.S.2d 431 (N.Y. App. Div. 2013) *leave to appeal granted*, 995 N.E.2d 851 (2013). Most of this analysis of the New York prohibition/preemption cases is taken from POOLING AND UNITIZATION, *supra* note 11, at § 4.05(2)(b)(ix).

106. *Cooperstown Holstein Corp.*, 943 N.Y.S.2d at 723.

107. *Id.* at 723-34 (citing N.Y. ENVTL. CONSERV. LAW § 23-0303(2) (McKinney 2013)).

108. Gernatt Asphalt Prods, Inc. v. Town of Sardinia, 664 N.E.2d 1226 (N.Y. 1996); Frew Run Gravel Prods., Inc. v. Town of Carroll, 518 N.E.2d 920 (N.Y. 1987).

unit is not preempted from enacting land use regulations, including those which totally prohibit oil and gas drilling within the unit because there is nothing in the statutory language evincing an intent to preempt the exercise of local zoning power.[109]

A similar result was reached in *Anschutz Exploration Corp. v. Town of Dryden*.[110] In August 2011, the Town amended its zoning ordinance to essentially prohibit all oil and gas exploration, production, and storage activities, including hydraulic fracturing within the town limits.[111] Anschutz had, prior to the date of the amendment, leased approximately 22,000 acres for oil and gas development.[112] In addition to the express preemption claim under section 23-0303, Anschutz argued that the town ordinance was impliedly preempted because it directly conflicted with the state conservation statute.[113] Relying on *Frew Run*, as did the court in *Middlefield,* the court found no clear legislative intent to preempt local control over land use and zoning.[114] All that section 23-0303 preempts is regulation of operations, although one can argue that the prohibition of the use of land for support activities clearly implicates operations.[115] The court buttressed its limited view of express preemption by listing a number of other statutory preemption provisions that indisputably preempt local zoning or land use regulation.[116] The court believed that the "operational conflicts" language used in Colorado and Pennsylvania further supported the view that the express preemption only applies where there are such conflicts, although as the court accurately pointed out, Colorado does not have any express preemption language in its oil and gas conservation statute that is comparable to the New York statue.[117]

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109. *Gernatt*, 664 N.E.2d at 1234-35.

110. Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458 (N.Y. Sup. Ct. 2012), *aff'd sub nom.*, Norse Energy Corp. v. Town of Dryden, 964 N.Y.S.2d 714 (N.Y. App. Div. 2013) *leave to appeal granted*, 995 N.E.2d 851 (2013).

111. *Anschutz*, 940 N.Y.S.2d at 465. The Town ordinance prohibited the use of any land within the Town for "natural gas and/or petroleum support activities." Would that prevent an equipment or water hauler from stopping its truck within the Town limits if it was on its way to an oil and gas operation outside of the Town limits?

112. *Id.* at 461.

113. *Id.* at 465.

114. *Id.* at 467.

115. *Id.* at 471.

116. *Id.* Section 27-1107 of the New York Environmental Conservation Law (dealing with hazardous waste facilities) prohibits sub-state units from requiring "conformity with local zoning or land use laws," and section 41.34(3) of the New York Mental Hygiene Law makes certain types of group homes a family unit for purposes of local regulation.

117. The court cited to *Board of County Commissioners v. Bowen/Edwards Assocs.*, 830 P.2d 1045 (Colo. 1992); *Huntley & Huntley, Inc. v. Borough Council*, 964 A.2d 855 (Pa. 2009); *Range Resources-Appalachia, LLC v. Salem Twp.*, 964 A.2d 869 (Pa. 2009); and *Penneco Oil Co. v. County of Fayette*, 4 A.3d 722 (Pa. Commw. Ct. 2010)*, appeal denied*, 38 A.3d 827 (Pa. 2012). *Bowen/Edwards* is an implied preemption by conflict case, while the

On appeal, the appellate division, on similar reasoning upheld the validity of the Dryden ordinance.[118] The appellate division's reasoning was similar to, but not identical with, the supreme court's opinion. The appellate division noted that land use powers constitute one of the "most significant functions" of local governments.[119] Because the oil and gas conservation statute in section 23-0303 of the New York Environmental Conservation Law contains an express preemption clause, the court's role should be one of statutory interpretation.[120] As did the supreme court, the appellate division relied on *Frew Run* to conclude that express preemption only relates to the regulation of the oil and gas business and not to surface use prohibitions and limitations.[121] The appellate division, however, supported its interpretation limiting preemption to regulatory matters with an extensive review of the legislative history of section 23-0303.[122] That legislative history evinced an intent to deal with matters of "waste," focusing on sub-surface activities.[123] The court also emphasized that the maximization of production along with the promotion of the oil and gas industry were removed from the powers granted to the Department of Environmental Conservation and moved to the Energy Office.[124] In order to find express preemption over a traditional sub-state function, a court must find a "clear expression of legislative intent" which the court concluded was absent from section 23-0303.[125] Finally, the court noted that where the legislature intends to expressly preempt sub-state unit's exercise of land use powers, it has done so through clear and express language.[126]

Pennsylvania cases are express preemption cases dealing with a statute that preempted sub-state regulation for the same "features" of state regulation or for ordinances that attempted to accomplish the same objectives as the state statute. The Pennsylvania cases are analyzed at text accompanying *infra* notes 131 to 155, while *Bowen/Edwards* is discussed at text accompanying *infra* notes 176 to 178.

118. Norse Energy Corp. v. Town of Dryden, 964 N.Y.S.2d 714 (N.Y. App. Div. 2013) *leave to appeal granted*, 995 N.E.2d 851 (N.Y. 2013). Pending its appeal, Anschutz assigned its interest in the leases within the Town to Norse Energy Corp., 964 N.Y.S.2d at 716.

119. *Norse Energy*, 964 N.E.2d at 718.

120. *Id.* at 719.

121. *Id.* at 719-22.

122. *Id.* at 719-23.

123. *Id.* at 720.

124. *Id.* at 720-21.

125. *Id.* at 721-23.

126. *Id.* (citing N.Y. ENVTL. CONSERV. LAW § 27-1107 (McKinney 2013)) (dealing with municipal land use regulation of hazardous waste facilities). The portion of this opinion dealing with the implied preemption by conflict doctrine will be analyzed at *infra* section VI. Even though the New York courts take the position that sub-state zoning regulation is not preempted by section 23-0303, local zoning ordinances that impact oil and gas operations must still fall within the locality's power in order to be enforceable. In *Jeffrey v. Ryan*, No. CA2012-001254, 2012 N.Y. Misc. LEXIS 4684 (N.Y. Sup. Ct. Oct. 2, 2012), the court, after agreeing with the decisions in *Dryden* and *Middlefield*, nonetheless invalidated the City's ordinance that enacted a temporary moratorium on allowing oil and gas operations because

The New York approach to express preemption gives short shrift to the language used in the statute which is unambiguous and quite broad in its scope. Reviewing legislative history to divine legislative intent is fraught with danger, especially in circumstances where the statutory language is clear on its face. The court did not consider that between the time of the enactment of section 23-0303, and the present circumstances may have changed so that the legislature did not believe that it needed to deal with the issue of the preemption of sub-state zoning ordinances because that was not an issue. The inclusion of two exceptions to the preemption was given short shrift by the courts. In cases dealing with preemption, whether the court is right or wrong regarding its interpretation of the statute, the legislature is free to amend the statute to make clear its intentions regarding the scope of preemption. By focusing on the legislative history to emphasize that the statute is allegedly targeted at waste prevention and conservation efforts minimizes the fact that the preemption language is probably unnecessary to prevent sub-state unit regulation of such activities. Except in the mid-continent region, and in the absence of state conservation regulation, sub-state units usually do not engage in waste prevention regulatory actions. Nonetheless, the cases upholding the prohibition ordinances are consistent with the earlier cases clearly differentiating between zoning and other types of police power actions.[127] State regulation is essentially a locational decision, albeit one determined by looking at waste prevention and conservation factors, while sub-state zoning regulation is just as much a locational decision based on surface use issues. To say that zoning is different than conservation agency regulation does not add much to the duty of the court, which is, in express preemption cases, solely a matter of statutory interpretation.

Prior to 2012, Pennsylvania had an express preemption statute that specifically authorized sub-state unit regulation under two enabling acts: the Municipalities Planning Act, and the Flood

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New York courts require that such ordinances meet a three-part test in order to be valid. *See* Belle Harbor Realty Corp. v. Kerr, 323 N.E.2d 697 (N.Y. 1974). Those three requirements are that the city's actions were: (1) "in response to dire necessity," (2) "reasonably calculated to alleviate or prevent a crisis condition[s]," and (3) that "[the municipality] is presently taking steps to rectify the problem." Belle Harbor Realty Corp., 323 N.E.2d at 699. The court concluded that the City did not offer any proof of satisfying any of those requirements and thus the ordinance was invalidated.

127. This artificial distinction raised by the court is reminiscent of an analogous distinction made relating to state regulation of activities on federal lands whereby, if the state regulation relates to environmental matters, the state is free to regulate such activities, while if the state regulation relates to land use matters, the state is preempted. *See* Cal. Coastal Comm'n v. Granite Rock Co., 480 U.S. 572 (1987). *See also* POOLING AND UNITIZATION, *supra* note 11, at § 24.04(1).

Management Act.[128] The preemption language covered sub-state regulation of "the same features of oil and gas well operations" regulated by the state statute.[129] Most of the cases decided under the pre-2012 amendments combined express preemption analysis with some conflict preemption principles to resolve the preemption issue.[130] This amalgam of express and implied preemption doctrines was due in part to the language of the statute that expressly preempted sub-state regulation, with an exception for sub-state regulation accomplished through zoning or flood management ordinances, but then further provided that: "No local ordinance adopted pursuant to the MPC or the Flood Plain Management Act shall contain provisions which impose conditions, requirements or limitations on the same features of oil and gas operations regulated by [this act] or that accomplish the same purposes as set forth in [this act]."[131] This provision required the court to determine what the "same features" of state regulation were that could not be duplicated by sub-state regulation and what the purposes of the statute and the ordinance were, because sub-state units were preempted from enacting regulations that accomplished the same purposes of the statute. The difficulty engendered by such language is reflected in two Pennsylvania Supreme Court decisions published on the same day that attempted to interpret the express statutory preemption language by not only relying on statutory interpretation principles but by incorporating the operational conflicts doctrine that applies where you have a conflict preemption case.[132] Both of the cases incorporate the conflict preemption standard that the sub-state unit cannot prohibit what the state allows and the sub-state unit may not allow that which the state prohibits.[133] Furthermore, as to one of the zoning ordinances being challenged, the court determined that its comprehensive cradle-to-grave regulatory system substantially interfered with the objec-

128. 58 PA. STAT. ANN. § 601.602, *repealed by* Act 13. Act of Feb. 14, 2012, P.L. 87, No. 13, cl. 58. The language of section 601.602, however, was re-adopted in title 58, section 3302 of the Pennsylvania Consolidated Statues.

129. *Id.*

130. In *Commonwealth v. Whiteford*, 884 A.2d 364 (Pa. Commw. Ct. 2005), the court was faced with a challenge to the application of a township zoning ordinance by an oil and gas operator who alleged that provisions of section 601.602 limited the exception for the non-preemption of zoning ordinances. The *Whiteford* court interpreted section 601.602 to allow zoning ordinance regulation so long as such regulation did not attempt to regulate the same "features of oil and gas operations" as the state conservation act.

131. 58 PA. STAT. ANN. § 601.602, *repealed by* Act 13. Act of Feb. 14, 2012, P.L. 87, No. 13, cl. 58. The language of section 601.602, however, was re-adopted in title 58, section 3302 of the Pennsylvania Consolidated Statues.

132. Huntley & Huntley, Inc. v. Borough Council, 964 A.2d 855 (Pa. 2009); Range Res.-Appalachia, LLC v. Salem Twp., 964 A.2d 869 (Pa. 2009).

133. *Huntley & Huntley, Inc.*, 964 A.2d at 862; *Range Res.-Appalachia LLC*, 964 A.2d at 877.

tives sought to be accomplished by the state conservation statute, thereby violating both the express preemption provision and the conflict preemption doctrine.[134]

Act 13, adopted in 2012, attempted to provide some express limitations on sub-state unit powers to regulate oil and gas operations. While readopting the pre-2012 preemption language, Act 13 added two additional sections that had the effect of limiting the exercise of sub-state unit flood plain and zoning powers to oil and gas operations.[135] The first added section stated that "environmental acts are of Statewide concern" so that local ordinances may not attempt to regulate oil and gas operations to achieve environmental protection objectives.[136] The second added section set out a laundry list of things that sub-state units must do, and cannot do, in relation to the regulation of oil and gas operations.[137] For example, sub-state units must not delay the processing of permits beyond a statutorily mandated time frame, must allow oil and gas operations in all zoning districts, must not treat oil and gas operations differently than other industrial operations, cannot increase the setback requirements set forth in the statute for oil and gas wells, and have limited power to issue discretionary permits for oil and gas operations.[138]

Almost immediately upon enactment, Act 13 was challenged by a number of plaintiffs in a direct appeal to the Pennsylvania Commonwealth Court.[139] The alleged grounds for the state constitutional challenge include the violation of article I, section 1, relating to inherent rights of mankind; article III, section 32, relating to prohibitions on special and local laws; article I, section 10, relating in part to eminent domain powers; article I, section 27, relating to natural resources; and article III, section 3, relating to the form of bills.[140] One of the provisions of Act 13 required local governments to amend their zoning ordinances to comply with the statutory requirements within 120 days of the passage of the Act.[141] Because zoning ordinance amendments have to go through a lengthy pro-

134. *Range Res.-Appalachia, LLC*, 964 A.2d at 877. For other cases adopting this hybrid approach that incorporates both express preemption and implied preemption by conflict principles, see *Range Res., Appalachia, LLC v. Blaine Twp.*, 649 F. Supp. 2d 412 (W.D. Pa. 2009); Penneco Oil Co., Inc. v. Cnty. of Fayette, 4 A.3d 722 (Pa. Commw. Ct. 2010).

135. 58 PA. CONS. STAT. §§ 3303-04.

136. *Id.* § 3303.

137. *Id.* § 3304.

138. *Id.*

139. Robinson Twp. v. Commonwealth, No. 284 M.D. 2012, 2012 Pa. Commw. Unpub. LEXIS 387 (Apr. 20, 2012). This decision rejected several motions to intervene on behalf of an oil and gas trade association and several individual legislators.

140. *Robinson Twp.*, 2012 Pa. Commw. Unpub. at *2 (citing PA. CONST. art I, §§ 1, 10, 27, art. 3, §§ 3, 32).

141. 58 PA. CONS. STAT. § 3309.

cess pursuant to the Municipalities Planning Code, the court issued a preliminary injunction preventing the enforcement of the 120-day deadline.[142]

In *Robinson Township v. Commonwealth of Pennsylvania*,[143] a divided court found that portions of Act 13 were unconstitutional.[144] Specifically, the Commonwealth Court enjoined enforcement of sections 3215(b)(4) and 3304 of Act 13 and those parts of sections 3304-3309 that enforce the two prior sections.[145] Preliminarily, the court concluded that the municipalities, the two councilmembers, and the environmental organization had standing to sue.[146] The court also dismissed the Commonwealth's claim that the suit should be dismissed under the political question doctrine because the legislature had made a basic policy decision that should not be overturned by the courts.[147] Based in part on the Pennsylvania constitutional provision giving the people the "right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment," the court concluded that the political question doctrine was not applicable.[148]

The majority of the Commonwealth Court engaged in a substantive due process analysis that ignored the predicate question as to whether sub-state units can bring such constitutional claims against the Commonwealth that created them and probably could extinguish them.[149] The majority then engaged in a classic *Lochner* rebalancing of the competing interests that the legislature had considered when it drafted and passed Act 13. While admitting to the continued vitality of the creature theory for state/sub-state unit relations, the court concluded that the zoning system set up by Act 13 was irrational and did not achieve any public purpose largely because it treated zoning as the creation of use-limiting districts which attempt to segregate incompatible uses from each

142. Paragraph nineteen of the Preliminary Injunction, which covers other subjects including the continued validity of extant ordinances, can be found in Barclay Nicholson and Stephen C. Dillard, *Analysis of Litigation Involving Shale & Hydraulic Fracturing in Center for American and International Law*, Third Annual Law of Shale Play Conference, Ch. 15 (2012).

143. Robinson Twp. v. Commonwealth, 52 A.3d 463 (Pa. Commw. Ct. 2012).

144. *Id.* at 471-72.

145. *Id.* at 485, 493.

146. The court found that one of the plaintiffs, a physician, lacked standing. This led to the dismissal of two of the twelve counts. The court dismissed the claim that Act 13 was an impermissible "special law" under article III, section 32 of the Pennsylvania Constitution and the claim that Act 13 violated the "single subject" provisions of article III, section 3.

147. The source of the political question doctrine is the separation of powers doctrine. *See Robinson Twp.*, 52 A.3d at 478-79.

148. PA. CONST. art. I, § 27.

149. See cases cited in *supra* notes 3-4. The Court does not cite to several Pennsylvania decisions that appear to deny sub-state units the right to claim that their rights have been violated by actions of the Commonwealth. *See, e.g.*, *In re* Condemnation of Land by Pa. Tpk. Comm'n, 32 A.2d 910 (Pa. 1943); Shirk v. Lancaster City, 169 A. 557 (Pa. 1933).

other. While at one time that may have been the principal purpose of zoning (although that is not entirely clear since early zoning ordinances would typically allow less intensive uses in more intensive use districts), zoning is more than the physical segregation of a sub-state unit into various compatible use districts. The court specifically concluded that the provisions of Act 13 that require oil and gas operations to be allowed in all zoning districts, including residential districts, violated substantive due process principles.[150] By mandating the inclusion of incompatible uses within zoning districts, Act 13 did not protect the interests of neighboring property owners and mandates "irrational classifications."[151] The rationale of the majority opinion is based on the outdated notion that zoning's principal purpose is to keep the "pig" out of the "parlor" by separating out incompatible uses. As noted in the dissenting opinion, unlike other industrial uses, which create negative externalities and thus can be relegated to certain limited areas within a community, oil and gas production operations must take place where the oil and gas is physically located.[152] The dissent argued that Act 13 represents a balance between various local and Commonwealth interests that should not be overturned by the court.[153] Most of the other constitutional challenges to Act were rejected.[154] Almost a year after the Commonwealth Court opinion was published, the Pennsylvania Supreme Court, in a one sentence per curiam opinion, "quashed the appeal."[155]

The Pennsylvania Supreme Court affirmed the holding of the Commonwealth Court although the plurality opinion disagreed with the due process rationale of the Commonwealth Court. In *Robinson Township v. Commonwealth*,[156] the plurality opinion of

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150. *Robinson Twp.*, 52 A.3d at 484-485.

151. *Id.* at 485.

152. *Id.* at 494-95 (Brobson, J., dissenting).

153. *Id.*

154. These constitutional challenges included article III, section 32 of the Pennsylvania Constitution (prohibition against local and special laws); article I, sections 1 and 10 (taking of property without just compensation); article I, section 27 (environmental rights); and Separation of Powers (Public Utility Commission does not have power to supersede local zoning ordinances although it does have power to give a non-binding advisory opinion regarding whether the local zoning ordinance complies with Act 13). The majority opinion does find that article II, section 1, the separation of powers article, has been violated because Act 13 does not provide any guidance to the Department of Environmental Protection in DEP's role as the granter of waivers from the setback requirements for well sites.

155. Robinson Twp. v. Commonwealth, 73 A.3d 520 (Pa. 2013).

156. Robinson Twp. v. Commonwealth, 83 A.3d 901 (Pa. 2013). There were four different opinions in *Robinson Twp.*. Chief Justice Castille was joined by Justices Todd and McCaffery in using the Environmental Rights Amendment in article I, section 27 of the Pennsylvania Constitution to overturn Act 13; Justice Baer concurred with the result but would have relied on the substantive due process analysis used by the Commonwealth Court; Justice Saylor, joined by Justice Eakin, dissented, rejecting the applicability of a substantive due process claim; while Justice Eakin separately dissented. In light of the

three of the six justices emphasized that Act 13 was unconstitutional under the Environmental Rights Amendment of the Pennsylvania Constitution.[157] As with the Commonwealth Court decision, the Pennsylvania Supreme Court only invalidated two parts of Act 13: one that gives the Department of Environmental Protection the power to grant waivers to setback requirements for wells located near various types of waters,[158] and a second which mandates that oil and gas operations must be allowed in all zoning districts.[159]

The touchstone of the plurality opinion is its broad reading of the Environmental Rights Amendment and its creation of individual environmental rights that "binds all government, state or local, or concurrently."[160] Under the Environmental Rights Amendment, the Commonwealth has affirmative duties as a trustee to protect the environment for both the current and future generations of Pennsylvanians.[161]

When viewed through this prism, the plurality opinion has no qualms about viewing the setback and zoning preemption decisions as encompassing a "blanket accommodation of industry and development."[162] As did the Commonwealth Court, the supreme court noted that sub-state units are "creations" of the state.[163] But due to the constitutional imposition on sub-state units of a duty to protect the environment, the Pennsylvania General Assembly may not withdraw power from sub-state units that is needed for such units to fulfill their trustee responsibilities.[164] But the plurality

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lengthy opinions and the timing of the publication of this article, it is not the intent of the author to provide the reader with a complete analysis of the Pennsylvania Supreme Court's opinion, which will be left for another day.

157. Article I, section 27 of the Pennsylvania Constitution provides: "The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."

158. *Robinson Twp.* 83 A.3d at 930-31.

159. *Id.* The zoning provisions also provide for a laundry list of oil and gas operations that are to be regulated solely by the Commonwealth and for which the sub-state unit has only a limited range of options regarding the application of its zoning ordinance. *Id.*

160. *Robinson Twp.* 83 A.3d at 952. The plurality opinion also gives a broad interpretation to the "public natural resources" for which the Commonwealth owes a trustee-type duty. The court recognizes that "public natural resources" do not encompass privately owned natural resources but that it does encompass more than state-owned lands, waterways, and the like. *Id.* at 954-55.

161. *Id.* at 958.

162. *Id.* at 973.

163. *Id.* at 977 (citing Fross v. Cnty. of Allegheny, 20 A.3d 1193, 1202 (Pa. 2011).

164. *Id.* at 977-78. The court relied in part on the long history of sub-state unit's exercise of zoning power that antedated the adoption of the Environmental Rights Amendment. Of course, that ignored the fact that the zoning power was specifically delegated to certain sub-state units through an enabling act, the absence of which would have left such units powerless to engage in zoning regulation.

opinion somewhat contradictorily concluded that the General Assembly could, in essence, abolish some or all of the sub-state units, which would devolve the trustee relationship to the Commonwealth under the Environmental Rights Amendment. Is the plurality opinion saying that the General Assembly lacks any power to adopt any statute that violates the court's definition of the trust relationship under the Environmental Rights Amendment? That is seemingly the plurality opinion's conclusion, whereby the court will determine whether or not the General Assembly, acting as trustee, has violated that trust.[165]

While it is still too soon to fully assess the plurality opinion's impact on state/sub-state relations, one preliminary question that needs to be answered is whether the pre-Act 13 express and implied preemption analyses used in Pennsylvania can still be used. The plurality's rationale would appear to limit the General Assembly's power to preempt sub-state unit power where it would violate the duty owed to the public under the Environmental Rights Amendment. Can a court find, consistent with that analysis, that a sub-state unit may not adopt a zoning ordinance that is in conflict with a state statute relating to oil and gas development? For example, can a sub-state unit adopt an ordinance regulating casing, concrete, or hydraulic fracturing operations that are in direct conflict with state regulations on the same subject matter if the sub-state regulations are more environmentally protective than the state regulations?[166] Likewise, could a citizen of a township challenge a zoning ordinance that expands the number of zoning districts where oil and gas extraction and production operations may take place using the plurality opinion's rationale that sub-state units are trustees under the Environmental Rights Amendment?

The plurality opinion raises a lot of unanswered questions as to the role of any level of government in the regulation of the extraction and production of privately-owned natural resources. It also raises substantial questions as to whether the judiciary retains the power to find that a more environmentally-friendly sub-state unit ordinance may ever be impliedly preempted due to the imposition of this public trust responsibility. These questions and others will need to be resolved before the final chapter can be written.

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165. *Id.* at 978.

166. *See, e.g.*, Huntley & Huntley, Inc. v. Borough Council, 600 Pa. 207, 964 A.2d 855 (Pa. 2009); Range Res.-Appalachia, LLC v. Salem Twp., 964 A.2d 869 (Pa. 2009).

VI. THE CONFLICT CONUNDRUM: DETERMINING WHEN STATE AND SUB-STATE REGULATORY PROVISIONS CONFLICT

The implied preemption by conflict doctrine is applicable when no express statutory preemption provision exists. The doctrine may arise either by express constitutional or statutory provisions that prohibit the sub-state governmental units from adopting ordinances or regulations that conflict with or are inconsistent with state statutes or regulations.[167] The implied preemption by conflict doctrine, however, may also arise as a common law matter even in the absence of such constitutional or statutory language. As one commentator has noted, the parties who resort to attacks on sub-state unit regulation based on either of the implied preemption theories, tend to be businesses who seek to avoid duplicative and/or more onerous sub-state regulation.[168] Seeking judicial relief from sub-state regulation is often part of a multi-pronged attack that may include attempts to have the state enact express preemption provisions. Given the political antipathy towards express preemption, courts have played a primary role in invalidating sub-state regulation, especially under the implied preemption by conflict doctrine.

One of the principal problems with the conflict doctrine is defining what constitutes a conflict.[169] It is an often-stated homily that "where a local ordinance prohibits an act that a state statute permits, or permits an act that a state statute prohibits," then a conflict exists.[170] Such a test was applied in an oil and gas preemption case in Ohio in 2013.[171] But, on its face, that test or definition is clearly inadequate at best and a canard at worst. In oil and gas preemption cases, the oil and gas operator will certainly have in its possession a state permit that authorizes the drilling of a well at a reasonably well-defined location. If a local zoning ordinance either

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167. Conflict preemption can occur even in those states that have a statutory recognition or approval of sub-state regulation of oil and gas operations. *See, e.g.*, CAL. PUB. RES. CODE § 3690 (West 2013); OKLA. STAT tit. 52, § 137 (2013).

168. Paul Diller, *Intrastate Preemption*, 87 B.U. L. REV. 1113, 1134 (2007).

169. The implied preemption by conflict doctrine is neither new nor capable of being easily applied. *See* REYNOLDS, *supra* note 5, at §§ 38-41.

170. REYNOLDS, *supra* note 5, at 128.

171. *See* State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶ 38. The Pennsylvania Supreme Court also embraced this definition of conflict preemption in *Huntley & Huntley, Inc.*, 964 A.2d 855 (Pa. 2009) (citing Liverpool Twp. v. Stephens, 900 A.2d 1030, 1037 (Pa. Commw. Ct. 2006); Duff v. Twp. of Northampton, 532 A.2d 500 (Pa. Commw. Ct. 1987)). Kansas also uses this test to determine when there is a conflict between the exercise of state and sub-state unit regulatory powers. DAVID E. PIERCE, 2 KANSAS OIL AND GAS HANDBOOK § 15.03 (1989). There are no Kansas cases dealing with preemption of home rule city ordinances in the context of oil and gas operations.

totally prohibits drilling within the locality or prohibits drilling in the zoning district where the well has been authorized to be drilled, the local regulation would clearly be preempted because it is in conflict with the state permit. Yet none of the implied preemption by conflict cases insulate the state permittee from local regulation merely because it has such a permit.

Another definition or test for conflict preemption is easier to understand, but still very difficult to apply. That test invalidates sub-state unit regulation that "substantially interferes with the effective functioning of a state statute or regulation or its underlying purpose."[172] This approach accepts the basic premise that merely having dual regulatory programs does not necessarily require that the sub-state unit's program will be preempted. It raises the bar on what will satisfy the conflict preemption test although it still gives the court great leeway in ascertaining how a statute functions and what its purposes or objectives are.

The experience with the application of the conflict preemption doctrine, when it comes to oil and gas operations, typifies the broad discretion and/or latitude that courts have in determining whether to find that the local regulation has been preempted. What will be described below is sometimes called the "operational conflicts" analysis and is similar to the "substantial interference" test described in the prior paragraph. There are several problems with the operational conflicts test. The first is that it requires an ad hoc determination on a regulation-by-regulation basis. The second is that if either the state statute or regulation changes, the prior analysis will not necessarily control the outcome after the amended provisions are adopted. The third is that the sub-state unit may amend its ordinance, which will trigger a new ad hoc decision on whether the amendment does or does not create an operational conflict. The fourth is the uncertainty and inconsistency in the results that can occur with multiple trial and intermediate appellate courts. The fifth is the delay inherent in awaiting a judicial result that adds substantially to the transaction costs faced by oil and gas operators. The sixth is that the court must ascertain the state's objectives in order to determine whether or not the sub-state regulation interferes with the achievement of such objectives.[173] Notwithstanding these and other problems, the operation-

172. Kotzebue Lions Club v. City of Kotzebue, 955 P.2d 921, 922 (Alaska 1998). This test is better than the one that requires to court "to examine inconsistencies and contradictions between the ordinance and the statute." *See* State *ex rel.* Morrison v. Beck Energy Corp., 2013-Ohio-356, 989 N.E.2d 85, at ¶ 38, (quoting Rispo Realty & Dev. Co. v. City of Parma, 564 N.E.2d 425, 428 (Ohio 1990)).

173. In many ways, this last problem is endemic with the implied preemption by occupation of the field doctrine whereby the courts have to decide what is the "field" that is being occupied. In most the conflict preemption and field preemption areas, you are asking a

al conflicts test is the predominant way that states deal with the conflict preemption issue relating to oil and gas operations. It is likely to remain as a critical part of the way our system resolves inter-governmental problems given difficulties inherent in adopting an express preemption system.

Colorado has the most experience in resolving conflict preemption cases dealing with oil and gas regulation. Other states, including New York and Oklahoma, have jurisprudential snippets of the conflict preemption doctrine without the extensive hands-on experience of comparing state and sub-state unit regulations as does Colorado.

Colorado has specifically adopted the operational conflicts test for determining whether or not the state oil and gas conservation statute preempts sub-state unit regulation of oil and gas operations. In *Board of County Commissioners, La Plata County, v. Bowen/Edwards Associates*,[174] several oil and gas operators sought to challenge the adoption by the County of oil and gas regulations. The specific types of regulation are not set forth in the opinion since the trial court had dismissed the action on standing grounds. The court noted the three preemption doctrines as defining conflict preemption as occurring "where [the] operational effect [of the ordinance] would conflict with the application of the state statute."[175] In defining the operational conflicts test, the court states: "State preemption by reason of operational conflict can arise where the effectuation of a local interest would materially impede or destroy the state interest. . . . Under such circumstances, local regulations may be partially or totally preempted to the extent that they con-

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court to make basic policy/legislative judgments about what the legislature intended but did not state expressly.

174. Bd. of Cnty. Comm'rs, La Plata Cnty. v. Bowen/Edwards Assocs., 830 P.2d 1045, 1049 (Colo. 1992). An earlier Colorado Court of Appeals decision had combined conflict preemption and occupation of the field preemption to invalidate a county ordinance that imposed conditions on a discretionary permit for oil and gas drilling operations, including requirements for a dirt berm for the sediment pond, a bond to cover the costs of reclamation and damages for an accident, requirements relating to a system of groundwater contamination prevention, and requirements relating to the cement casing for the well. Oborne v. Cnty. Comm'rs, 764 P.2d 397 (Colo. App. 1988), *cert. denied*, 778 P.2d 1370 (Colo. 1989). The preemption battle in Colorado is discussed at length in Debra S. Kalish, Gerald E. Dahl, & Christopher Price, *The Doctrine of Preemption and Regulating Oil and Gas Development*, 38 COLO. LAW. 47 (2009); Angela Neese, *The Battle Between the Colorado Oil and Gas Conservation Commission and Local Governments: A Call for a New and Comprehensive Approach,* 76 U. COLO. L. REV. 561 (2005).

175. *Bowen/Edwards Assocs.*, 830 P.2d at 1057. The court cites to two non-oil and gas related cases for that proposition. Nat'l Adver. Co. v. Dep't of Highways, 751 P.2d 632, 637-38 (Colo. 1988) and Lakewood Pawnbrokers, Inc. v. City of Lakewood, 517 P.2d 834, 836-38 (Colo. 1974). The *Lakewood Pawnbrokers* opinion, however, recites the traditional definition of a conflict relating to the city allowing what the state prohibits or the city prohibiting what the state allows. *Lakewood Pawnbrokers, Inc.*, 517 P.2d at 836.

flict with the achievement of the state interest."[176] Because there had been no trial on the merits and no record created, the court could not judge whether or not there were operational conflicts. The court, however, adds the following hypothetical to the mix which emphasizes the very ad hoc nature of the analysis along with the court having to ascertain the objective or objectives of the oil and gas conservation statute:

> We hasten to add that there may be instances where the county's regulatory scheme conflicts in operation with the state statutory or regulatory scheme. For example, the operational effect of the county regulations might be to impose technical conditions on the drilling or pumping of wells under circumstances where no such conditions are imposed under the state statutory or regulatory scheme, or to impose safety regulations or land restoration requirements contrary to those required by state law or regulation. To the extent that such operational conflicts might exist, the county regulations must yield to the state interest. Any determination that there exists an operational conflict between the county regulations and the state statute or regulatory scheme, however, must be resolved on an ad-hoc basis under a fully developed evidentiary record.[177]

Such a review was done in *Town of Frederick v. North American Resources Co.*,[178] where the court looked at the Town's discretionary permit requirement, its well location, setback, noise mitigation, visual impact, and aesthetic standards in determining whether or not those provisions were preempted by state statute. The ordinance also imposed penalties for failure to comply. The

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176. *Bowen/Edwards Assocs.*, 830 P.2d at 1059.

177. *Id.* at 1060. How will the evidentiary record help the trial judge determine what the state interest is that the local regulation is allegedly interfering with? Will the judge look to the preamble or statement of purpose of the statute, receive testimony by legislators, or look at the legislative history to the extent there is any such history? Likewise, will the objectives or the purpose of the sub-state unit regulation need to be explored? A simple hypothetical will suffice to show the difficulty with this approach: A state conservation statute has as one of its stated objectives the production of hydrocarbons in a manner that prevents waste and protects correlative rights. A sub-state unit passes an ordinance prohibiting all oil and gas drilling. What is the state interest? What is the local interest? Is there a conflict? While the Colorado courts have found prohibitory ordinances invalid, the New York courts have, to date, answered that question by finding no preemption. *See infra* text accompanying notes 188 to 189.

178. Town of Frederick v. N. Am. Res. Co., 60 P.3d 758, 760 (Colo. App. 2002), *cert. denied,* 2003 Colo. LEXIS 7 (Jan. 6, 2003). The court found no express preemption and no implied preemption by occupation of the field even though the Colorado oil and gas conservation act had been amended to give the Oil and Gas Conservation Commission substantially greater authority since *Bowen/Edwards* had been decided.

North American Resources Company drilled a well in the town without submitting a special use (discretionary) permit application, based upon its receipt of a Colorado Oil and Gas Conservation Commission (COGCC) permit. The court found that in applying the operational conflicts test, several of the town's regulations were preempted. The court quoted from *Bowen/Edwards* to determine the scope and extent of these operational conflicts. It said:

> [T]he efficient and equitable development and production of oil and gas resources within the state *requires uniform regulation of the technical aspects of drilling*, pumping, plugging, waste prevention, safety precautions, and environmental restoration. Oil and gas production is closely tied to well location with the result that the *need for uniform regulation extends also to the location and spacing of wells.*[179]

The existence of a discretionary permit system per se did not violate the operational conflicts test of *Bowen/Edwards*, especially where the town provided that the permit could not be denied if the applicant met the performance standards imposed by the ordinance.[180] There was no conflict in having a permit and fee requirement given the Town's concession that it would or could not deny the permit.[181] The court also upheld the town's regulations insofar as they required building permits for above-ground structures, access roads, response costs, and similar items.[182] Those matters were found not to conflict with any extant COGCC regulations. On the other hand, after doing a regulation-by-regulation analysis of several other town requirements, the court invalidated the town's setback requirements, noise abatement rules, and visual impact rules as directly conflicting with specific COGCC rules.[183] In addition, the court invalidated the Town's efforts to incorporate existing COGCC rules and allow for independent town enforcement.[184] The court held that while Colorado statutes allow any person to sue to enforce COGCC rules, that person must comply with various procedural safeguards, none of which were pre-

179. *Id.* at 763 (quoting *Bowen/Edwards Assocs.*, 830 P.2d at 1058).

180. *Id.* at 765. This denial of the power to prohibit or deny a discretionary permit is a theme in a number of preemption cases because it minimizes the conflict preemption claim since the sub-state unit is denying the power to, in effect, veto the state permit. *See* Cal. Coastal Comm'n v. Granite Rock Co., 480 U.S. 572 (1987).

181. *See Town of Frederick*, 60 P.3d at 763 (citing COLO. REV. STAT. § 34-60-106(15) (2001)) (reasonable and nondiscriminatory local government fees are not preempted).

182. *Id.*

183. *Id.* at 765.

184. *Id.*

sent in the town's enforcement mechanism.[185] Thus the attempt to have town penalties for violating COGCC rules was also found preempted by state law.

In response to the ad hoc and uncertain nature of the operational conflicts test, the COGCC promulgated the following rule: "The permit-to-drill shall be binding with respect to any conflicting local governmental permit or land use approval process."[186] In *Board of County Commissioners v. Colorado Oil and Gas Conservation Commission,*[187] the court invalidated the rule after finding that it was inconsistent with the judicially-created operational conflicts doctrine. Because the rule was an attempt to codify that doctrine, the court gave no deference to the agency's interpretation. Because the operational conflict test requires an ad hoc balancing of state and sub-state interests that can only be done after an evidentiary hearing, the COGCC rule setting forth a blanket preemption doctrine was ultra vires even though the COGCC has broad delegated powers to protect the public health, safety and general welfare.

Given the necessity for an ad hoc review in operational conflicts cases, may a trial court decide such cases using the summary judgment process? In *Board of County Commissioners v. BDS International, LLC*,[188] the court approved of the use of summary judgment motions to resolve operational conflicts claims. The County adopted a comprehensive oil and gas regulatory ordinance that imposed various performance standards, bonding requirements, and a permit fee on oil and gas operators seeking to drill in the County.[189] The performance standards were numerous and ranged from wildlife and wildlife habitat standards to recreation impacts to wildfire hazards to geologic hazards. In addition, the permit applicant has to submit information regarding numerous potential impacts of its operations on wildlife, vegetation, water quality, and drainage and erosion control.[190] The court of appeals found that even though operational conflicts questions must be determined on an ad hoc basis, the court may make that determination using the summary judgment process. The court also provided some guidance to trial courts in their necessary balancing of state and sub-state interests to determine if conflicts exist.[191] In review-

185. *Id.*

186. Colo. Code Regs. § 404-1.

187. Bd. of Cnty. Comm'rs v. Colo. Oil & Gas Conserv. Comm'n, 81 P.3d 1119, 1124 (Colo. App. 2003).

188. Bd. of Cnty. Comm'rs v. BDS Int'l, LLC, 159 P.3d 773, 777 (Colo. App. 2006).

189. *Id.* at 779.

190. *Id.* at 777.

191. The trial court had invalidated most of the county ordinance based on its conflict preemption analysis. *Id.* at 778-79.

ing sub-state ordinances, the court should construe them "so as to harmonize them with the applicable state statutes or regulations. Where no possible construction of the [ordinance] may be harmonized with the state regulatory scheme, we must conclude that a particular regulation is invalid."[192] In addition, merely because the state and sub-state unit regulate the same area or field and do so in a different way does not necessarily create an operational conflict.[193] Looking at the same ordinance and the same state statute and regulations, the court of appeals disagrees with the trial court's near-universal finding of preemption and remands for further review under its new harmonization principle. This case reflects the judicial antipathy towards finding preemption of a sub-state unit's police powers in areas of traditional local concern. By allowing the use of competing motions for summary judgment to resolve operational conflicts, the court speeds up the process but may eliminate the submission of factual evidence that might provide the court with additional insights as to the nature and extent of the putative conflict.

The hot button issue of enacting prohibitory ordinances that do not allow oil and gas drilling and production activities anywhere within the sub-state unit has been resolved by the Colorado Supreme Court in *Voss v. Lundvall Brothers, Inc.*.[194] A home rule city enacted an ordinance that totally prohibited the drilling of oil and gas wells within city limits. The court applied the *Bowen/Edwards* operational conflicts test in determining whether the extant state statutes and regulations preempted a prohibitory ordinance. The court distilled its findings in the following passage:

> We hold that while the Oil and Gas Conservation Act does not totally preempt a home-rule city's exercise of land-use authority over oil and gas development and operations within the territorial limits of the city, the statewide interest in the efficient development and production of oil and gas resources in a manner calculated to prevent waste, as

192. *Id.* at 779.

193. *Id.*

194. Voss v. Lundvall Bros., 830 P.2d 1061, 1062 (Colo. 1992). The citizens of the City of Longmont, Colorodo enacted by an initiative election an ordinance that prohibits the use of hydraulic fracturing to extract oil or gas and prohibits the use of open pits or disposal of solid or liquid wastes created in connection with the hydraulic fracturing process. The initiative election results are analyzed in Jack Healy, *With Ban on Drilling Practice, Town Lands in Thick of Dispute*, N.Y. TIMES, Nov. 25, 2012, http://www.nytimes.com/2012/11/26/us/with-ban-on-fracking-colorado-town-lands-in-thick-of-dispute.html, and in the complaint filed by the Colorado Oil and Gas Association against the City of Longmont filed in the District Court of Weld County on December 17, 2012. While not prohibiting oil and gas drilling per se, the viability of the initiative ordinance is clearly questioned by the result in *Voss*.

> well as in protecting the correlative rights of owners and producers in a common pool or source to a just and equitable share of the profits of production, prevents a home-rule city from exercising its land-use authority so as to totally ban the drilling of oil, gas, or hydrocarbon wells within the city.[195]

The court made clear that it was not finding field preemption but was applying conflict preemption principles. Where state policy or interest is to allow oil and gas drilling and production operations, it appeared clear to the Colorado Supreme Court that a sub-state unit would substantially interfere with that policy or interest and would thus be preempted.

Notwithstanding the apparent rejection of sub-state unit prohibitory ordinances, other Colorado sub-state units have enacted through the initiative process prohibitory ordinances that will likely be challenged by either the state or by oil and gas operators.[196]

Other states, in applying the conflict preemption doctrine to oil and gas operations, have usually relied on the older test of sub-state units not being allowed to prohibit what the state allows and not being authorized to allow what the state prohibits. That test was utilized to invalidate a Pennsylvania township's ordinance that would deny an oil and gas operator a permit to drill or produce after it had received three notices of violations of township ordinances.[197] Because the operator's state permit to drill and produce could not be revoked on the basis of ordinance violations, the court deemed that the Township was prohibiting what the state was authorizing.[198] While New Mexico has no oil and gas-related preemption cases, cases involving statutes analogous to its oil and

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195. *Voss*, 830 P.2d at 1062. Compare this approach with the approach taken by the New York courts in dealing with prohibitory ordinances as discussed in the text accompanying *supra* notes 110 to 126. Two early Oklahoma cases also reflect the disparate approaches that may be taken to conflict preemption situations, one creating a type of presumption against finding conflict preemption and the other finding complementary regulation invalid where the result is to defeat a state objective. *Compare* Gant v. City of Oklahoma, 6 P.2d 1065 (Okla. 1931), *with* Indian Territory Illuminating Oil Co. v. Larkins, 31 P.2d 608 (Okla. 1934). *See* POOLING AND UNITIZATION, *supra* note 11, at § 4.05(2)(b)(xii).

196. In the November 2013 election cycle, three more Colorado sub-state units enacted ordinances prohibiting hydraulic fracturing operations. Carol Proctor, *Colorado's New Frack Bans May be on Shaky Legal Grounds*, DENV. BUS. J., Nov. 13, 2013, http://bizjournals.com/denver/blog/earth_to_power/2013/11/colorados-new-frack-bans-may-be-on.html?ana=RSS&s=article_search; Edward McCallister, *Colorado's Fracking Ban Could Fall Before Courts*, REUTERS NEWS SERVICE, Nov. 7, 2013, http://reuters.com/article/2013/11/07/colorado-fracking-bans-idUSL2N0IS2CP20131107.

197. Range Res.-Appalachia, LLC v. Blaine Twp, No. 09-355, 2009 U.S. Dist. LEXIS 100932 (W.D. Pa. Oct. 29, 2009). A subsequent opinion, *Range Res., Appalachia, LLC v. Blaine Twp.*, 649 F. Supp. 2d 412 (W.D. Pa. 2009), dealt with a township ordinance that sought to strip corporations of their right to assert constitutional violations.

198. *Range Res.-Appalachia, LLC*, 2009 U.S. Dist. LEXIS 100932 at *22-23.

gas conservation act have applied the conflict preemption doctrine in a way that creates a presumption that the sub-state unit's powers should not be preempted.[199]

While the New York drilling prohibition cases largely deal with express preemption issues,[200] one such case expressly dealt with the argument made by the operator that such ordinances conflict with or are inconsistent with state law.[201] The court did not apply the traditional test for determining whether a conflict existed but relied on its express preemption argument that state regulation focused on the "details and procedures of well spacing" while the Town's zoning regulation focused on traditional land use considerations.[202] Since their objectives were different there was no conflict or inconsistency. The court also rejected the operator's claim that the state statute and regulations were intended to maximize recovery of oil and gas.[203] The court did not concede that claim as an accurate statement of the state's objectives, instead focusing its view on the fact that state regulation is designed to deal with the prevention of underground waste and not necessarily an objective to allow oil and gas development wherever oil and gas may be found.[204] While waste prevention is clearly one objective of state oil and gas regulation, there are also conservation regulation and protection of correlative rights objectives that the court ignores which are clearly impacted by a prohibitory ordinance. This approach, which attempts to divine state legislative intent by identifying state objectives, allows the court to not find preemption, even where prohibitory ordinances are involved. At some level, it appears incongruous to state that no conflict exists between a state oil and gas conservation regulatory program that authorizes drilling and production operations and a sub-state unit's prohibitory ordinance which would deny a state well permit holder the right to drill a well.

Texas does not clearly follow the traditional approach of dividing preemption claims into three sub-parts (express preemption,

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199. *See* San Pedro Mining Corp. v. Bd. of Cnty. Cmm'rs, 909 P.2d 754 (N.M. Ct. App. 1995). In *San Pedro Mining,* the court suggested that a conflict preemption analysis would have to be ad hoc in nature, but since the plaintiff had not claimed that only portions of the ordinance were preempted, the court would not render an advisory opinion on the conflict preemption issue. *Accord* Rancho Lobo, Ltd. v. DeVargas, 303 F.3d 1195 (10th Cir. 2002). *See generally* Freilich & Popowitz, *supra* note 43.

200. *See supra* text accompanying notes 96 to 126.

201. Norse Energy Corp. v. Town of Dryden, 964 N.Y.S.2d 714 (N.Y. App. Div. 2013) *leave to appeal granted*, 995 N.E.2d 851 (N.Y. 2013).

202. *Id.* at 723-24.

203. *Id.* at 723.

204. *Id.*

conflict preemption, and field preemption).[205] Nonetheless, sub-state unit regulation can be subject to a conflict preemption claim and invalidated although there is a strong presumption against conflict preemption.[206] There is some indication that Texas will follow the operational conflicts approach taken in *Bowen/Edwards* that requires a court to make an ad hoc analysis of specific sub-state regulatory ordinance provisions and compare them with the state statute and regulations in order to determine if there is a conflict.[207]

In the few cases challenging sub-state regulation of oil and gas operations, no court has found such regulation preempted.[208]

VII. CONCLUSION

There is no consensus of which level of government is best suited to regulate oil and gas operations. There are some who firmly believe that only the federal government has the resources and expertise to regulate unconventional hydrocarbon drilling and production activities. There are some who believe that state oil and gas conservation agencies are the proper repository of regulatory powers over such activities, while there are others who believe that, because it is the sub-state unit and its residents who are most deleteriously impacted by such activities, sub-state unit regulation is the preferred policy choice. Then there are others, including myself, who believe that all three levels of government probably have a role in regulating unconventional hydrocarbon extraction activities. As between state and sub-state units, it is the author's opinion that, in the absence of a broadening of state oil and gas conservation authority to consider surface and/or environmental impacts of such activities, sub-state units clearly have a role to play in the regulatory arena. If, however, a state authorizes its oil and gas conservation agency to consider more than sub-surface

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205. *See, e.g.*, *In re* Sanchez, 81 S.W.3d 794 (Tex. 2002) (Election Code provision requiring a forty-five-day period for filing of application to run for office petition does not preempt home rule charter provision that imposes only a thirty-day filing period); Dallas Merchant's & Concessionaire's Ass'n v. City of Dall, 852 S.W.2d 489, 491 (Tex. 1993); City of Sweetwater v. Geron, 380 S.W.2d 550, 552 (Tex. 1964); State v. Chacon, 273 S.W.3d 375 (Tex. App. 2008); City of Mont Belvieu v. Enter. Prods. Operating, LP, 222 S.W.3d 515 (Tex. App. 2007).

206. *See* cases cited in *supra* note 205.

207. *See Enter. Prods. Operating, LP*, 222 S.W.3d at 520 (Tex. App. 2007). Rather than litigate the conflict preemption case, the City and the operator entered into a settlement agreement that was unsuccessfully challenged in *Cernosek Enters., Inc. v. City of Mont Belvieu*, 338 S.W.3d 655 (Tex. App. 2011).

208. *See* Tysco Oil Co. v. R.R. Comm'n of Tex., 12 F. Supp. 195, 201 (S.D. Tex. 1935); *see also* Unger v. State, 629 S.W.2d 811, 812 (Tex. App. 1982); Klepak v. Humble Oil & Ref. Co., 177 S.W.2d 215, 218 (Tex. Civ. App. 1944).

impacts and the protection of correlative rights, as is clearly the situation with the Colorado Oil and Gas Conservation Commission, then the case for state preemption of most sub-state unit regulation is justified. Where, however, the state oil and gas conservation agency retains its focus on prevention of waste, protection of correlative rights and conserving natural resources, then sub-state units should be able to regulate to deal with the surface externalities caused by oil and gas operations. Notwithstanding the current view of the New York courts, however, I would deem prohibitory ordinances per se preempted because they clearly conflict with the state oil and gas conservation statute's acceptance of the legitimacy of oil and gas drilling and production activities. While recognizing the popularity and potential simplicity of setback requirements from protected uses, sub-state units should be required to develop overlay maps to show where, if anywhere, oil and gas drilling operations can take place when the setback requirements are applied. Oil and gas operations engender substantial controversy. Therefore, subjecting oil and gas operators to discretionary permit requirements, including public hearings, may require a more active role for courts in reviewing denials of such permits. While I have for many years believed that courts should review local land use decisions, be they legislative, administrative or quasi-judicial using a "soft glance" approach, that approach might operate to allow on an as applied basis the de facto exclusion of a lawful use from a community. As unconventional hydrocarbon plays expand their geographic coverage, states and sub-state units have the opportunity to experiment with regulatory initiatives that can properly balance the competing interests that are engendered by such development.

While the courts clearly have a role to play in resolving these competing policy objectives, it would be better for the relevant legislative bodies to more clearly set forth the scope and extent to which sub-state units are allowed to regulate oil and gas operations. State courts have developed a predilection for not finding state preemption notwithstanding the creature theory of state/sub-state relations. While such a predilection is more appropriate at the federal/state level where the states are not creatures of the federal government, state courts should consider the creature theory in balancing the competing interests. While constitutional and statutory home rule provisions have muted the application of the creature theory, states still retain substantial authority over their sub-state units.

The extent to which sub-state units may regulate oil and gas operations will be the subject of both legislative and judicial atten-

tion in the years to come. The area is rife with strong public policy disputes relating to both the division of power between state and sub-state units and the use or non-use of hydraulic fracturing operations. In my opinion, legislative resolution of those competing policy objectives is the superior process, but I also have little doubt that the courts will continue to play a leading role as well in the process.

PERMITTING SHALE GAS DEVELOPMENT

EMILY A. COLLINS*

I. INTRODUCTION

As a matter of historical practice, and as an exemption from the Federal Safe Drinking Water Act, the regulatory framework for shale gas extraction currently resides within state permitting and enforcement structures. The Eleventh Circuit decision in *Legal Environmental Assistance Foundation v. U.S. EPA*[1] prompted a

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1. Legal Envtl. Assistance Found., Inc. v. EPA, 118 F.3d 1467, 1471 (11th Cir. 1997).

federal agency study,[2] which resulted in Congress expressly excluding "the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities" from the definition of "underground injection."[3] Thus, in keeping with traditional regulation of onshore oil and gas development and groundwater,[4] states have been left to their own devices in addressing any potential underground migration of fluids and gas as a result of hydraulic fracturing activities.

Left without a federal floor of minimal regulation in permitting shale gas extraction, states have routinely modified their statutes and rules to address increasing public concern and to reflect enhanced understanding of well construction and the hydraulic fracturing process. Yet, most states have not fully utilized their statutory authority to address the environmental risk assessment that would take place if the exemption of hydraulic fracturing activities from the federal definition of underground injection was not present. Rather than using their statutory authority to evaluate potential environmental impacts from shale gas extraction proposals, most states' permitting of oil and gas development have stuck to a traditional role: require minimum well construction standards, setbacks, and a process for groundwater supply replacement. This approach differs dramatically from the predictive model-based approach of permitting underground injection control wells.

This tension between state oil and gas development statutes and the lack of environmental regulation imposed by the Safe Drinking Water Act has led to debates over whether environmental risk management and control should be left with the states or provided with a federal standard that requires states to "develop comprehensive plans to manage environmental risks."[5] That the

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2. OFFICE OF GROUND WATER & DRINKING WATER, U.S. ENVTL. PROT. AGENCY, EPA 816-R-04-003, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS (2004), *available at* http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.cfm.

3. Energy Policy Act of 2005, Pub. L. No. 109-58, § 322, 119 Stat. 594, 694 (codified as amendend at 42 U.S.C. § 300h(d)(1)(B)(ii) (2012)). Congress otherwise defined *underground injection* to mean "the subsurface emplacement of fluids by well injection." 42 U.S.C. § 300h(d)(1)(A).

4. *See generally* Robin Kundis Craig, *Hydraulic Fracturing (Fracking), Federalism, and the Water-Energy Nexus*, 49 IDAHO L. REV. 241, 258-260 (2013) (discussing states' historical control over energy facility siting and water allocation).

5. Jody Freeman, Op-Ed., *The Wise Way to Regulate Gas Drilling,* N.Y. TIMES, July 5, 2012 at A23, *available at* http://nytimes.com/2012/07/06/opinion/the-wise-way-to-regulate-hydraulic-fracturing.html?_r=0. For a full discussion and debate of the federalism and fracturing debate, see David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431 (2013); Michael Burger, Response*, Fracking and Federalism Choice*, 161 U. PA. L. REV. ONLINE 150 (2013).

federal government must be allowed to step in where states have "abdicated their responsibility"[6] to appropriately manage environmental risks reflects the norm in environmental law, a checks-and-balances system called cooperative federalism.

In this article, I join in that call for a federal minimum that requires states to request and review more comprehensive permit applications for gas development that involve predictive modeling of environmental risk using site-specific inputs, such as local geologic characteristics, anticipated pressures imposed by the gas development operation, site stratigraphy, rock properties, formation conditions, permeability, fluid volumes, hydraulic fracturing fluid composition, target formation fluid composition, and any other necessary information to predict impacts. Environmental permitting processes routinely involve predictive models as the best evidence of potential harm caused by the proposed operation. Predictive modeling allows permitting authorities to make well-informed decisions about whether and under what conditions to issue environmental permits. These models are available for use in shale gas development permitting, as demonstrated by the United States Environmental Protection Agency's (EPA) Progress Report on its Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources.[7]

Below, I examine existing statutory and regulatory authority of states to address environmental risk during the permitting process. Comparing statutory language in the context of oil and gas permitting and underground injection control (UIC) gives a clear picture of state responsibility to evaluate the potential for environmental harm, but little-to-no legislative imposition on applicants for permits to provide enough information to allow state regulators to properly evaluate risk and issue properly restrictive permits. State gas development statutes, except for the recently enacted Illinois Hydraulic Fracturing Regulatory Act,[8] tend to a clear requirement that is commonplace in environmental protection statutes: the imposition of a burden of proof on the permit applicant to demonstrate that its proposed operation will not endanger water resources or otherwise pose a risk of violation of environmental health standards. I also compare state applications and

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6. Freeman, *supra* note 5.

7. OFFICE OF RESEARCH & DEV., U.S. ENVTL. PROT. AGENCY, EPA/601/R-12/011 STUDY OF THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER RESOURCES: PROGRESS REPORT (2012) [hereinafter EPA PROGRESS REPORT], *available at* http://www2.epa.gov/sites/production/files/documents/hf-report20121214.pdf.

8. Ill. Hydraulic Fracturing Regulatory Act, 2013 Ill. Legis. Serv. P.A. 98-22 (West) (codified in 225 Ill. Comp. Stat. 732 (2013)).

permits in the oil and gas and UIC context to investigate whether, based on the duty to evaluate the potential for harm in both contexts, state agencies are interpreting their duty to evaluate environmental impacts of proposed gas development to require them to request necessary information from applicants during the permit decision-making process. In the UIC context, agencies routinely interpret their duty to evaluate the potential for harm to require a great deal of information from the permit applicant. In the oil and gas context, agencies routinely interpret their authority in permitting very narrowly.

II. DETERMINING WHETHER STATE AGENCIES CAN INCORPORATE RISK ANALYSIS INTO PERMITTING DECISIONS FOR GAS DEVELOPMENT

A. Environmental Laws Require Evaluation of Potential Impacts Prior to Permit Issuance

The decision of whether a permit should be issued to an operator and, if it should be issued, under what conditions the operation may go forward necessarily involves the scientific prediction of outcomes. Predictive models are the best analytical tools available for regulatory agencies to evaluate potential impacts of a proposed activity during the permitting process.[9] State agencies can determine the likelihood of a site-specific subsurface impact if proper data and analyses are provided. While the precautionary principle has been raised as a proposed method of administrative decision-making for permitting gas development,[10] simply using the tools that we have come to expect in other environmental contexts has the potential to appropriately balance development, health, and environment concerns and is more than is currently being done in gas development permitting. Where the law requires that an agency consider potential environmental impacts in determining whether and under what conditions to issue a permit, the regulator must decide how to determine the prospect for and likelihood of impacts.

Using predictive models to determine potential impacts from activities that require a permit to operate is a commonplace phe-

9. Telephone interview with Tim A. Wool, U.S. Envtl. Prot. Agency, Region 4 Water Management Division (July 25, 2013) (describing water quality models as the "best evidence" for environmental agencies to use in making NPDES permit decisions and noting that models for subsurface migration are more difficult to "ground truth.").

10. *See* Elizabeth Burleson, *Cooperative Federalism and Hydraulic Fracturing: A Human Right to a Clean Environment*, 22 CORNELL J.L. & PUB. POL'Y 289, 295 (2012).

nomenon with a long history.[11] Those seeking an air quality permit must typically project the fate of pollutants through the air and record that projection in a permit application.[12] If a person wishes to discharge wastewater to surface waters, the prediction of the resulting water quality of the receiving stream is determined using a model with inputs related to the background water quality, the quality of the expected effluent, and the flow of the receiving water prior to permit issuance.[13] For underground wastewater disposal wells, groundwater or reservoir modeling of impacts is done through computer programs that take into account "injection rates and quantities, injection-interval layer thickness, permeability, porosity, structure, water saturation, temperature, rock compressibility, water compressibility, and the type of formation fluid found in the [injection zone]."[14] While models themselves are not typically required by statute or rule, permit application requirements and instructions often require an applicant to provide the inputs for a model that is run by the regulatory authority.[15]

Modeling can typically only be performed by an applicant and regulatory agency based on site-specific knowledge of the proposed operation. For injection wells, the local geology must be assessed.[16] For emission sources, background air quality and local air dispersion must be delineated.[17] For wastewater discharges, background

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11. *See* Robert B. Ambrose, Jr., Tim A. Wool & Thomas O. Barnwell, Jr., *Development of Water Quality Modeling in the United States*, 14 ENVTL. ENGINEERING RES. 200 (2009), *available at* http://eeer.org/upload/eer-14-4-200-.pdf (discussing the history and development of water quality modeling in the U.S.).

12. *See* 40 C.F.R. § 51.160(c), (f) (2013) (requiring that state implementation plans include procedures for the submission of information on "the nature and amounts of emissions to be emitted" by facility operators and any air quality modeling used to provide that information).

13. *See* U.S. ENVTL. PROT. AGENCY, EPA-833-K-10-001, NPDES PERMIT WRITERS' MANUAL (2010), § 6.2.3, 6-16, *available at* http://www.epa.gov/npdes/pubs/pwm_chapt_06.pdf.

14. *See* Proposal for Decision at 31, *In re* Application of TEXCOM Gulf Disposal, L.L.C. for Texas Commission on Environmental Quality Underground Injection Control Permit Nos. WDW410, WDW411, WDW412 and WDW 413, No. 582-07-2673 (2010) [hereinafter Application of TEXCOM], *available at* http://www.soah.state.tx.us/pfdsearch/pfds/582%5C07%5C582-07-2673-pfd1.pdf The permit applications at issue in this case were for four Class I commercial UIC wells for disposal of nonhazardous industrial wastewater.

15. *See, e.g.*, TEX. COMM'N ON ENVTL. QUALITY, CLASS I INJECTION WELL PERMIT APPLICATION FORM 24, *available at* http://tceq.texas.gov/assets/public/permitting/waste/uic/Class%20I%20UIC%20Application.docx (discussing geology report requirements); TEX. WATER CODE ANN. § 27.051(a)(1), (3) (West 2013) ("The commission . . . may issue the permit if it finds: (1) that the use or installation of the injection well is in the public interest; [and] . . . (3) that, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution . . . .").

16. *See, e.g.*, 30 TEX. ADMIN. CODE § 331.121(a)-(c) (2013); TEX. COMM'N ON ENVTL. QUALITY, *supra* note 15.

17. *See, e.g.*, 25 PA. CODE § 127.12(a)(6) (2013) (an application must "show that the source will not prevent or adversely affect the attainment or maintenance of ambient air

water quality, pollutants discharged, and anticipated mixing with the receiving stream must be assessed before a model of impacts can be run.[18] Failure to provide this information in an application can result in a denial of the permit or in a return of the application.

B. EPA Study Progress Report

In its conference report accompanying House Bill 2996—the fiscal year 2010 Appropriations Act—the U.S. House of Representatives Appropriations Committee asked EPA to "carry out a study on the relationship between hydraulic fracturing and drinking water, using a credible approach that relies on the best available science, as well as independent sources of information."[19] In December 2012, EPA issued a progress report on the study that identifies the drinking water issues as the potential for: fracturing fluid to migrate into drinking water aquifers, formation fluid being displaced into aquifers, and "mobilization of subsurface formation materials into aquifers."[20] EPA expects to publish a final draft report for public comment and peer review in 2014.[21]

In addressing Congress's relationship question directly, EPA asked: "Can subsurface migration of fluids or gases to drinking water resources occur, and what local geologic or man-made features might allow this?"[22] In asking this question, it appears that EPA is first tackling the now commonplace claim that hydraulic fracturing has never impacted underground sources of drinking water.[23]

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quality standards *when required by the Department*." (emphasis added)); BUREAU OF AIR QUALITY, PA. DEP'T OF ENVTL. PROT., 2700-PM-AQ0007, PROCESSES: APPLICATION FOR PLAN APPROVAL TO CONSTRUCT, MODIFY OR REACTIVATE AN AIR CONTAMINATION SOURCE AND/OR INSTALL AN AIR CLEANING DEVICE 20, ("If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions.").

18. *See, e.g.*, OHIO ADMIN. CODE § 3745-33-03(A), (C) (2013) (requiring that the application characterize the chemicals in the effluent); 40 C.F.R. 122.44(d)(1)(ii) (2013) (instructing permit writers on how to determine whether there is a reasonable potential for a discharge to exceed numeric or narrative water quality criteria); *see also* U.S. ENVT'L PROT. AGENCY, *supra* note 13, at § 6.3.2, 6-23.

19. H.R. REP. NO. 111-316, at 109 (2009) (Conf. Rep.).

20. EPA PROGRESS REPORT, *supra* note 7, at 9.

21. *EPA's Study of Hydraulic Fracturing and Its Potential Impact on Drinking Water Resources,* EPA, http://epa.gov/hfstudy (last updated Feb. 3, 2014).

22. EPA PROGRESS REPORT, *supra* note 7, at 17.

23. *See, e.g.*, *Shale Development: Best Practices and Environmental Concerns: Hearing before the S. Comm. on Energy & Natural Resources*, 112th Cong. (2013) (statement of Marc Edwards, Senior Vice President of Completion and Production, Halliburton) ("After more than 60 years of experience in the U.S., EPA and numerous regulators have substantiated, following extensive scientific rigor, that not a single instance of contamination has occurred."), *available at* http://energy.senate.gov/public/index.cfm/2013/5/full-committee-foru

EPA poses several hypothetical scenarios to model in determining whether migration of fluids or gases are possible. Those scenarios include the following:

- **Scenario A**: consequences of geochemical wellbore failure.
- **Scenario B1 & B2**: consequences of induced fractures reaching groundwater resources before and after intercepting conventional reservoirs.
- **Scenario C**: consequences of activation of native faults and fractures.
- **Scenario D1 & D2**: consequences of induced fractures intersecting offset unplugged wells.

The scenarios being simulated look like analyses performed under the federal UIC Program, which account for the mechanical integrity of the well, the local geology where the well will be constructed, faults and fracturing in the area, and other potential migration pathways.

In identifying drinking water issues, asking questions about the potential for a causal connection, and modeling hypothetical scenarios, EPA is performing what would be done by EPA for federal UIC permitting if an exemption to the Safe Drinking Water Act did not exist for shale gas development.[24] For example, in modeling the scenarios, EPA relied on the following input data as compared to typical UIC input data considered in permitting decisions for Class I and Class II UIC wells:

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m-shale-development-best-practices-and-environmental-concerns (statements viewable in webcast at 1:20:16 to 1:21:33); Clifford Krauss & Tom Zeller, Jr., *When A Rig Moves In Next Door*, N.Y. TIMES, Nov. 6, 2010, at BU1 ("The industry says that no conclusive evidence has been produced that fracking fluids can migrate thousands of feet back up from a well bore, through multiple layers of rock and into aquifers much closer to the surface."); Mike Soraghan, *Study Finds Methane Contamination Rises Near Shale Gas Wells*, N.Y. TIMES, May 9, 2011, *available at* http://nytimes.com/gwire/2011/05/09/09greenwire-study-finds-methane-contamination-rises-near-s-87464.html?pagewanted=all ("What the [Duke] study did not find is evidence that hydraulic fracturing fluid or flowback waste is getting into drinking water. The contamination was methane . . . . Industry groups are criticizing the study, noting that there is no 'baseline' before-and-after data and no proof drilling wells caused the methane contamination.").

24. EPA has issued draft guidance for comment that characterizes "Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels" as Class II injection wells because "Class II has been the primary well classification used for injection wells that are associated with oil and gas storage and production . . . [and] is also the well classification for injection wells used for enhanced recovery (ER) of oil or natural gas." U.S. ENVT'L PROT. AGENCY, OFFICE OF WATER, EPA 816-R-12-004, PERMITTING GUIDANCE FOR OIL AND GAS HYDRAULIC FRACTURING ACTIVITIES USING DIESEL FUELS–DRAFT: UNDERGROUND INJECTION CONTROL PROGRAM GUIDANCE #84, at 6 (2012) (citations omitted), *available at* http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/hfdieselfuelsguidance508.pdf.

EPA Hydraulic Fracturing Study Input Data[25]	**UIC Permitting Review Input Data**[26]
• Site stratigraphy • Rock properties (grain density, intrinsic matrix permeability, permeability of natural fracture network, matrix and fracture porosity, fracture spacing and aperture) • Initial formation conditions (fracture and matrix saturation, pressures) • Gas composition • Pore water composition • Gas adsorption isotherm • Thermal conductivity and specific heat of rocks • Parameters for relative permeability • Hydraulic fracturing pressure • Number of hydraulic fracturing stages • Injected volumes • Pressure evolution during injection • Volumes of fracturing fluid recovered	• Structural and stratigraphic geology, hydrogeology, and seismicity of the region • Stratigraphy, structure, and rock properties, aquifer hydrodynamics, and mineral resources • Confining zones must be laterally continuous and free of transecting, transmissive faults or fractures • Confining zones must have at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing initiation and/or propagation of fractures • Injection rates and quantities • Injection-interval layer thickness • Type of formation fluid of injection interval

This comparative list demonstrates that the analytic and numerical model inputs used in UIC permitting decisions to predict the limits of waste fate and transport are essentially the same inputs that can be used to predict the potential migration of shale gas de-

25. EPA PROGRESS REPORT, *supra* note 7, at 72-73.

26. *See* 30 TEX. ADMIN. CODE § 331.121(c)(2) (2013) (requiring a determination of "geologic suitability" for Class I wells, including "a determination that the geology of the area can be described confidently and that limits of waste fate and transport can be accurately predicted through the use of analytical and numerical models."); 30 TEX. ADMIN. CODE § 331.121(c)(3)(B); Application of TEXCOM, *supra* note 14 (describing the purpose of reservoir modeling, the model inputs and types of models used, including BOAST98, PRESS and PRESS2). *See also* 40 C.F.R. § 146.24(a) (2013) (requiring EPA to consider injection rates, pressure, and quantities; the properties of the injection fluid; and "appropriate geological data on the injection zone and confining zone including lithologic description, geological name, thickness and depth" before issuing a Class II well permit).

velopment contaminants. Thus, the EPA Progress Report tells us that predictive models of underground migration exist. A comparison to the inputs used in UIC permitting shows that we have used similar models for the same reasons in deciding whether to authorize the construction and operation of proposed waste injection wells.

EPA's Progress Report utilizes the predictive process that Congress exempted for UIC-based regulation of hydraulic fracturing to answer Congress's question about "the relationship between hydraulic fracturing and drinking water."[27] Removal of the exemption would impose a requirement on states to proactively address potential threats to health, safety, and the environment by traditional environmental permitting processes.

III. COMPARATIVE AUTHORITY AND REQUIREMENTS TO PROTECT GROUNDWATER AND ENVIRONMENT IN UIC AND SHALE GAS PERMITTING

Predictive models of underground contamination are used for UIC permitting. The federal statutory language prompting a risk-based evaluation of a proposed operation during the permitting process is quite simple: (1) a prohibition of the activity itself without a permit,[28] and (2) a standard for permit issuance that requires "the applicant for the permit to inject . . . [to] satisfy the State that the underground injection will not endanger drinking water sources . . . ."[29] Congress defined endangerment from injection as an injection operation that:

> [M]ay result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.[30]

The endangerment standard for permit issuance in the Safe Drinking Water Act does more than simply prohibit the occurrence of pollution. Instead, the statutory standard requires a specific evaluation of the risks of the operation prior to the operator receiving

27. H.R. REP. NO. 111-316, at 109 (2009) (Conf. Rep.).
28. 42 U.S.C. § 300h(b)(1)(A) (2013).
29. *Id.* § 300h(b)(1)(B).
30. *Id.* § 300h(d)(2).

any permission to proceed with the injection of wastewater into the ground. The only way for an applicant to satisfy the agency that its operation will meet the endangerment standard is to conduct a site-specific investigation of geology and man-made conduits for underground migration and use a predictive model to determine the potential impacts of the operation at the proposed site based on that investigation.

State statutes with broad language that allow agencies room to promulgate "necessary" rules to protect from subsurface migration harms would also authorize those agencies to incorporate an evaluation of the risks of pollution into any gas development permitting scheme. Since predictive modeling tools are available to address those risks from shale gas development, it seems that a state interested in ensuring that those operations do not endanger water resources could utilize that broad statutory authority to incorporate predictive modeling into its permitting process. The state oil and gas statutes evaluated below show that state legislatures have given agencies that broad direction to ensure the protection of groundwater and the environment. However, with the exception of the Illinois statute, none of these state oil and gas statutes include a standard for permit issuance that (1) clearly puts the burden on the applicant to show that their proposed operation is safe, or (2) describes the level of acceptable risk of contamination of water supplies. As a result of this and a lack of a federal floor, state agencies are routinely underutilizing their broad authority during the gas development permitting process.

A. UIC Permitting

1. The Federal UIC Permitting Program

Federal requirements for minimum agency consideration during permitting of Class I well *construction* include maps identifying water sources within the area of review, faults, and surface features of public record; tabulated data from wells that penetrate the proposed injection zone; the geologic characteristics of the local and regional area; proposed operating data related to injection rate, injection pressure, and injection fluid characteristics; a proposed formation testing program; the proposed injection procedure; a well construction schematic and construction procedures; contingency plans in case of well failure or shut-ins; a monitoring plan;

and bonding assurances.[31] In the case of Class II well construction, EPA makes consideration of the proposed formation testing program, stimulation program, injection procedure, contingency plans, and monitoring plans discretionary with the regulatory agency.[32] Otherwise, the same information is required for evaluation prior to permitting for Class II wells as it is for Class I injection wells.

Prior to authorizing *operation* of those same wells, the agency must review logs and testing program data from the well, the results of a mechanical integrity test, formation testing results, compatibility of wastewater with fluids and minerals in the injection and confining zone, the injection procedure, and maximum pressure and flow rates.[33] Permitting authorities do not need to look at waste compatibility for Class II wells.[34]

2. Examples of State UIC Permitting Programs

In 1974, the federal government enacted the Safe Drinking Water Act to address the danger to public health of contaminated or inadequately treated drinking water, the lack of use of available treatment technologies, and the impacts of "economic, industrial, agricultural, and environmental practices [that] have resulted in increasing concentrations of potentially harmful chemicals entering the Nation's drinking water sources."[35] In the House Report on the bill, Congress complained that despite these widespread problems, "government at all levels—Federal, state, regional, local—have not developed, applied, and enforced adequate standards and procedures for protection of the public's health."[36] After including itself in the list of culpable actors in addressing the problem to date, the House Report later states that "[t]he States, which have the primary responsibility to supervise water supplies, have au-

31. 40 C.F.R. § 146.14(a) (2013). Class I wells involve hazardous wastes, industrial and municipal wastes, and radioactive wastes that are injected below the "lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water." 40 C.F.R. §§ 144.6(a)(1), 146.5(a) (2013).

32. 40 C.F.R. § 146.24(a), (b) (2013). Class II wells are those that inject fluids "for enhanced recovery" or "which are brought to the surface in connection with . . . conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection." 40 C.F.R. §§ 144.6(b), 146.5(b)(1). *See also supra* note 24.

33. 40 C.F.R. §§ 146.14(b), 146.24(c).

34. 40 C.F.R. § 146.24(c).

35. H.R. REP. NO. 93-1185 (1974), *reprinted in* 1974 U.S.C.C.A.N. 6454, 6459.

36. *Id.*

thority and regulations that range from good to very poor."[37] Congress envisioned that the passing of the Safe Drinking Water Act would foster a "cooperative effort in which the Federal government assists, reinforces, and sets standards for the State and local efforts" in implementing the Act.[38]

Once EPA laid out the federal minimum, states seeking authority to run their own UIC programs adopted statutes marked by broad prohibitions regarding the contamination of drinking water and clear directives on permit application requirements. The endangerment standard is typically not restated in state UIC statutes; instead, state UIC statutes often give express authority to deny a permit if a threat to water supplies is present and require the provision of necessary information to evaluate.

In Texas, the legislature provided that "[t]he Commission may . . . issue [a] permit if it finds . . . that the use or installation of the injection well is in the public interest . . . [and] that, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution"[39] Notably, under this language, the Texas Commission on Environmental Quality must consider the public interest in its UIC permitting decisions. In addition, the language speaks to the agency's duty to evaluate whether water can be protected by stating that a permit may be issued "if . . . [*the Commission*] finds."[40] The idea that water could only be adequately protected "with proper safeguards" provides implicit authority for the agency to put appropriate conditions in permits to ensure water protection.

For Class II wells in Texas,[41] an applicant must comply with the requirements of chapter 27 of the Texas Water Code as described above.[42] An applicant for a Class II disposal well permit must "show that the [geologic] formations [to be used for disposal] are separated from freshwater formations by impervious beds which will give adequate protection to such freshwater for-

37. *Id.* (addressing the lack of state drinking water standards and poor enforcement of those standards).

38. *Id.* at 6461.

39. TEX. WATER CODE ANN. § 27.051(a)(1), (3) (West 2013).

40. WATER § 27.051(a) (emphasis added).

41. The Texas Railroad Commission has jurisdiction over Class II wells pursuant to WATER § 27.031 and TEX. NAT. RES. CODE ANN. § 91.101 (2013). The Texas Legislature gives wide discretion to the Railroad Commission in determining necessary information for Class II injection well applications, more than it gave to the Texas Commission on Environmental Quality for applications for Class I and other injection well applications under the TCEQ's jurisdiction. *Compare* WATER § 27.031, *with* WATER § 27.051(a)(1), (3).

42. 16 TEX. ADMIN. CODE § 3.9 (2013) (stating that "Any person who disposes of saltwater or other oil and gas waste by injection . . . shall be responsible for complying with this section, Texas Water Code, Chapter 27, and Title 3 of the Natural Resources Code.").

mations."[43] Applicants also must submit an inventory of wells from public record that "penetrate the proposed disposal zone."[44] The Texas Class II application form includes requests for well location; the distance of the well from the nearest town; the size, depth, and other specific information about the casings of the well; the depth to the base of the deepest underground source of drinking water; the depth of the injection interval, the name of the disposal formation, the injection volume, the surface pressure, and the source and type of oil and gas wastewater to be injected.[45]

The Ohio General Assembly's UIC statute requires the administrative agency to determine the risks of seismic activity, geologic fracturing, and contamination posed by the injection well (before issuing a permit) as follows: whether "the application demonstrates that the proposed activities will not comply or will pose an unreasonable risk of inducing seismic activity, inducing geologic fracturing, or contamination of an underground source of drinking water."[46] The language requires that the applicant demonstrate that water can be protected. If the applicant does not meet that burden, the agency may deny the permit.[47] While Ohio's statute requires a similar pre-development evaluation of the potential for adverse impacts to water and welfare as Texas' UIC statute, the Ohio statute does not include an additional "public interest" factor.

Ohio's UIC application consists of two forms that request a restoration plan, a surveyors plat, and information on the "source(s) of ground and/or surface water used in production operation," the "proposed casing and cementing program," the total depth and geologic formation that will be produced,[48] the geology of the proposed injection zone, proposals for well construction and operation, proposed injection volumes and pressures, and a corrective action plan for any wells penetrating the zone within the area of review.[49] The Ohio Department of Natural Resources, Division of Oil and Gas Resources Management is currently reviewing its permit applica-

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43. *Id.* § 3.9(2).

44. *Id.* § 3.9(7).

45. R.R. COMM. OF TEX., OIL & GAS DIVISION, FORM W-14, APPLICATION TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A FORMATION NOT PRODUCTIVE OF OIL AND GAS, (2004), *available at* http://rrc.state.tx.us/forms/forms/og/pdf/FormW-14p.pdf.

46. OHIO REV. CODE ANN. § 6111.044 (West 2013).

47. *Id.*

48. DIV. OF OIL & GAS RES. MGMT., OHIO DEP'T OF NAT. RES., DNR 5619, APPLICATION FOR A PERMIT (FORM 1) (2012), *available at* http://oilandgas.ohiodnr.gov/portals/0/Forms/oilgas/permitting/APPLICATION_FOR_A_PERMIT_Form-1.doc.

49. DIV. OF OIL & GAS RES. MGMT., OHIO DEP'T OF NAT. RES, DNR-734, SUPPLEMENT TO APPLICATION, PERMIT FOR A SALTWATER INJECTION WELL (FORM 210) (2012), *available at* http://oilandgas.ohiodnr.gov/portals/0/Forms/oilgas/UIC/Saltwater_Injection_Well_Supplement(Form%20210).doc.

tion forms to determine if the agency needs additional information during the permitting process from applicants for Class II UIC wells.[50]

The Wyoming Legislature provided authority for the Oil and Gas Commission to regulate Class II injection wells "in such a manner as to prevent contamination of the waters of the state."[51] Wyoming Class II UIC applications must include a plat with locations of abandoned and drilled wells and dry holes within one-half mile of the proposed disposal well; a description of and depth information for the target formation; a description of the proposed casing program and testing method of the casing; a description of the wastewater source, characteristics, volume, and disposal pressure; "evidence and data to support a Commission finding that the proposed disposal well will not initiate fractures through the overlying strata or confining zone which could enable the injection fluid or formation fluid to enter the fresh water strata"; the results of an investigation of mechanical conditions of wells and known geologic features within a one-quarter mile radius of the disposal well; and the depth and extent of underground sources of drinking water.[52] Interestingly, the rules and application form are exactly the same for both UIC Class II well permits and gas development well permits.[53]

Based on this review of federal and several state's statutory and regulatory UIC authority, the local and regional investigation of geology around the proposed UIC well, the characteristics of the injected wastewater, the volume and pressures related to the proposed operation, and monitoring and testing plans are consistently required of applicants proposing to construct and operate an injection well.[54] Including this data in a permit application allows the applicant and the regulatory authority to run predictive models to determine potential impacts from the proposed operation. Provision of this information by the applicant allows the regulatory au-

50. Telephone interview with Andrew Adgate, Geologist III, Ohio Dep't of Nat. Res., Div. of Oil & Gas Res. Mgmt. (July 29, 2013) (describing the ODNR's application forms required of Class II UIC applicants and that the agency is deliberating about whether it should request more information).

51. WYO. STAT. ANN. § 30-5-104(d)(vi)(B) (2013).

52. WYO. OIL & GAS CONSERVATION COMM'N, DOC. NO. 7929, ENVIRONMENTAL RULES, INCLUDING UNDERGROUND INJECTION CONTROL PROGRAM RULES FOR ENHANCED RECOVERY AND DISPOSAL PROJECTS, Ch. 4, § 5(c) (2013), *available at* http://soswy.state.wy.us/Rules/RULES/7929.pdf.

53. WYO. OIL & GAS CONSERVATION COMM'N, DOC. NO. 7928, OPERATIONAL RULES, DRILLING RULES, OIL GEN, Ch. 3, § 8 (2013), *available at* http://soswy.state.wy.us/Rules/RULES/7928.pdf.

54. In addition to the statutes and rules discussed above, see also OKLA. ADMIN. CODE § 165:10-5-5 (2013); 1-H-1 ARK. CODE R. § 178.00 (LexisNexis 2013).

thority to make informed decisions on whether and under what conditions to issue a permit authorizing the UIC well construction and operations.

B. Examples of State Authority and Permitting Considerations for Oil and Gas Development

Gas development statutes typically offer broad prohibitions regarding pollution of the environment and water supplies. Some state statutes give regulatory agencies express authority to deny a permit if a threat to water supplies is present. These statutory authorizations tend to imply that the only possible approach to contamination possibilities is regulation in the area of well construction or casing and cementing of gas wells, but do not necessarily restrict agencies to only that solution. States have routinely interpreted that authority to require three methods of environment protection in permitting well construction and operation: (1) standards and criteria for well construction, casing and cementing, and pit construction; (2) setbacks from natural resources and man-made structures of concern; and (3) post-development water replacement or property damage recovery processes. State legislation often provides non-exclusive lists of what should be requested by agencies in permitting applications. The language requiring a demonstration of non-endangerment present in the Safe Drinking Water Act does not appear in state oil and gas statutes.

Even when states have authority to request information that would allow agencies to make evidence- and risk-based decisions in issuing gas development permits, states have routinely opted to require applicants for gas development permits to provide only well location information, the source of water used in production operations, and the name of the target formation. While some states require the provision of additional plans, such as casing and cementing plans or pit construction plans, only in the cases of Illinois and Wyoming are there requests for information that would allow the state to conduct (or the applicant to conduct) predictive modeling of subsurface migration.

Despite similar broad direction from state legislatures in the UIC context and the oil and gas permitting context, states are not using their authority to assess the potential for shale gas development to cause subsurface migration of fluids or gases to underground sources of drinking water. The difference between UIC and gas development permitting is clear from regulations, permit application forms and instructions, and the permits themselves.

1. Texas

In Texas, the suggestion that standards for well construction practices are the way to evaluate threats to water supplies is present in the statutory language, but the language does not exclude the agency from looking at other possibilities. Texas' statute reads as follows:

> To prevent pollution of surface water or subsurface water in the state, the commission shall adopt and enforce rules and orders and may issue permits relating to: (1) the drilling of exploratory wells and oil and gas wells or any purpose in connection with them, (2) the production of oil and gas . . . .
> . . . .
> The commission shall adopt rules to establish groundwater protection requirements for operations that are within the jurisdiction of the commission, *including requirements relating to the depth of surface casing for wells.*[55]

In the UIC context, Texas' statute explicitly required the agency to make pre-permit issuance findings related to groundwater protection. In the gas development context, the Texas Legislature appears to merely require uniform rules for every gas drilling and production proposal to abide by, such as uniform well construction requirements. The public interest language present for UIC permitting is not present in the gas development permitting language in Texas.

Texas' statute does not provide a standard for denial of a permit or for the issuance of a permit with special conditions related to protection of groundwater. Yet, the language also does not restrict the agency to the imposition of well construction requirements as the only measure to protect groundwater. However, Texas' rules and drilling application do not require any additional information that allow the agency to restrict drilling and operations if a predictive model indicated that threats to the environment may occur at a specific location. Texas' rules prohibit gas development operations from "caus[ing] or allow[ing] pollution of . . . subsurface water in the state."[56] Texas rules also describe important "pollution control" standards for disposal and recycling of

55. TEX. NAT. RES. CODE ANN. §§ 91.101(a)(1)-(2), .1015 (West 2013) (emphasis added).

56. 16 TEX. ADMIN. CODE § 3.8(b) (2013).

wastewater, pit specifications, and waste hauling.[57] The permit application requires specific location information, the completion depth, bottom-hole location, and lateral drain-hole location.[58] After the permit application is issued, Texas has numerous forms that must be filed by operators related to well completion.[59] In no instance in its rules or application to drill does Texas require information that would allow the Railroad Commission to model the potential for subsurface migration of fluids or methane from gas development operations.

2. Ohio

In Ohio, the statute does not use the weight of suggestion like Texas' statute does. Instead, the Ohio General Assembly clearly authorizes the state to request any information in the permit application to address risk.

Rules for permits and permit conditions shall address "[p]rotection of the public and private water supply," including quantity.[60] Furthermore, the statute states that:

> The chief shall issue an order denying a permit if the chief finds that there is a substantial risk that the operation will result in violations of this chapter or rules adopted under it that will present an imminent danger to public health or safety or damage to the environment, provided that where the chief finds that terms or conditions to the permit can reasonably be expected to prevent such violations, the chief shall issue the permit subject to those terms or conditions . . . .[61]

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57. *Id.* § 3.8(d), (f). For a discussion of the importance of rules and policies related to, *inter alia*, spill prevention, wastewater treatment, water withdrawals, well pad construction, and air pollution from gas development, see Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 U. COLO. L. REV. 729 (2013).

58. R.R. COMM'N OF TEX., OIL & GAS DIV., FORM W-1, APPLICATION FOR PERMIT TO DRILL, RECOMPLETE OR RE-ENTER, (2004), *available at* http://rrc.state.tx.us/forms/forms/og/pdf/finalw-1-92104.pdf (last visited Feb. 6, 2014); R.R. COMM'N OF TEX., OIL & GAS DIV., FORM W-1H, APPLICATION FOR PERMIT TO DRILL, RECOMPLETE OR RE-ENTER: SUPPLEMENTAL HORIZONTAL WELL INFORMATION (2004), *available at* http://texinfo.library.unt.edu/texasregister/html/2004/apr-09/in-addition/200402122-10.pdf.

59. *Oil and Gas Forms Arranged by Purpose of Filing*, R.R. COMM'N OF TEX., http://rrc.state.tx.us/forms/forms/og/purpose.php (last visited Feb. 6, 2014) (containing sections for "Well Completion and Associated Forms" and "Well Testing, Capability and Forecasts" forms).

60. OHIO REV. CODE ANN. § 1509.03(A)(2) (West 2013).

61. *Id.* § 1509.06(F).

Ohio's statute clearly requires that the state evaluate risk prior to issuing a permit, whereas Texas' statute seems to focus primarily on well construction rules to ensure protection of groundwater. The Ohio agency does not have a choice in whether to deny a permit after a finding of substantial risk of imminent danger to public health or safety *or* damage to the environment.

Yet, all that is requested by the Ohio Department of Natural Resources of applicants for a permit is to provide a restoration plan; a surveyors plat; and information on the "source(s) of ground and/or surface water used in production operation," the "proposed casing and cementing program," and the total depth and geologic formation that will be produced.[62] A geological investigation of the area around the proposed gas well, a review of the proposed well construction and operation, and information related to fracturing volumes and pressures are *not* required as it is in the Class II UIC context in Ohio.[63] Thus, the risk evaluation language in the statute has little consequence in gas development permitting decisions in Ohio.

3. Oklahoma

In Oklahoma, the agency has the authority and duty to develop rules and issue orders to prevent waste, including the authority to "make rules, regulations, and orders . . . for the protection of all fresh water strata . . . encountered in any well drilled for gas."[64] The Oklahoma statute provides jurisdiction for the Oklahoma Corporation Commission to issue permits for drilling, completion, and production of horizontal shale gas wells if the Commission finds that the well or wells "will prevent waste," among other things.[65] Applications for a gas development permit must provide the manner of allocation among units, location of the proposed wells, and maps of the units.[66] Oklahoma's rules also require information on well spacing and plans for wastewater disposal.[67] Despite statutory authority to ensure protection of freshwater, Oklahoma's permitting process does not develop an administrative record to allow the Corporation Commission to assess potential impacts to fresh water from the proposed operations.

62. DIV. OF OIL & GAS RES. MGMT., OHIO DEP'T OF NAT. RES., *supra* note 48.
63. DIV. OF OIL & GAS RES. MGMT., OHIO DEP'T OF NAT. RES., *supra* note 49.
64. OKLA. ST. ANN. tit. 52, § 86.3 (2013).
65. *Id.* § 87.7.
66. *Id.* § 87.8(B)(4).
67. OKLA. ADMIN. CODE § 165:10-3-1(e), (f) (2013).

4. Pennsylvania

In Pennsylvania, the General Assembly prescribed the permit application contents to include two items: (1) a plat demonstrating the tract, political subdivision(s), landowners and water purveyors, coal owners, angle and direction of the well, and "any other information needed by the department to administer this chapter,"[68] and (2) proof of notification to surface owners that "identif[ies] the rights afforded those persons under [the water supply replacement provision] . . . [and] advise[s] them of the advantages of taking their own predrilling or prealteration survey."[69] The Pennsylvania Oil and Gas Act specifically states that the method of "prevent[ion] of migration of gas or fluids into sources of fresh groundwater and pollution or diminution of fresh groundwater" is "a string or strings of casing . . . run and permanently cemented in each well drilled through the fresh water-bearing strata to a depth and in a manner prescribed by regulation . . . ."[70]

While this language leaves little room for the Pennsylvania Department of Environmental Protection (Department) to evaluate the potential for migration during permitting beyond a consideration of a casing and cementing plan, the Act allows the Pennsylvania Department of Environmental Protection to deny a permit in six circumstances, as follows:

> (1) The well site for which a permit is requested is in violation of any of this chapter or issuance of the permit would result in a violation of this chapter or other applicable law.
> (2) The permit application is incomplete.
> (3) Unresolved objections to the well location by the coal mine owner or operator remain.
> (4) [Bonding requirements have not been met].
> (5) [T]he applicant, or any parent or subsidiary corporation of the applicant, is in continuing violation . . . .
> (6) The applicant failed to pay [application fees] . . . .[71]

Since Pennsylvania has a statute that prohibits groundwater pollution without a permit,[72] it appears that the Department could

68. 58 PA. CONS. STAT. ANN. § 3211(b)(1) (2013).
69. *Id.* § 3211(b.1).
70. *Id.* § 3217(b).
71. *Id.* § 3211(e.1).
72. *See generally* 35 PA. STAT. ANN. § 691.301 (2013) (prohibiting the discharge or flow of industrial wastes to "waters of the Commonwealth"); *Id.* § 691.1 (defining "waters of the

evaluate if each well site "would result in violation of . . . other applicable law[s]"[73] during the permitting process. In addition, the Pennsylvania Legislature gives the state environmental agency explicit authority to "impose permit terms and conditions necessary to assure compliance with this chapter or other laws administered by the [D]epartment."[74] However, the permitting process must be completed within forty-five to sixty days,[75] and Pennsylvania's rules do not require any such assessment during the permitting process.[76] Instead, Pennsylvania's scheme of environmental protection revolves around a series of setbacks from natural features and property improvements, well construction standards, erosion and sediment control, and water testing requirements that allow water replacement in the case of contamination.[77]

The comparison between UIC and gas development applications and permits in Pennsylvania demonstrates the difference in the extent of agency evaluation of potential impacts from each proposed operation. In a recent Class II UIC permitting action in Pennsylvania, the permit application for two wells consisted of approximately 300 pages of local geologic data, information on groundwater in the area of review, investigation results of area faults, migration pathways for contaminants, and information related to the mechanical integrity of the well.[78] The associated UIC permit for one of the wells applied for contained conditions, monitoring provisions, details on construction, and reporting requirements.[79] The permit itself was fifteen pages long.[80] In contrast, a permit application to develop a gas well in Pennsylvania around the same time included a mere ten pages (including attachments)

Commonwealth" to include "any and all rivers, streams, creeks . . . and all other bodies or channels of conveyance of surface and underground water . . .").

73. 58 PA. CONS. STAT. ANN. § 3211(e.1)(1).

74. *Id.* § 3211(e).

75. *Id.* § 3211(e).

76. 25 PA. CODE §§ 78.11-.19 (2013).

77. *See Id.* § 78.15 (requiring that gas development permit applications contain "information required by the Department to evaluate the application."); *Id.* § 78.51 (describing the standard and process for replacement of water supplies affected by gas development operations); *Id.* § 78.52 (establishing water testing requirements to allow gas operators to claim a defense against claims that it caused pollution of a water supply); *Id.* § 78.53 (requiring well pad construction to comply with best management practices and create an erosion and sediment control plan); *Id.* § 78.81-.89 (casing and cementing standards); 58 PA. CONS. STAT. ANN. § 3215 (2013) (describing setback requirements from gas wells, water wells, buildings, wetlands, streams, and surface water intakes or reservoirs).

78. Bear Lake Props., LLC, Brine Disposal Well Permit Application Bittinger #1 and #4 (Oct. 2010) (on file with author).

79. U.S. Envtl. Prot. Agency Region III, Underground Injection Control Permit No. PAS2D216BWAR, Authorization to Operate a Class IID Injection Well (2011) (on file with author).

80. *Id.*

that stated the location of the wellhead from surface water supplies and buildings, a plat map with the planned depth and lateral location, and a plan related to where the applicant would obtain water used in its operations.[81] The gas development permit contained the location of the well, the depth, a requirement to properly dispose of wastes, a requirement to comply with construction rules for pits and impoundments, and a requirement to characterize wastes prior to disposal.[82] The length of the gas development permit issued pursuant to the application cited above totaled two pages.[83] Pennsylvania's gas development permitting process does not actively provide room for the reviewing agency to evaluate and address subsurface migration of gas and contaminants prior to development.

5. Wyoming

Wyoming provides authority for the Oil and Gas Conservation Commission (Commission) to regulate the "drilling, casing, and plugging of wells" to "prevent . . . the pollution of fresh water supplies by oil, gas, or salt water . . . ."[84] The statute also charges the Commission with "regulat[ion], for conservation purposes" of "the contamination or waste of underground water . . . ."[85] The same section of the Wyoming statute provides agency authority to regulate Class II injection wells "in such a manner as to prevent the contamination of the waters of the state."[86] The Wyoming Legislature prohibits drilling without a permit, but like Pennsylvania, the Commission must "promptly issue such person a permit to drill, unless the drilling of the well is contrary to law, or to a rule, regulation, or order . . . ."[87]

Wyoming's statute anticipates *surface* damage and requires that operators work out payment conditions or bonding prior to receiving a permit to drill. Wyoming requires oil and gas operators to certify that the applicant provided notice of entry to the surface

81. Rex Energy Operating Corporation., Permit Application for Drilling or Altering a Well for Voll Unit #1H, Well Permit No. 019-21674 (Oct. 2009) (on file with author). A blank copy of Pennsylvania's Permit Application to Drill and Operate an Unconventional Well, a form finalized in April 2012, is available at http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-87970/8000-PM-OOGM0001b%20Permit%20%20Unconventional%20WellRF2.pdf.

82. Pa. Dep't of Envtl Prot., Well Permit No. 37-019-21674 (Nov. 2009) (on file with author).

83. *Id.*

84. WYO. STAT. ANN. § 30-5-104(d)(i)(C) (2013).

85. *Id.* § 30-5-104(d)(ii)(E).

86. *Id.* § 30-5-104(d)(vi)(B).

87. *Id.* § 30-5-115.

owner,[88] which must include an agreement regarding surface use with the landowner or a bond for the use and damage of the surface, a description of the "plan of work and operations to enable the surface owner to evaluate the effect of oil and gas operations on the surface owner's use of the land," and a copy of the Oil and Gas Conservation Act.[89] Good faith negotiations related to the surface use agreement must involve "protection of the surface resources, reclamation activities, timely completion of reclamation of the disturbed areas and payment for damages caused by the oil and gas operations."[90] Like Pennsylvania, Wyoming's statute anticipates damage and provides a process for landowners to seek compensation or replacement of damaged property. Unlike Pennsylvania's water supply replacement scheme, Wyoming's statute does not appear to acknowledge damage to subsurface property by water contamination or methane migration.

As a clear exception to the norm and despite a lack of clear statutory direction to do so, the Commission requires applicants for both Class II UIC permits and gas well permits to provide the same information; except that, for horizontal wells, additional information about the wellbore path must be provided.[91] The application for any permit to drill a well must provide the Commission with information on the following: well depth; water supplies within one-quarter of a mile of the "drilling and spacing unit";[92] "formation depth, geological and hydrological detail from public records, published or otherwise known information of useable groundwater underlying the drilling and spacing unit . . . ";[93] "estimated depth to the top of important geologic markers";[94] details on the proposed casing and cementing plan; a "description of the anticipated completion and stimulation program, including the base stimulation fluid and its source, the chemical additives and proposed concentrations to be mixed";[95] and representative data from wells drilled adjacent to or from offset wells "that would inform and possibly influence drilling and cementing practices on the

88. *Id.* § 30-5-403(a).

89. *Id.* § 30-5-402(e). Notably, the surface use agreement is not required to be filed with the Oil and Gas Conservation Commission. *Id.* § 30-5-403(b).

90. WYO. STAT. ANN. § 30-5-402(f) (2013).

91. WYO. OIL & GAS CONSERVATION COMM'N, DOC. NO. 7928, OPERATIONAL RULES, DRILLING RULES, Ch. 3 § 8 (2013), *available at* http://soswy.state.wy.us/Rules/RULES/7928.pdf.

92. *Id.* § 8(c)(iii).

93. *Id.* § 8(c)(iv).

94. *Id.* § 8(c)(v).

95. *Id.* § 8(c)(ix).

proposed well."[96] Here, the application form is exactly the same for both UIC Class II well permits and gas development well permits. Yet, it is unclear that the Oil and Gas Conservation Commission uses this information to model the potential for impacts. Indeed, it appears that Wyoming is looking to adopt a water supply replacement scheme like Pennsylvania's to address water contamination reactively instead of during permitting.[97]

6. New Mexico

New Mexico's Oil and Gas Act authorizes the Oil Conservation Division of the Energy, Minerals and Natural Resources Department (Division) to:

> [R]equire wells to be drilled, operated and produced in such manner as to prevent injury to neighboring leases or properties . . . [and] to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas or both . . . in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer . . . .[98]

As another example of a state oil and gas statute's reactive response to losses by the landowner, New Mexico has passed a Surface Owner Protection Act that requires compensation for "damages sustained," including "loss of agricultural production and income, lost land value, lost use of and lost access to the surface owner's land and lost value of improvements caused by oil and gas operations."[99] New Mexico's statute does not explicitly acknowledge subsurface property damage related to contamination or methane migration.

While New Mexico's rules require gas development and injection operations to "seal and separate the oil, gas and water strata above the producing or injection horizon to prevent their contents from passing into other strata,"[100] the permitting process does not allow the agency to determine whether that could occur in the context of gas development. New Mexico's application to drill an oil

96. *Id.* § 8(c)(x).

97. Adam Voge, *Wyoming Officials Unveil Pre-drilling Water Testing Rules*, CASPER STAR-TRIB., June 11, 2013, http://trib.com/business/energy/wyoming-officials-unveil-pre-drilling-water-testing-rules/article_12e5e0db-b05c-5eba-83be-d42850561f36.html.

98. N.M. STAT. ANN. 1978 § 70-2-12(B)(7), (15) (2013).

99. *Id.* § 70-12-4(A).

100. N.M. CODE R. § 19.15.16.9(A) (LexisNexis 2014).

and gas well requests the following information from the applicant: well location (surface- and bottom-hole), gas pool name, the proposed casing, and the cementing and blowout prevention program.[101] The Director of the Division may deny a permit when an applicant is not in compliance with financial assurance requirements, is not subject to an order issued after a hearing that requires corrective action, has an overdue penalty assessment, *and* has a certain number of wells out of compliance with the Division's plugging and abandonment rules.[102] Thus, an evaluation of the proposed operations in light of the geology of the area and the potential for subsurface migration from those operations is not a possible consideration during the permitting process in New Mexico.

7. Arkansas

By rule, permit applications for a production well in Arkansas require information on location and elevation, a plat map that includes the location of "all producing wells completed or producing within the same common source of supply," the depth of the well, and the "name of the deepest geologic formation to be tested."[103] Like Wyoming, Arkansas applicants wishing to drill either a gas well or a Class II or V UIC well must fill out the same form.[104] The application includes information requests for casing grade, setting depth, top of production casing cement, anticipated maximum surface treating pressure for proposed hydraulic fracture treatment, and the compressive strength of cement for setting the production casing.[105] The application form also asks for well location, a surveyors plat, the proximity of the well to the nearest town and drilled or applied for well, the name of the drilling or workover contractor, the "formation you propose to complete in" and, for

101. OIL CONSERVATION DIV., ENERGY MINERALS & NATURAL RES., FORM C-101, APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE (2013), *available at* http://www.emnrd.state.nm.us/OCD/documents/C-10120130718.pdf; OIL CONSERVATION DIV., ENERGY MINERALS AND NATURAL RES., FORM C-102, WELL LOCATION AND ACREAGE DEDICATION PLAT (2011), *available at* http://www.emnrd.state.nm.us/OCD/documents/C-10220110801.pdf.

102. N.M. CODE R. § 19.15.14.9. Notably, applicants for UIC wells must "apply for authority to inject" in addition to applying for authority to drill under section 19.15.14.9. *Id*..§ 19.15.26.8 (B)(1).

103. 178.00.1-B-1 ARK. CODE R. § B-1(b)(C)(ii), (E) (LexisNexis 2011).

104. ARK. OIL & GAS COMM'N, FORM 2, APPLICATION FOR A PERMIT TO DRILL (2011), *available at* http://aogc.state.ar.us/onlinedata/forms/Form%202%20-%20Application%20for%20a%20%20Permit%20to%20Drill.pdf.

105. *Id.* These items are only required if the proposed completion requires fracture stimulation.

Fayetteville Shale wells, the "lowest ground surface elevation within one mile."[106]

Arkansas's Class II UIC permit applicants must also fill out another application.[107] The Class II Injection Well permit application requires information on the proposed injection interval, fracture gradient, and pressure; the confining strata, fracture gradient, thickness, and pressure; the zone and depth of the lowermost "freshwater" within a mile of the disposal well; the injection pressure and rate of fluids; wastewater characteristics; the location and plugged status of wells in the injection interval within one-half mile of the proposed well; information on known faults penetrating the injection zone within a mile of the proposed well; and a description of methods to be used for monitoring volumes and pressures at the well.[108] Like most of the states' permitting schemes outlined above, Arkansas gathers information to evaluate UIC well applications to determine the likelihood of subsurface migration, but does not request the same information for gas well development applications.

8. Illinois

The Illinois General Assembly has charged the Department of Natural Resources with requiring:

> [T]he drilling, casing and plugging of wells to be done in such a manner as to prevent the migration of oil or gas from one stratum to another; to prevent the intrusion of water into oil, gas or coal strata; [and] to prevent the pollution of fresh water supplies by oil, gas or salt water.[109]

The Illinois Oil and Gas Act requires oil and gas developers to obtain a drilling permit.[110] By statute, the application for the permit must include well location, depth, and any other information required by the Department of Natural Resources.[111] This was all that was required until June 2013, when the Illinois General Assembly passed the Hydraulic Fracturing Regulatory Act (HFRA).

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106. *Id.*

107. 1-H-1. ARK. CODE R. § 178.00(b) (LexisNexis 2013).

108. ARK. OIL & GAS COMM'N, FORM 36 A, CLASS II UIC INJECTION WELL PERMIT AMENDMENT (2013), *available at* http://aogc.state.ar.us/OnlineData/Forms/Form%2036A%20Class%20II%20UIC%20Injection%20Well%20Permit%20Amendment.pdf.

109. 225 ILL. COMP. STAT. ANN. 725/6(1) (2013).

110. *Id.* 725/6(2), 725/6.1.

111. *Id.* 725/6(2).

The HFRA is strikingly comprehensive and extraordinarily detailed. It requires a second permit for "high volume horizontal hydraulic fracturing" beyond the drilling permit required by the Oil and Gas Act.[112] Based on the new law, the state may only issue a permit upon a demonstration that, *inter alia*, the "proposed hydraulic fracturing operations will be conducted in a manner that will protect the public health and safety and prevent pollution or diminution of any water source."[113] The presence of a statutory burden on a permit applicant to show the safety of its shale gas development operations to the state agency is completely unique to Illinois. While many parts of the HFRA mimic UIC regulatory requirements, the Act goes beyond what is required in UIC permitting. The HFRA includes planning and evaluation of, for example, proper use and management of water supply quantities and emissions.[114]

The HFRA provides very specific details on the contents of an application, including the following: detailed descriptions of the geology of the target formation; anticipated pressure level at the surface, fracture pressure in the producing and confining zones, the "maximum anticipated injection treating pressure," and the "planned depth of all proposed perforations or depth to the top of the open hole section."[115] If the information provided by the applicant is insufficient, the state has cause to deny the permit.[116] The Illinois Legislature also includes public participation procedures that are sorely lacking in most oil and gas development statutes, such as public notice and comment and administrative permit challenge opportunities.[117]

The Illinois statute uses the concepts present in UIC statutes and goes beyond broad pollution prohibitions present in most state oil and gas laws to issue language akin to UIC *rules* that regulatory agencies use during the permitting process to evaluate the risk of impact to drinking water resources. Most important, the HFRA clearly puts a burden on the applicant for the fracturing permit to demonstrate that its proposed operations will not pose a threat to public health, safety, or the environment. The HFRA is an *envi-*

112. Ill. Hydraulic Fracturing Regulatory Act, 2013 Ill. Legis. Serv. P.A. 98-22 (West) (codified in 225 Ill. Comp. Stat. 732 (2013)).

113. *Id.* § 1-53(a)(4).

114. *Id.* §§ 1-35(b)(10), 1-75(e).

115. *Id.* §§ 1-35(b)(6)(C), (E).

116. *Id.* §§ 1-53(a)(3) (stating that the Department of Natural Resources "shall issue a . . . permit . . . only if the record of decision demonstrates that . . . the plans required to be submitted with the application under Section 1-35 of this Act are adequate and effective"), 1-60(a)(1).

117. *Id.* §§ 1-45, 1-50.

ronmental permitting and enforcement statute for shale gas development instead of a traditional well location and construction statute.

IV. THE NEED FOR A FEDERAL MINIMUM TO PROPERLY PERMIT SHALE GAS DEVELOPMENT

As an environmental permitting and enforcement statute, the HFRA requires the state agency to request the kind of information gathering from applicants that is needed to address underground migration possibilities prior to issuing a permit. As shown above, many states have broad statutory authority to proactively address potential environmental and public health and safety impacts from underground migration of gas and wastewater during the permitting process. However, state agencies have not incorporated necessary information gathering into their permitting rules and processes to use predictive modeling, which is the best evidence, in deciding whether, and under what conditions, to issue a gas development permit. State agencies' underutilization of existing statutory authority to evaluate the potential for subsurface impacts should be the harbinger for a cooperative federal approach to permitting shale gas development.

Even if states are best equipped to understand regional and local geologic conditions for permitting purposes, they are not attempting to do so. A federal floor that requires states to consider the geology of the area in deciding whether endangerment of groundwater through subsurface migration of gas or wastewater may occur will trigger states to begin considering local conditions rather than prevent the states from accounting for those characteristics. Indeed, one would expect the geologic characteristics of the Antrim shale region to differ from the predictive model inputs that states would consider in the Utica shale play, but the general need for predictive modeling across the states remains the same.

Modeling impacts is possible and should be utilized in permitting decisions for gas well permits. Properly evaluating the potential for risk from a proposed gas well development operation requires knowledge of certain "inputs" to allow an agency to use predictive modeling. Applications for a permit should include site stratigraphy, rock properties, formation conditions, permeability, fluid volumes, hydraulic fracturing fluid composition, target formation fluid composition, fracturing pressure, and any other necessary information to predict impacts. While most states have broad enough authority to amend their rules and application forms

to request such information, the shale gas boom has not prompted such a reaction. Since states are not incorporating local geologic conditions and the science of injection and fracturing into their permitting decisions, the federal government should step in and ensure, at a minimum, that applicants for permits have the burden to demonstrate that their operations will meet an endangerment standard and that regulatory authorities are required to consider whether the applicant's burden is met before issuing a permit.

A federal minimum does not necessarily require preemption of current state oil and gas development statutes. Instead, states could continue issuing permits under their gas development statutes *and* maintain "primacy" over the environmental permitting of those same operations by adopting necessary rules. If states wish to take an approach like Illinois, this would involve a second permit in addition to the well construction and location permit. Requiring a minimum environmental permitting scheme of all states for gas development results in that same "cooperative effort in which the Federal government assists, reinforces, and sets standards for the State and local efforts" that Congress found necessary when enacting the federal Safe Drinking Water Act in 1974.[118] We are, once again, at a place where "[t]he States, which have the primary responsibility to supervise water supplies, have authority and regulations that range from good to very poor."[119]

118. H.R. REP. NO. 93-1185 (1974), *reprinted in* 1974 U.S.C.C.A.N. 6454, 6461.

119. *Id.* at 6459 (addressing the lack of state drinking water standards and poor enforcement of those standards).

CONCENTRATING ON HEALTHY FEEDING OPERATIONS: THE NATIONAL SCHOOL LUNCH PROGRAM, "CULTURED MEAT," AND THE PATH TO A SUSTAINABLE FOOD FUTURE

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As a culture, Americans have a veritable love affair with consuming meat, milk, cheese, eggs, and pretty much anything else we can get from an animal. In response to consumer demand, companies have ramped up production of these goods, increasingly in intensive "factory farm" operations. While the concentration of thousands of animals in single buildings allows for substantial cost-savings and efficiencies, it also creates a raft of environmental, health, and social problems. Governments, both state and federal, have taken steps to address environmental pollution from animal food production. Unfortunately, industry pressure, lack of political will, and constitutional limits on federal regulation have thus far conspired to make it nearly impossible for state and federal authorities to adequately address Concentrated Animal Feeding Operation (CAFO) pollution. Fortunately, however, these legal and political limitations are not an absolute barrier; by embracing market-based approaches, governments and private industry are already taking steps to make the American food system more sustainable, all while providing healthful, tasty, and convenient protein options for consumers. This paper will argue that the National School Lunch Program, in conjunction with several emerging novel technologies, offers the opportunity to spare the environment harm, without the need for potentially unconstitutional or otherwise legally-deficient regulatory approaches, by reducing the "stomach share" of animal products in the American diet. Instead of relying on top-down regulation to protect the environment from food-production externalities, this paper envisions a new food culture where consumers can "have their meat and eat it too." Using the National School Lunch Program offers the additional benefit of improving childhood health and combating the growing epidemic of childhood obesity.

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I. INTRODUCTION

America has a long-standing cultural and gustatory love affair with all things meat, milk, cheese, and eggs (at times hereinafter referred to collectively as "animal products"). Over the last fifty years, consumption has been on a steady rise, largely in response to production efficiencies and technological innovations.[1] Looking at meat specifically, the USDA projects that, even after falling from a high of "221 pounds per capita in 2004-2007 to less than

1. Carrie R. Daniel et al., *Trends in Meat Consumption in the USA*, 14 PUB. HEALTH NUTR. 575, 575-83 (2010).

198 pounds in 2013," consumption will again reach 213 pounds by 2021.[2] And meat is cheap in the United States, by historic standards: Americans today spend about half as much of their disposable income on meat as they did four decades ago.[3] Meat is big business in the United States: in 2010 alone, the United States produced over ninety-two billion pounds of meat and poultry products.[4] The USDA Economic Research Service reports that in 2010, the retail equivalent value of the United States beef industry alone was seventy-four billion dollars.[5] On the global stage, the market for American meat exports is huge and demand is only expected to grow as incomes continue to rise in the developing world.[6]

Notwithstanding its substantial place in the American economy (and dinner plate), animal agriculture has largely escaped meaningful regulation under state and federal environmental laws.[7] Perhaps nowhere is this more evident than in the "Concentrated Animal Feeding Operations" (CAFOs) increasingly taking over the business of making meat, dairy, and eggs.[8] Known to many as "factory farms," it is not uncommon for CAFOs to confine thousands of animals (even *hundreds* of thousands in the case of egg-laying hens and broiler chickens) to a single, enclosed structure. The intensive concentration of animals in CAFOs helps keep animal products relatively cheap, which makes consumers happy; but there is a dark side to modern "factory farming." Lots of animals concentrated in one place makes for a lot of sewage waste, which is one of the single biggest environmental problems associated with CAFOs and poses significant threats to both human

2. INTERAGENCY AGRIC. PROJECTIONS COMM., OCE-2012-1, U.S. DEP'T OF AGRIC. PROJECTIONS TO 2021 79 (2012), *available at* http://ers.usda.gov/ersDownloadHandler.ashx?file=/media/273343/oce121_2_.pdf.

3. PEW COMM'N ON INDUS. FARM ANIMAL PROD., PUTTING MEAT ON THE TABLE: INDUSTRIAL FARM ANIMAL PRODUCTION IN AMERICA 3, *available at* http://www.ncifap.org/_images/PCIFAPFin.pdf [hereinafter PEW COMM'N] ("In 1970, the average American spent 4.2% of his or her income to buy 194 lbs of red meat and poultry annually. In 2005, Americans spent, on average, 2.1% of their annual income to buy 221 lbs of red meat and poultry.").

4. Am. Meat Inst., *The United States Meat Industry at a Glance,* MEATAMI (Mar. 2011), http://meatami.com/ht/a/GetDocumentAction/i/89473 (according to the American Meat Institute, total meat and poultry production in the United States reached more than 92.1 billion pounds in 2010).

5. *Statistics and Information*, USDA., http://ers.usda.gov/topics/animal-products/cattle-beef/statistics-information.aspx#.UoGb0vlwqSo (last updated Oct. 31, 2013).

6. FOOD & AGRIC. ORG. OF THE UNITED NATIONS., WORLD LIVESTOCK 2011: LIVESTOCK IN FOOD SECURITY 15 (A. McLeod ed., 2011).

7. J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263, 265, 267 (2000) (Agriculture is "virtually unregulated by the expansive body of environmental law that has developed in the United States in the past 30 years.").

8. For a graphic illustration of the distribution and density of CAFOs around the country, see Food & Water Watch, *Factory Farm Map*, http://www.factoryfarmmap.org (last visited Feb. 8, 2014).

health and the environment.[9] The many significant problems associated with CAFOs—water pollution, greenhouse gas emissions, antibiotic-resistant bacteria, worrisome animal welfare and working conditions, and disruption of rural communities—largely stem from this intense concentration of animals, leading many to regard CAFOs as a major environmental and public health problem.[10]

This paper will primarily focus on the environmental problems associated with CAFOs, but a brief background on the ethical and moral opposition to CAFOs is also useful for understanding the problem. There is a growing consensus among Americans, even among those who consume animal products, that the most intensive animal-farming practices should be eliminated. Undercover investigations conducted by animal welfare groups document the often troubling conditions behind the walls of modern factory farms. These investigations, especially when targeted at the companies that purchase meat or other animal products from investigated facilities, have spurred a number of corporate animal welfare reforms. The reaction to these investigations has been swift and severe: spurred by the animal food industry, several states have enacted so-called "ag-gag" laws,[11] designed to effectively or explicitly criminalize undercover investigations of factory farms.[12] Despite the crackdown on investigations, the meat and dairy industry is paying attention to consumer concerns, and many of the biggest players in the industry are talking about sustainability[13] as well as voluntarily doing away with some of the most intensive

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9. CARRIE HRIBAR, NAT'L ASS'N OF LOCAL BDS. OF HEALTH, UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS AND THEIR IMPACT ON COMMUNITIES 2 (2010), *available at* http://cdc.gov/nceh/ehs/Docs/Understanding_CAFOs_NALBOH.pdf. *See also* CLAUDIA COPELAND, CONG. RESEARCH SERV., RL31851, ANIMAL WASTE AND WATER QUALITY: EPA REGULATION OF CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOS) 1 (2010), *available at* http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL31851.pdf; CLAUDIA COPELAND & JEFFREY ZINN, CONG. RESEARCH SERV., 98-451, ANIMAL WASTE MANAGEMENT AND THE ENVIRONMENT: BACKGROUND FOR CURRENT ISSUES (1998), *available at* http://agrienvarchive.ca/bioenergy/download/wasteman_env.pdf (last visited Feb. 8, 2014).

10. *See generally* PEW COMM'N, *supra* note 3; DOUG GURIAN-SHERMAN, UNION OF CONCERNED SCIENTISTS, CAFOS UNCOVERED: THE UNTOLD COSTS OF CONFINED ANIMAL FEEDING OPERATIONS (2008), *available at* http://ncifap.org/_images/UCSCAFOsUncovered.pdf.

11. *See, e.g.*, IOWA CODE § 717A.3A (2013); UTAH CODE ANN. § 76-6-112 (West 2012).

12. For a detailed and extensive discussion of the history and legal deficiencies of "ag-gag" laws, see generally Lewis Bollard, *Ag-Gag: The Unconstitutionality of Laws Restricting Undercover Investigations on Farms*, 42 ENVTL. L. REP. 10960 (2012), *available at* http://www.law.yale.edu/documents/pdf/News_&_Events/BollardLewis2012Hogan-SmogerEssayContestWinner.pdf.

13. *See, e.g.*, Tyson Foods, *2009 Sustainability Report: Rooted in Tradition. Growing Responsibly* (2009), *available at* http://tysonfoods.com/~/media/Sustainability/Files/2009SustainabilityReport_English.ashx; American Meat Inst., SUSTAINABLE MEAT INDUS., http://www.sustainablemeatindustry.org (last visited Feb. 8, 2014).

confinement practices.[14] Much of the pressure to reform is coming from activists and nongovernmental organizations, but there is pressure coming from government as well.[15] On the political front, a series of state ballot initiatives in recent years have banned some of most extreme forms of CAFO confinement; perhaps most notably are gestation crates (also called farrowing pens), which confine mother breeder pigs so tightly that they cannot so much as turnaround or lay on their side.[16] In addition, some of the largest marketers of animal products, including McDonald's and Burger King, are beginning to demand their suppliers phase out certain confinement practices in response to public pressure.[17] To those who have been watching the animal agriculture industry over the past several decades, it appears that the tide is beginning to turn against the most extreme forms of confinement.

While there has been marked progress as of late on the issue of farmed-animal welfare, environmental issues have thus far proved to be far more intractable. Federal and state environmental agencies have been grappling with CAFOs for decades with limited suc-

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14. Joe Vansickle, *Smithfield Announces Gestation Stall Phase-Out*, NAT'L HOG FARMER, Dec. 9, 2011, http://nationalhogfarmer.com/animal-well-being/smithfield-announces-gestation-crate-phase-out.

15. For example, H.R. 3798, 112th Cong. (2012) would amend the Egg Products Inspection Act, 21 U.S.C. § 1033 (1970) (amended 2013), to, among other things, impose a minimum cage-size requirement on producers of egg-laying hens. The Humane Society of the United States (HSUS) brokered a deal in 2012 with the largest egg producer organization in the country, United Egg Producers (UEP), to introduce jointly the proposed amendments. The amendments would, for the first time, impose federal regulations on farmed animals during their lives in CAFOs (there are federal regulations which regulate the transport of certain animals and the slaughter of certain animals). It would also be the first meaningful federal regulation for chickens, as they are exempted from the Animal Welfare Act, the Humane Methods of Slaughter Act, and other federal laws. The fact that such a drastic change in farm-animal policy is being considered–and supported by the industry–is evidence of the progress the animal protection community has made on the issue of farm animal welfare. It is also recognition, among at least portions of the industry, that a patchwork of state laws is inherently bad for business.

16. A number of ballot initiatives in recent years have outlawed the most intensive confinement practices. Most significant among them is Proposition 2, which passed in 2008 in California–the largest agricultural state in the country–with almost two-thirds of the popular vote. Proposition 2, since codified into law, requires that farm animals in California be given at least enough space to stand up, spread their limbs, and turn around. *See* Jonathan R. Lovvorn & Nancy V. Perry, *California Proposition 2: A Watershed Moment for Animal Law*, 15 ANIMAL L. 149 (2009). In addition, nine states have prohibited the use of gestation crates–metal crates that confine pregnant pigs so tightly that they cannot turn around or comfortably lie down–including Florida (2002), Arizona (2006), Oregon (2007), Colorado (2008), California (2008), Maine (2009), Michigan (2009), Ohio (2010), and Rhode Island (2012). *See* THE HUMANE SOC'Y OF THE U.S., AN HSUS REPORT: WELFARE ISSUES WITH GESTATION CRATES FOR PREGNANT SOWS 2 (2013), *available at* http://humanesociety.org/assets/pdfs/farm/HSUS-Report-on-Gestation-Crates-for-Pregnant-Sows.pdf.

17. *See, e.g.*, Stephanie Strom, *McDonald's Set to Phase Out Suppliers' Use of Sow Crates*, N.Y. TIMES, Feb. 13, 2012, http://nytimes.com/2012/02/14/business/mcdonalds-vows-to-help-end-use-of-sow-crates.html. *See also* Tracie Cone, *Burger King Promises 100% Cage-Free Eggs and Pork by 2017*, USA TODAY, Apr. 25, 2012, http://usatoday.com/money/industries/food/story/2012-04-25/burger-king-pigs-eggs-cage-free/54534572/1.

cess. Overall, our current body of environmental law has been and continues to be ineffective in controlling CAFO pollution. Federal environmental regulations like the Clean Water Act (CWA) and Clean Air Act (CAA) have thus far proved to be of limited efficacy in controlling CAFO pollution, and state laws—to the extent they are not preempted—have not fared much better. Given this backdrop, this paper argues that a new and innovative approach is called for to address the effects of CAFOs on the natural environment.

Despite being constrained in the regulatory context, the federal government is still in a position to positively affect the sustainability of the food system through its procurement programs. Specifically, the National School Lunch Program presents a unique opportunity for the government to achieve important environmental goals that it has been unable to achieve through regulation alone. This article will first survey the environmental problems associated with CAFOs and argue that CAFOs are not a sustainable method of food production over the long term. Next, this article will examine the government's attempts to regulate CAFO pollution, with a focus on the limitations of the traditional regulatory approach. Finally, this article will argue that the federal government, through the USDA, should incorporate more meat- and dairy-alternatives in the National School Lunch Program in order to ease the burden on the environment created by CAFO-style animal agriculture. This paper will also survey the business opportunities available in the production of animal-food alternatives, as well as highlight some of the most important developments in the industry. The School Food Program is a small step, but it could have a substantial impact on the overall sustainability of the food system as well as plant a seed for long-term food sustainability.

II. A BRIEF HISTORY OF CONFINED ANIMAL FEEDING OPERATIONS

The history of factory farms goes back many decades. In the years following World War II, the meat, egg, and dairy industries began a process of rapid concentration.[18] In the years since, the number of total farms in America has declined precipitously, while the number of animals raised for food has remained fairly constant and the number of animals confined to single operations continues

18. JAMES M. MACDONALD & WILLIAM D. MCBRIDE, U.S. DEP'T OF AGRIC., ECON. INFO. BULL. NO. EIB-43, THE TRANSFORMATION OF U.S. LIVESTOCK AGRICULTURE: SCALE, EFFICIENCY, AND RISKS 5-13 (2009), *available at* http://ers.usda.gov/ersDownloadHandler.ashx?file=/media/184977/eib43.pdf.

to rise.[19] The USDA estimates that, between 1982 and 2002, the number of "large farms" rose sharply, from about 3,600 to almost 12,000.[20]

And between 2002 and 2007, the total number of livestock (beef cattle) on the largest factory farms rose from 23.8 million in 2002 to 28.8 million in 2007.[21] Following widespread industry trends, pig and chicken operations have followed a similar pattern of concentration.[22]

The rise of the CAFO came about largely as a result of three major forces:

(1) The drastically increased efficiency of grain production, particularly corn and soy: The "Green Revolution" greatly increased the efficiency and output of grain production in the years following World War II,[23] and corn and soybeans, in particular, became the primary components of animal feed at this time. Starting after the passage of the 1996 Farm Bill and continuing today, the United States' agricultural policy stimulates widespread overproduction of corn and soybeans.[24] To illustrate: As a result of corn and soy overproduction, CAFO producers were able to purchase corn and soy at prices below what it cost to produce the crops, and it is estimated that CAFO producers saved thirty-five billion dollars between 1997 and 2005.[25] While some animal production still occurs on traditional pastures and farmland, extremely low commodity prices have made it economically feasible for producers to eschew traditional farming methods, like grazing, in favor of confining large

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19. *Id.* at 5. For example, in 2002 the average beef cow came from an operation that sold 34,494 cattle per year. *Id.*

20. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-08-944, CONCENTRATED ANIMAL FEEDING OPERATIONS: EPA NEEDS MORE INFORMATION AND A CLEARLY DEFINED STRATEGY TO PROTECT AIR AND WATER QUALITY FROM POLLUTANT OF CONCERN 13 (2008), *available at* http://gao.gov/new.items/d08944.pdf.

21. FOOD & WATER WATCH, FACTORY FARM NATION: HOW AMERICA TURNED ITS LIVESTOCK FARMS INTO FACTORIES (2010) [hereinafter FOOD & WATER WATCH], *available at* http://documents.foodandwaterwatch.org/doc/FactoryFarmNation-web.pdf. *See also* U.S. DEP'T OF AGRIC., AC-02-A-51, 2002 CENSUS OF AGRICULTURE app. A-8 (2004), *available at* http://agcensus.usda.gov/Publications/2002/USVolume104.pdf; U.S. DEP'T OF AGRIC., AC-07-A-51, 2007 CENSUS OF AGRICULTURE, app. B-5 (2009), *available at* http://agcensus.usda.gov/Publications/2007/Full_Report/usv1.pdf.

22. *See* FOOD & WATER WATCH, *supra* note 21, at 9-13; Mary Hendrickson & William Heffernan, *Concentration of Agricultural Markets*, FOOD CIRCLES NETWORKING PROJECT (Apr. 2007), http://foodcircles.missouri.edu/07contable.pdf.

23. PEW COMM'N, *supra* note 3, at 3.

24. ELANOR STARMER & TIMOTHY A. WISE, GLOBAL DEV. & ENVTL. NO. 07-03, INST. FEEDING AT THE TROUGH: INDUSTRIAL LIVESTOCK FIRMS SAVED $35 BILLION FROM LOW FEED PRICES 1, 1 (2007), *available at* http://ase.tufts.edu/gdae/Pubs/rp/PB07-03FeedingAtTroughDec07.pdf.

25. *Id.*

numbers of animals in enclosed facilities on a diet of cheap grains.[26]

(2) Lax oversight by the federal government of potentially monopolistic practices in the agriculture industry: The Department of Justice (DOJ) has allowed the largest meatpackers to merge into virtual monopolies, thereby operating free of many antitrust restrictions.[27] Today, a handful of corporations essentially control the American meat market, either directly or through vertical integration contracts with small producers, which constrain producers from seeking a market price for production animals.[28] As a result of having limited and heavily regulated markets in which to sell animals and animal products, many small farmers have seen their livelihoods slowly eroded by the ascendancy of the meat giants, which can insist on paying low prices because they are either the only game in town or they have farmers under vertical integration contracts.[29] Under the Obama Administration, there have been efforts to rein in agricultural monopolies using antitrust laws including the Packers and Stockyards Act, which dates back almost a century.[30] These government efforts have been fiercely resisted by the largest meat companies, which insist that the current model—under which producers raise animals under contract to be sold to the large meatpackers and have little effective say in the final selling price—is the most efficient and dependable way to ensure a consistent flow of meat and dairy products for consumption.[31] To this point, the big players (Tyson Foods, ConAgra, Smithfield, and Cargill, among others) have prevailed, and as the industry has grown more concentrated, so too have the farms.

(3) The lack of political will and ability to address agricultural pollution: due both to a lack of political will and constitutional limits on environmental regulation, federal and state environmental au-

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26. FOOD & WATER WATCH, s*upra* note 21, at 3. Also, because they have built their businesses around a cheap and steady supply of corn, the livestock giants are among the biggest opponents of using corn for ethanol. *See, e.g.*, Tyson Foods*, supra* note 13.

27. FOOD & WATER WATCH, s*upra* note 21, at 2.

28. *Id.* at 15; Hendrickson & Heffernan, *supra* note 22.

29. *See* FOOD & WATER WATCH, s*upra* note 21, at 15.

30. In 2010, USDA proposed regulations under the Packers and Stockyards Act (passed in 1921 to curb the monopolistic tendencies of the livestock industry) that would have put contract farmers on a more even footing when negotiating with agribusiness corporations. Implementation of Regulations Required Under Title XI of the Food, Conservation and Energy Act of 2008; Conduct in Violation of the Act, 75 Fed. Reg. 35,338, 35,338-54 (proposed June 22, 2010) (to be codified at 9 C.F.R. pt. 86). *See also* GRAIN INSPECTION, PACKERS AND STOCKYARDS ADMIN., FARM BILL REGULATIONS–PROPOSED RULE OUTLINE, http://grist.files.wordpress.com/2011/02/farm_bill_rule_outline.pdf (last visited Feb. 8, 2014).

31. *See* Am. Meat Inst., *Ten Key Facts About the Proposed GIPSA Rule*, MEATAMI.COM (July 2010), http://meatami.com/ht/a/GetDocumentAction/i/61564. According to the American Meat Institute, the country's largest producer groups, including the National Cattlemen's Beef Association and the National Pork Producer's Council, "have come out strongly against this type of government interference in the marketplace." *Id.*

thorities have been largely unwilling or unable to address the effects of CAFO pollution. Because of this lack of effective regulation, manure management—the preeminent CAFO waste challenge—has remained relatively cheap for most producers. The lack of regulation has been a boon for the factory-farm industry. For some producers, it has been a lifeboat, since the cost of proper waste treatment could easily turn many companies dependent on CAFOs into losing enterprises.[32]

A. The Regulatory Definition of a "Concentrated Animal Feeding Operation"

"Concentrated Animal Feeding Operations" are expressly included in state and federal environmental statutes and regulations as a source of water pollution.[33] To this point, the most extensive CAFO regulation has been carried out under the CWA.[34] EPA regulations promulgated under the CWA establish specific guidelines for designating CAFOs. In order to qualify as a CAFO, an operation must first be designated as an "Animal Feeding Operation" (AFO). EPA defines an AFO as an operation where:

> (i) Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and (ii) Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.[35]

Not all AFOs are CAFOs; this determination comes down to the number of animals on the premises. For those facilities that fall under the AFO designation, EPA sets specific guidelines for determining if that operation is also a CAFO for purposes of the CWA.[36] CAFOs are, in turn, broken down into three categories, "Small," "Medium," and "Large."[37] A CAFO is "Large" if it holds over 1,000 cattle, "2,500 swine each weighing 55 pounds or more; .

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32. FOOD & WATER WATCH, s*upra* note 21, at 19.

33. For an extensive list of state laws incorporating EPA's definition of AFO/CAFO, see *Animal Feeding Operation–Laws, Regulations, Policies, and Guidance*, EPA, http://www.epa.gov/agriculture/anafolaw.html (last updated Feb. 8, 2013).

34. Clean Water Act §§ 101-607, 33 U.S.C. §§ 1251-1387 (1972). CAFOs are explicitly listed as "point sources" within the Act. Clean Water Act § 502(14), 33 U.S.C. § 1362(14) (2006).

35. 40 C.F.R. § 122.23(b)(1) (2013).

36. *Id.* § 122.23(b)(2).

37. *Id.* § 122.23(b)(4), (6), (9).

. . or 125,000 chickens (other than laying hens), if the AFO uses other than a liquid manure handling system . . . ."[38] A CAFO is "Medium" if it houses 300-999 cattle, 750-2,499 swine weighing more than fifty-five pounds each, or 37,500-124,999 chickens (not including laying hens) and the AFO does not use a liquid manure handling system.[39] Medium and Large CAFOs are subject to CWA regulation, and other AFOs may be designated as CAFOs and be subject to regulation if they are determined to be a "significant contributor of pollutants to waters of the United States."[40]

The key difference between AFOs and traditional farms is that on AFOs, animal feed is brought in from the outside—there is no grazing on the facility and no crops are grown for animal feed. As such, AFOs lack the cyclical characteristics of a traditional farm, whereby the animals eat crops grown on the farm and return nutrients directly back to the land as manure. On AFOs, the land is often simply unable to incorporate the nutrients from all of that waste. This fact, combined with the incredible numbers of animals that can be confined to single CAFOs, makes waste management a major challenge.[41] The USDA offers to assist livestock producers in formulating "nutrient management plans" to effectively manage waste on their facilities.[42] However, it is far from clear how often these plans are put in place or how effective they are in controlling CAFO pollution.[43]

Without doubt, the concentration of production animals creates production efficiencies and lowers end-prices for consumers. When producers can raise thousands of animals on a relatively small plot of land, costs can be kept relatively low. However, these efficiency gains don't tell the whole story. Negative externalities abound, and there are substantial hidden costs lurking beneath the surface of CAFO-produced animal products.

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38. *Id.* § 122.23(b)(4).
39. *Id.* § 122.23(b)(6).
40. *Id.* § 122.23(c).
41. *See generally* ROBERT L. KELLOGG ET AL., U.S. DEP'T OF AGRIC., NPS00-0579, MANURE NUTRIENTS RELATIVE TO THE CAPACITY OF CROPLAND AND PASTURELAND TO ASSIMILATE NUTRIENTS: SPATIAL AND TEMPORAL TRENDS FOR THE UNITED STATES (2000), *available at* http://nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_012133.pdf. *See also* A. W. Jongbloed & N. P. Lenis, *Environmental Concerns About Animal Manure*, 76 J. ANIMAL SCI. 2641, 2641-48 (1998).
42. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 20, at 11-12.
43. *Id.* at 22-23.

III. THE ENVIRONMENTAL PROBLEMS ASSOCIATED WITH CAFOS

As outlined above, CAFOs present a significant environmental problem, impacting water, soil, air, and public health. The primary source of these problems is the stupendous amount of fecal and other waste that CAFOs produce. The waste problem is greatly compounded when several CAFOs are concentrated in a single region,[44] as is frequently the case throughout the "farm belt." For example, the more than 464,000 dairy cows in Tulare County, California, produce *five times* as much waste as the entire combined human population of the greater New York City metropolitan area (about twenty million people).[45]

A. CAFOs Are a Significant Source of Water Pollution

CAFOs often create far more waste than the adjacent land can possibly incorporate, creating significant water-quality implications.[46] CAFOs either store waste in massive lagoons (which are liable to spill or leak), or simply apply it to the land, where it can leach into groundwater or be washed away as surface runoff, potentially polluting nearby waterways.[47] States recognize CAFOs as a water-quality problem: in the most recent National Water Quality Inventory, twenty-nine states specifically identified CAFOs as significant contributors to water-quality impairment.[48]

Animal wastes pose inherent risks, and the problem is magnified for CAFOs, which as noted above confine tremendous numbers of animals to single locations. According to EPA, the adverse environmental and health impacts associated with water polluted by animal wastes include "increases in suspended solids that cloud the water and inhibit the functioning of aquatic plants and animals, nitrate contamination of drinking water, and transmission of pathogens (disease-causing bacteria) and parasites associated with food and waterborne diseases in humans."[49] CAFO waste also con-

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44. *See id.* at 18. To get a sense for the geographic concentration of CAFOs, see *Factory Farm Map*, FOOD & WATER WATCH, http://factoryfarmmap.org (last visited Feb. 8, 2014).

45. FOOD & WATER WATCH, *supra* note 21, at 5.

46. U.S. ENVTL. PROT. AGENCY, EPA/600/R-04/042, RISK ASSESSMENT EVALUATION FOR CONCENTRATED ANIMAL FEEDING OPERATIONS 24-25 (2004).

47. *Id.* at 48-61.

48. OFFICE OF WATER, U.S. ENVTL. PROT. AGENCY, EPA-841-R-08-001, NATIONAL WATER QUALITY INVENTORY: REPORT TO CONGRESS—2004 REPORTING CYCLE (2009).

49. OFFICE OF ENFORCEMENT & COMPLIANCE, ENTL. PROTECTION AGENCY, EPA TARGETS CLEAN WATER ACT VIOLATIONS AT LIVESTOCK FEEDING OPERATIONS 1, (2009), *available at* http://epa.gov/compliance/resources/newsletters/civil/enfalert/cafo-alert09.pdf.

tributes a high level of nutrients to the waters, particularly nitrogen and phosphorous, which can lead to decreased oxygen levels, adversely affecting fish and other aquatic life.[50]

CAFO waste can wreak havoc on ecosystems. For example, in 1995, a 120,000 square foot manure lagoon ruptured in North Carolina, sending over twenty-two million gallons (a quantity twice as big as the Exxon Valdez oil spill) of pig feces, urine, and carcasses into the New River.[51] It was the biggest environmental spill in United States history,[52] yet the event received surprisingly little media coverage. The sludge was so toxic that it burned skin and so dense that it took almost two months to travel sixteen miles downstream to the ocean.[53] Nearly every living creature in the river was killed, including millions of fish.[54] Shortly after the spill, the North Carolina legislature put a moratorium on the construction of any new waste lagoons in the state; but even still, CAFO waste continues to pose significant threats to waterways in the state.[55]

In the face of a lack of effective federal regulation, some states have attempted to take matters into their own hands. For example, in 2005, the State of Oklahoma brought a complaint against Tyson Foods and several other poultry producers under the Comprehensive Environmental Response, Compensation and Liability Act[56] (CERCLA), alleging substantial harm to the Illinois River Watershed arising from defendant companies' negligent handling of poultry waste.[57] While the case was dismissed on technical, tribal sovereignty grounds, the State of Oklahoma maintains that Tyson and other poultry producers have substantially damaged wa-

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50. *Id.* Nutrient contamination from animal waste is a major problem in Florida; the state and EPA are involved in litigation to determine which party has primary authority to set limits on these nutrients. *See Federal Water Quality Standards for the State of Florida*, EPA, http://water.epa.gov/lawsregs/rulesregs/florida_index.cfm (last updated Dec. 20, 2013).

51. *Animal Feeding Operations–Compliance and Enforcement*, EPA, http://epa.gov/oecaagct/anafocom.html (last updated May 22, 2013).

52. J. Tietz, *Boss Hog: The Dark Side of America's Top Pork Producer*, ROLLING STONE, Dec. 14, 2006, *available at* http://rollingstone.com/culture/news/boss-hog-the-darkside-of-americas-top-pork-producer-20061214. *See also* FOOD AND WATER WATCH, FACTORY FARMED HOGS IN NORTH CAROLINA, (2010), *available at* http://documents.foodandwaterwatch.org/doc/ncHogs.pdf.

53. *Id.*

54. *Id.*

55. Susan Hardy, *The Price of Pork*, ENDEAVORS, Winter 2012, at 7, *available at* http://endeavors.unc.edu/the_price_of_pork.

56. 42 U.S.C. §§ 9601-9675 (2006).

57. In *Oklahoma v. Tyson Foods, Inc.* (*Tyson Foods I*), 258 F.R.D. 472 (N.D. Okla. 2009), the court ruled that the suit could not go forward since the Cherokee Nation was a necessary party to the suit. The Cherokee nation then sought to intervene in the suit, the district court denied the motion, and the denial was upheld in *Oklahoma ex rel. Edmondson v. Tyson Foods, Inc.* (*Tyson Foods II*), 619 F.3d 1223 (10th Cir. 2010).

ters in the state. In the case of Oklahoma, the assertions are supported by findings from EPA.[58]

B. CAFOs Are a Significant Contributor of Greenhouse Gas Emissions and Other Gases

Meat, dairy, and egg production creates substantial greenhouse gas emissions.[59] On the high end, it has been estimated that, globally, livestock production alone accounts for 32,564 million tons of carbon dioxide per year—a full 51% of annual worldwide GHG emissions.[60] The UN has also linked livestock production to global climate change.[61]

Three laws provide EPA with certain authorities related to air emissions from animal feeding operations: the CAA,[62] CERCLA, and the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).[63] Unlike the CWA, however, these laws do not specifically name CAFOs as a source of pollutants. Additionally, technical and political limits have hampered EPA's attempts to regulate air emissions from CAFOs, and the agency has granted CAFOs broad exemptions from having to report many discharges.[64] These emissions frequently do real and immediate damage: CAFOs take a toll on rural communities, driving out many small farms and subjecting communities to noxious fumes arising from the collected, untreated waste of thousands of animals.[65] Noxious gas vapors from CAFOs—including ammonia and hydrogen sulfide—are common in rural communities located adjacent to CAFOs and can

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58. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 20, at 22. ("According to EPA Region 6 officials, the Arkansas-Oklahoma border is an area of concern due to the number of poultry operations (mainly broilers, but also turkeys and layers) within this area. Furthermore, Region 6 officials identified numerous water bodies in northwest Arkansas and northeast Oklahoma that have been impaired by manure from feeding operations and identified these locations as 'areas of general ground water concern.' ").

59. Int'l Panel for Sustainable Res. Mgmt., United Nations Env't Programme, Assessing the Environmental Impacts of Consumption and Production: Priority Products and Materials, 78-79 U.N. Doc. DTI/1262/PA (2010). *See also* Tara Garnett, *Livestock-Related Greenhouse Gas Emissions: Impacts and Options for Policy Makers*, 12 ENVTL. SCI. & POL. 491 (2009), *available at* http://awellfedworld.org/sites/awellfedworld.org/files/pdf/FCRNLivestock2009.pdf.

60. ROBERT GOODLAND & JEFF ANHANG, WORLDWATCH INSTITUTE, LIVESTOCK AND CLIMATE CHANGE: WHAT IF THE KEY ACTORS IN CLIMATE CHANGE ARE . . . COWS, PIGS, AND CHICKENS?, 11 (2009), *available at* http://worldwatch.org/files/pdf/Livestock%20and%20Climate%20Change.pdf.

61. United Nations Food & Agric. Org., The State of Food and Agriculture 64 (2009), *available at* http://fao.org/docrep/012/i0680e/i0680e.pdf.

62. Clean Air Act, 42 U.S.C. §§ 7401-7671q (2006).

63. *Id.* §§ 11001-11050.

64. *See Better Approach to Reporting Hazardous Substances from Farm Animal Waste*, EPA, Dec. 12, 2008, http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/6236c34a042f55378525751d00722e6a!OpenDocument.

65. *See, e.g.*, PEW COMM'N, *supra* note 3, at 27.

create a range of negative health effects for the people living there.[66]

C. CAFOs Have a Significant Impact on Human Health

In addition to threatening the environment, CAFOs create significant public health risks. Unlike with water and air pollution, these concerns have been largely ignored and even exacerbated by government. These public health risks include lackluster government inspection of animal carcasses, the overuse of antibiotics in farmed animals, and the increasing use of harsh decontaminants in slaughterhouses to control food-borne pathogens, which nonetheless are finding their way into supermarkets all over the country. While these public health problems associated with CAFOs do not fall neatly under the aegis of any one federal regulatory scheme, as is the case with water and air pollution, they are nonetheless critical and add to the case for reducing the share of animal products in the American diet.

Over a century ago, Upton Sinclair's classic novel *The Jungle* sparked public outrage with its description of the fetid and unsanitary conditions inside American slaughterhouses.[67] Shortly thereafter, Congress passed several laws regulating animal slaughter and meat inspection nationwide, setting the foundation for the inspection scheme in place to this day.[68] These laws are designed to protect the safety of the nation's meat supply as well as preserve the reputation of the American meat industry at home and abroad. Nonetheless, massive product recalls and revelations of unsanitary conditions in slaughterhouses and other facilities are common,[69] and the USDA even admits that its own inspection oversight is spotty at best and that its inspectors routinely allow potentially diseased carcasses to leave slaughterhouses and enter interstate commerce.[70] However, even a perfect post-mortem inspection does

66. For an extensive list of government-funded and peer-reviewed studies tracking the links between CAFO pollution and public health, see U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 20, at 65-75.

67. *See* UPTON SINCLAIR, THE JUNGLE 36-45, 67, 100-02 (Forgotten Books 2008) (1906).

68. *See* Animal Health Protection Act, 7 U.S.C. §§ 8301-8322 (2012); Meat Inspection Act, 21 U.S.C. §§ 601-695; Poultry Products Inspection Act, 21 U.S.C. §§ 451-472.

69. *See, e.g.*, William Neuman, *Egg Recall Expanded After Salmonella Outbreak*, N.Y. TIMES, Aug. 19, 2010, at B1; David Brown, *USDA Orders Largest Meat Recall in U.S. History*, WASH. POST, Feb. 18, 2008, http://washingtonpost.com/wp-dyn/content/article/2008/02/17/AR2008021701530.html.

70. OFFICE OF INSPECTOR GEN., U.S. DEP'T OF AGRIC., AUDIT REPORT 24601-0001-41, FOOD & SAFETY INSPECTION SERVICE—INSPECTION AND ENFORCEMENT ACTIVITIES AT SWINE SLAUGHTER PLANTS (2013), *available at* http://usda.gov/oig/webdocs/24601-0001-41

nothing to limit the potential pathogens coming out of CAFOs: fecal waste, which is generated throughout the lifetime of farmed animals and not just at slaughter, has the potential to spread virulent diseases, many of which are transmissible to humans.[71] Lackluster enforcement of federal animal handling and inspection laws are a major public health problem, made more maddening by the fact that Sinclair released his exposé well over a hundred years ago, in 1906.

The overuse of antibiotics is another major problem in CAFOs, and one with substantial public health implications. Perhaps not surprisingly, confining thousands of animals so close together that they can hardly move creates a breeding ground for various diseases, many of which can be transmitted through waste.[72] To keep animals from succumbing to disease, as well as to stimulate rapid growth, CAFO producers administer increasingly high doses of antibiotics, typically through the animals' feed.[73] Antibiotic use in farmed animals is increasingly seen as a public health threat, and many groups are pressuring the government to limit the use of antibiotics in farmed animals in order to preserve their efficacy in humans.[74] In 2013, the Environmental Working Group (EWG) released as part of its "Meat Eater's Guide to Climate Change and Health" a report on antibiotic-resistant bacteria in supermarket meat products. Using data from the FDA's 2011 Retail Meat Report, EWG reported "startlingly high" levels of antibiotic-resistant bacteria on 81% of ground turkey; 69% of pork chops; 55% of ground beef; and 39% of chicken breasts, wings, and thighs.[75] Both

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.pdf. *See also* Bruce Friedrich, *USDA Inspector General: Food Safety and Humane Slaughter Laws Ignored with Impunity*, HUFFINGTON POST, May 28, 2013, http://huffingtonpost.com/bruce-friedrich/usda-inpector-general-fo_b_3333853.html.

71. JoAnn Burkholder et al., *Impacts of Waste from Concentrated Animal Feeding Operations on Water Quality*, 115 ENVTL. HEALTH PERSPECTIVES 308, 310 (2007). More than 40 diseases found in manure can be transferred to humans, including causative agents for Salmonellosis, Tuberculosis, Leptospirosis, infantile diarrheal diseases, Q-fever, Trichinosis, and Giardiasis. Both recreational use of affected surface water and consumption of contaminated ground or surface water can lead to infection. *See id.*

72. *See* PEW COMM'N, *supra* note 3, at 10-21.

73. The annual amount of antimicrobial drugs sold and distributed in 2009 for use in animal agriculture was 32.4 million pounds. DEP'T OF HEALTH & HUMAN SERVS., U.S. FOOD & DRUG ADMIN., 2009 SUMMARY REPORT ON ANTIMICROBIALS SOLD OR DISTRIBUTED FOR USE IN FOOD-PRODUCING ANIMALS (2010). This was a significant increase in the annual use from approximately 18 million pounds reported in 1985. OFFICE OF TECH. ASSESSMENT, U.S. CONG., OTA–H–629, IMPACTS OF ANTIBIOTIC-RESISTANT BACTERIA 158 (1995).

74. *See, e.g.*, *Supermoms Against Superbugs*, PEW CHARITABLE TRUSTS (Aug. 1, 2013), http://pewhealth.org/other-resource/supermoms-against-superbugs-85899432655.

75. ENVTL. WORKING GROUP, SUPERBUGS INVADE AMERICAN SUPERMARKETS 5-6 (2013), *available at* http://static.ewg.org/reports/2013/meateaters/ewg_meat_and_antibiotics_report2013.pdf.

the meat industry[76] and the government—via the Food and Drug Administration—urged caution against reading too much into the EWG report.[77] Meanwhile, according to EPA and World Health Organization (WHO), among other institutions, the high level of antibiotic use on CAFOs has the potential to create virulent, antibiotic-resistant strains of bacteria, some of which could be passed to humans directly through consuming infected animal products.[78] The animal-food industry acknowledges heavy antibiotic use in farmed animals—eighty percent of all antibiotics sold in the United States go into farmed animals—but disputes the claim that humans contract antibiotic-resistant bacteria through consuming meat.[79]

Factory farming is also taking a toll on worker health and safety. Slaughterhouse employees and federal inspectors are exposed to increasingly high levels of hazardous decontaminant chemicals in the workplace, with allegations that prolonged exposure can cause worker deaths.[80] While falling outside the confines of the CAFO, this problem nonetheless stems from intensive farmed animal production: these decontaminant chemicals are needed because the volume of animals is so high and the risk for disease so great owing to the conditions these animals are raised in. Industry pressure against reform and relaxed regulations does not help matters. As part of a sweeping reevaluation of regulatory oversight of industry, the Obama Administration proposed in 2012 to amend USDA regulations to increase the maximum slaughter rate for chickens in federally-inspected slaughter facilities from 140 birds per minute to 175 birds per minute (forty-five birds per minute to fifty-five birds per minute for turkeys).[81] The proposed increased

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76. *See* Tim Lundeen, *FDA: Antibiotic Resistance Data Require Context*, FEEDSTUFFS FOODLINK, Apr. 25, 2013, http://feedstuffsfoodlink.com/story-fda-antibiotic-resistance-data-require-context-71-97647.

77. *FDA Cautions in Interpretation of Antimicrobial Resistance Data*, FDA (Apr. 22, 2013), http://www.fda.gov/AnimalVeterinary/NewsEvents/CVMUpdates/ucm348794.htm?source=govdelivery.

78. SHANE ROGERS & JOHN HAINES, U.S. ENVTL. PROT. AGENCY, A/600/R-06/021, DETECTING AND MITIGATING THE ENVIRONMENTAL IMPACT OF FECAL PATHOGENS ORIGINATING FROM CONFINED ANIMAL FEEDING OPERATIONS: REVIEW, 11-16 (2005); WORLD HEALTH ORG., FACT SHEET NO. 268, USE OF ANTIMICROBIALS OUTSIDE HUMAN MEDICINE AND RESULTANT ANTIMICROBIAL RESISTANCE IN HUMANS (2002), *available at* http://whqlibdoc.who.int/fact_sheet/2002/FS_268.pdf. *See also* Sherwood L. Gorbach, *Antimicrobial Use in Animal Feed—Time to Stop*, 345 NEW ENG. J. MED. 1202 (2001).

79. *Report Touts Resistant Bacteria Found on US Meat*, MEATPOULTRY.COM, Apr. 17, 2013, http://meatpoultry.com/articles/news_home/Food_Safety/2013/04/Report_touts_resistant_bacteri.aspx?ID=%7B4D3E358D-76AC-43EB-A8A1-6EA29B59090F%7D&cck=1.

80. Kimberly Kindy, *At Chicken Plants, Chemicals Blamed for Health Ailments Are Poised to Proliferate*, WASH. POST, Apr. 25, 2013, http://washingtonpost.com/politics/at-chicken-plants-chemicals-blamed-for-health-ailments-are-poised-to-proliferate/2013/04/25/d2a65ec8-97b1-11e2-97cd-3d8c1afe4f0f_story.html.

81. *Id.*

kill speeds come alongside a decreasing role for government in monitoring slaughter facilities. With the proposed increase in kill speeds, slaughterhouse employees will not have time to remove visibly dirty carcasses, even those soiled with feces, thus requiring every bird to be gassed, contaminated or not.[82] Workers already routinely complain of "carpal tunnel and other musculoskeletal disorders" from working on poultry killing lines.[83] With the increased use of ammonia and other potent anti-bacterial agents, workers and inspectors complain of a variety of respiratory and other ailments, reporting symptoms including "coughing up blood" and "various skin diseases," according to a report of the Occupational Safety and Health Administration (OSHA).[84] While it is presumably true that faster kill speeds will allow more poultry to reach the market more quickly, these short-term, limited benefits could lead to disastrous costs down the line in the form of lost employee lives, disease outbreaks, and other health effects.

The environmental and health risks associated with CAFOs are substantial. While the government recognizes this, attempts to regulate the production of meat, milk, and eggs have thus far been woefully inadequate. The following section looks, in part, at what the federal government has tried to do to cope with CAFOs.

IV. THE GOVERNMENT'S ATTEMPTS TO REGULATE CAFOS

State and federal environmental agencies are well aware of the environmental problems associated with CAFOs, and there have been many attempts to more tightly regulate CAFO wastes. EPA first promulgated regulations on CAFOs in 1974 and 1976 in response to negative impacts on water quality.[85] Additionally, CAFOs are explicitly included among the list of "point sources" under the CWA,[86] and as such are legally responsible for ensuring that pollutants from their operations do not enter the nation's waters.[87] Unfortunately, many CAFOs regularly fail in this responsibility, and the record of oversight and enforcement by EPA and

82. *Id.*
83. *Id.*
84. *Id.*
85. EPA initially issued national effluent limitations guidelines and standards for feedlots on February 14, 1974. 39 Fed. Reg. 5704 (Feb. 14, 1974). EPA issued limitations guidelines and standards for NPDES CAFO regulations on March 18, 1976. 41 Fed. Reg. 11,458 (Mar. 18, 1974).
86. *See* Clean Water Act, § 502(14), 33 U.S.C. § 1362(14) (2006).
87. Clean Water Act, § 301(a), 33 U.S.C. § 1311(a) (2006).

state agencies is spotty at best.[88] In 2011, EPA estimated "that approximately 8,000 CAFOs out of a total universe of 20,000 CAFOs have obtained permit coverage under" the CWA's National Pollutant Discharge Elimination System (NPDES) program.[89] This means that more than half of the country's CAFOs are not subject to any meaningful environmental oversight by EPA or state agencies. To this day, EPA lists CAFO regulation among six "National Enforcement Initiatives" for fiscal years 2011-2013.[90] According to EPA, CAFO regulation is a priority because, "[i]f not properly controlled, manure can overflow from lagoons or run off from the fields into nearby surface waters or seep into ground water, carrying disease-causing pathogens, nutrients, or other contaminants into the water."[91]

Critics argue that EPA and delegated state agencies have failed in their responsibility to regulate CAFOs.[92] EPA has made efforts over the past decade to bring more producers under the requirements of the NPDES permitting program through administrative rulemaking, but many of these efforts have been struck down by the courts upon industry challenge. Very early in her term as EPA Administrator, Lisa Jackson released the "Clean Water Act Enforcement Plan."[93] The Plan was prepared in response to the important changes that have occurred in the field of water-quality enforcement since the passage of the CWA. Increasingly, the most pressing threats to water quality come not from the end of a pipe, but from diffuse sources like CAFOs. EPA is still looking

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88. In 2001, EPA estimated that at least 13,000 CAFOs were required to have CWA permits, but EPA and states had issued just 2,500 permits. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations, 66 Fed. Reg. 2960, 2963 (2001); *see also*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-03-285, LIVESTOCK AGRICULTURE: INCREASED EPA OVERSIGHT WILL IMPROVE ENVIRONMENTAL PROGRAM FOR CONCENTRATED ANIMAL FEEDING OPERATIONS 7 (2003) (estimating that 11,500 facilities would need to be permitted with expansion of CAFO requirements to previously exempt feeding operations, but only 4500 facilities had permits in 2003).

89. National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65,431, 65,445 (Oct. 21, 2011).

90. *National Enforcement Initiatives for Fiscal Years 2011-2013,* EPA, http://epa.gov/compliance/data/planning/initiatives/initiatives.html (last updated Feb. 7, 2014) (discussing that CAFOs are a concern of the initiative "Preventing Animal Waste from Contaminating Surface and Ground Water").

91. EPA NATIONAL ENFORCEMENT INITIATIVES FOR FISCAL YEARS 2011-2013, ENVTL. PROTECTION AGENCY, *available at* http://law.richmond.edu/centers/environmental/deq-files/10-17-0830-Mulkey01.pdf.

92. MICHELE M. MERKEL, NAT'L COMM'N ON IDUS. FARM ANIMAL PROD., EPA AND STATE FAILURES TO REGULATE CAFOS UNDER FEDERAL ENVIRONMENTAL LAWS (2006), *available at* http://environmentalintegrity.org/pdf/publications/EPA_State_Failures_Regulate_CAFO.pdf.

93. OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE, U.S. ENVTL. PROT. AGENCY, CLEAN WATER ACT ACTION PLAN 1 (2009), *available at* http://www2.epa.gov/sites/production/files/documents/actionplan101409.pdf.

for ways to effectively regulate CAFO pollution, but EPA's difficulty in dealing with the problem on its own is becoming increasingly clear. The inability of EPA and state agencies to effectively regulate CAFO pollution makes additional action necessary.

This article argues that actions outside of the standard model of environmental regulation have great potential to mitigate the harmful effects of CAFO pollution. Before looking to these alternative courses of action, it is useful to get a sense of what EPA has attempted to do about CAFO regulation. The history of these attempts sheds light on why traditional environmental regulation alone is likely insufficient to deal with the problems of CAFO pollution, and why a new approach focused on creating and sustaining markets for animal-free protein sources is needed.

A. EPA's Attempts to Deal with CAFO Water Pollution

The majority of the government's efforts in response to the environmental risks of CAFO waste have been carried out in the context of water protection. EPA has been clear for decades that CAFOs are a major problem for water quality. However, its efforts have been limited. To make matters worse, the courts have shot down agency attempts to regulate CAFO waste more meaningfully in recent years on two notable separate occasions detailed below. Despite its best efforts, the agency is effectively hamstrung when it comes to protecting the Nation's waters from CAFO pollution.

1. The 2003 Rule and *Waterkeeper*

In 2003, EPA issued a final rule (2003 Rule) designed to bring more CAFOs under the NPDES, which is the primary vehicle whereby EPA imposes waste-treatment and other conditions on industrial emitters of pollutants into waterways.[94] Through the 2003 Rule, EPA attempted to require all CAFOs to apply for NPDES permits, unless it could be demonstrated that there was "no potential to discharge" pollutants.[95] The 2003 Rule would not have imposed specific conditions on any one CAFO; rather, it would only have required CAFOs to go through the NPDES permit process if they could not show that animal wastes were highly unlikely to leave their facility (the regulations make exceptions for

94. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations, 68 Fed. Reg. 7176, (Feb. 12, 2003) (codified at 40 C.F.R. §§ 9, 122, 123, 412).

95. 40 C.F.R. § 122.23(d) (2012) (governing determinations of "no potential to discharge" for NPDES permit).

discharges resulting from rare and catastrophic weather events). Different aspects of the 2003 Rule were challenged by environmental groups and the livestock industry, and in 2005, the Second Circuit heard these challenges in *Waterkeeper Alliance v. EPA*.[96] Predictably, environmental groups argued that the 2003 Rule was too lenient, and industry groups argued that it was too restrictive. Ultimately, the court ended up siding with both sides on different aspects of the 2003 Rule. In sum, however, the *Waterkeeper* ruling was a loss for EPA and a setback for CAFO pollution regulation.

As noted above, EPA attempted to require all CAFOs to apply for NPDES permits unless it could be demonstrated that there was "no potential to discharge" pollutants.[97] The court held this provision was unlawful on the grounds that, under the CWA, EPA only has authority to regulate the actual discharge of pollutants.[98] In response to EPA's argument that the regulation was proper because all CAFOs have the potential to discharge pollutants, the court held, "the Clean Water Act gives the EPA jurisdiction to regulate and control only *actual* discharges—not potential discharges, and certainly not point sources themselves."[99] However, the court noted in dicta that EPA may have won on this point if, instead of arguing that large CAFOs have a potential to discharge, it had argued for a regulatory presumption that large CAFOs *actually* discharge pollutants.[100] EPA took this lesson to heart and tried again a couple years later.

2. The 2008 Rule and *National Pork Producers Council*

The *Waterkeeper* decision led to a new round of rulemaking by EPA.[101] This round of rulemaking culminated in a final rule in 2008 (2008 Rule). Instead of looking at the mere "potential" of CAFOs to discharge waste pollutants, which was expressly disallowed by the court in *Waterkeeper*, the 2008 Rule required every CAFO to apply for an NPDES permit if it "discharge[d] or pro-

96. Waterkeeper Alliance, Inc. v. EPA, 399 F.3d 486 (2d Cir. 2005).

97. 40 C.F.R. § 122.23(d).

98. Waterkeeper, 399 F.3d at 504 (quoting 33 U.S.C. § 1311(a) (2006)).

99. *Id.* at 505 (citing Natural Res. Def. Council v. EPA, 859 F.2d 156, 170 (D.C. Cir. 1988)).

100. *Id.* at 506, n. 22 ("In our view, the EPA has marshaled evidence suggesting that such a prophylactic measure may be necessary to effectively regulate water pollution from Large CAFOs, given that Large CAFOs are important contributors to water pollution and that they have, historically at least, improperly tried to circumvent the permitting process.").

101. Revised National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitation Guidelines for Concentrated Animal Feeding Operations in Response to Waterkeeper Decision, 71 Fed. Reg. 37,744 (June 30, 2006).

pose[d] to discharge pollutants."[102] Like the 2003 Rule before it, the 2008 Rule was quickly challenged by the livestock industry, and EPA was dealt another blow in *National Pork Producers Council v. EPA* when the Fifth Circuit held that the agency could not legally require CAFOs that merely *proposed* to discharge pollutants to apply for an NPDES permit.[103] The court also held that EPA could not hold CAFOs liable under the CWA for simply failing to apply for an NPDES permit.[104] In reaching this ruling, the court cited *Waterkeeper* for the premise that there must be an actual discharge before liability can attach to CAFOs under the CWA. The court did affirm that EPA could require CAFOs that are actually discharging pollutants to apply for an NPDES permit.[105] However, this alone is inadequate to protect the Nation's waters from CAFO waste, since it is impossible for EPA to police every single CAFO in the country to ensure wastes are not migrating into waterways.

3. 2011 Proposed Rulemaking

In response to *National Pork Producers Council*, EPA proposed a rule in October 2011 that would put NPDES permitting aside and instead impose reporting requirements on CAFOs under the CWA.[106] The rationale behind the proposed rule was that EPA is unable to adequately determine which CAFOs should be subject to the NPDES permitting regime without first gathering some basic information about the location of CAFOs, number of animals confined in each, waste handling procedures, proximity to waterways, and other necessary details.[107] EPA argued that it had authority under § 308 of the CWA to require operators of point sources to maintain records and provide data to the agency.[108]

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102. *Id.* at 37,747.

103. Nat'l Pork Producers Council v. EPA, 635 F.3d 738, 750 (5th Cir. 2011). The NPDES permitting program is governed by 33 U.S.C. § 1342 (2006). While the discharge of pollutants is prohibited by 33 U.S.C. § 1311 (2006), EPA and state agencies that have been delegated authority may issue NPDES permits, which allow for the permitted to discharge pollutants within certain parameters known as "effluent limitations."

104. *Id.* at 752-53.

105. *Id.* at 751.

106. National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65,431 (Oct. 21, 2011).

107. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 20, at 48.

108. National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65,436 (Oct. 21, 2011). EPA cites Clean Water Act § 308, 33 U.S.C. § 1318 for the authority to require point sources to supply information necessary for carrying out the purposes of the CWA. CAFOs are point sources under Clean Water Act § 502(14), 33 U.S.C. § 1362(14). EPA also cites *Natural Resources Defense Council v. EPA*, 822 F.2d 104, 119 (D.C. Cir. 1987) for the proposition that this is a reasonable use of its authority under CWA § 308.

In June 2012, EPA rescinded the proposed rule[109] to the applause of the meat and dairy industry.[110] The industry had opposed the reporting requirements as little more than burdensome and duplicative. EPA stated that it will use other resources, like existing state CAFO permits, to gather the necessary data.

EPA has limited reach under the CWA to control CAFO waste, and the courts have been unwilling to provide the agency teeth to police CAFO waste. Many CAFOs are able to evade reporting requirements on both the state and federal level, and the impacts of their operations often remain underappreciated, sometimes to devastating effect. Given the inherent limits of the CWA, there is little reason to think that EPA will be able to make any meaningful strides against CAFO water pollution at any point in the near future. It is also clear that the meat and dairy industry will continue to vigorously oppose any regulation that could increase compliance costs.

B. CAFOs and Air Pollution

CAFOs have been implicated in greenhouse gas emissions, and there has been a lot of attention paid recently to the links between meat production and global climate change.[111] EPA is well aware that air emissions from CAFO waste are a problem: greenhouse gas emissions impact the climate, and nuisance gases negatively impact the quality of life for rural communities close to CAFOs. Nonetheless, EPA has struggled to get CAFOs to comply with the CAA, CERCLA, and EPCRA, and emissions continue almost unabated.

One of the major hurdles in the way of regulating CAFO air emissions has been the lack of a reliable and uniform method for quantifying gas emissions from CAFOs. To help remedy the problem, EPA reached an agreement—the "Air Compliance Agreement"—with major industry and environmental groups in 2005 to jointly develop a reliable and scientifically sound methodology for measuring and controlling air emissions from CAFOs.[112] The study

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109. 77 Fed. Reg. 42,679 (July 20, 2012).

110. *See, e.g.*, *EPA Pulls CAFO Reporting Rule*, NAT'L HOG FARMER, July 16, 2012, http://nationalhogfarmer.com/environment/epa-pulls-cafo-reporting-rule.

111. *See, e.g.*, United Nations Food & Agric. Org., Livestock's Long Shadow: Environmental Issues and Options, at 95, FAO Corp. Doc. Repository 1, (2006), *available at* ftp://ftp.fao.org/docrep/fao/010/a0701e/a0701e.pdf; Nathan Fiala, *How Meat Contributes to Global Warming*, SCI. AM. (Feb. 4, 2009), http://scientificamerican.com/article.cfm?id=the-greenhouse-hamburger.

112. OFFICE OF ENFORCEMENT & COMPLIANCE, ENVTL. PROTECTION AGENCY, LARGE ANIMAL FEEDING OPERATIONS: REDUCING THEIR IMPACT ON AIR QUALITY 9 (2008), *available at* http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1001B9Z.PDF.

focused on four pollutants: ammonia, hydrogen sulfide, particulate matter, and volatile organic compounds.[113] The study was completed in 2009, and the results were made available to the public in 2011.[114] At this point, it is not clear how this information will be used and what kind of impact it will have on CAFO gas emissions. There was some sense in the wake of the U.S. Supreme Court's decision in *Massachusetts v. EPA*[115] that EPA would propose new rules on carbon dioxide emissions from livestock production, but this has not happened.[116] In the meantime, EPA still lacks a reliable method to control gas emissions from CAFOs, both nuisance gasses and those implicated in global climate change. There are currently no substantial efforts underway to address CAFO air pollution, but it is plain that these efforts will be fiercely resisted by the animal food industry.

C. CAFOs and Human Health

Of all of the issues presented by CAFOs, the government has arguably been the least effective in the realm of public health. As detailed in the previous section, the government has frequently been complicit in spreading the negative health impacts of CAFO-produced animal products. In fact, the only update to report in this section comes not from a federal agency or other enforcement body, but rather from the courts.

The government has long been aware of the problems created by using antibiotics in farmed animal production. The Food and Drug Administration (FDA) has jurisdiction over antibiotics used in animal production. In 1977, FDA proposed to withdraw approval for the use of certain antibiotics in livestock for the purposes of growth promotion and feed efficiency, on the grounds that the use of the antibiotics had not been proven to be safe.[117] This rule would have restricted antibiotic use in farmed animals to those animals

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113. *See id.*

114. *Emissions Data from Animal Feeding Operations Study Now Available/EPA Also Solicits Additional Information to Further Understand Emissions*, EPA, Jan. 13, 2011, http://yosemite.epa.gov/opa/admpress.nsf/6427a6b7538955c585257359003f0230/dc13b657ff6203ce85257817005ed001!OpenDocument.

115. Massachusetts v. EPA, 127 S.Ct. 1438, 1448 (2007) (holding that the EPA Administrator was required under CAA to determine whether greenhouse gas emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare).

116. CLAUDIA COPELAND, CONG. RESEARCH SERV., RL32948, AIR QUALITY ISSUES AND ANIMAL AGRICULTURE: A PRIMER 22-26 (2010), *available at* http://cnie.org/NLE/CRSreports/10Jun/RL32948.pdf.

117. Diamond Shamrock Chemical Co., et al., 42 Fed. Reg. 43,772, 43,793 (Aug. 30, 1977); *see also* Maryn McKenna, *FDA Documents Show Agency Once Strongly Opposed Farm Antibiotic Overuse*, WIRED, Dec. 29, 2011, http://wired.com/wiredscience/2011/12/fda-documents-antibiotic-overuse.

that actually exhibit outward signs of disease, generally a small percentage. However, FDA delayed the hearings for over three decades, and finally withdrew the notices in 2011.[118] To many observers, this is one more example of the problematic influence of the meat industry over public policy.[119]

A 2012 ruling from the U.S. District Court for the Southern District of New York could finally spur action on the antibiotic issue. In *Natural Resources Defense Council. v. FDA*, the district court held that the FDA had unlawfully delayed hearings on the use of certain antibiotics in animal production.[120] The FDA, along with many public health organizations, has long taken the position that the overuse of antibiotics, like penicillin in livestock, poses a major health concern by creating the conditions for the development of antibiotic-resistant bacteria that could easily spread from livestock to humans through consumption. It remains to be seen exactly how FDA will respond to this ruling. What is clear is that the government is not taking adequate steps to protect public health when it comes to antibiotic use in CAFOs.

The government is, largely, either unwilling or unable to address the myriad problems associated with CAFOs. Limits on the scope of federal environmental regulation, lackluster enforcement efforts, and official feet-dragging are conspiring to expose Americans to arguably intolerable levels of risk. While government regulation is necessary and vital in so many aspects of modern life, we cannot simply sit idly by and wait for regulation to solve all of our problems. Considering that the government has been aware of many of the problems associated with animal food production for over a century and has nonetheless failed to take adequate action, a new approach is called for, one that harnesses the critical forces of market demand to unseat animal foods from their preeminent spot on the American menu.

V. USING THE NATIONAL SCHOOL LUNCH PROGRAM TO MAKE THE AMERICAN FOOD SYSTEM MORE SUSTAINABLE

The federal government can change its procurement strategies to encourage a more sustainable food supply. Specifically, the gov-

118. Penicillin and Tetracycline Used in Animal Feed, 76 Fed. Reg. 79,697, 76,701 (Dec. 22, 2011).

119. Jill Richardson, *Obama White House Appoints Former Monsanto Lobbyist to FDA*, DAILY KOS, (July 8, 2009, 4:30 AM), http://dailykos.com/story/2009/07/08/751167/-Obama-White-House-Appoints-Former-Monsanto-Lobbyist-to-FDA#; Jeffrey Smith, *You're Appointing* Who*? Please Obama, Say It's Not So!*, HUFFINGTON POST, (July 23, 2009, 3:17 PM), http://huffingtonpost.com/jeffrey-smith/youre-appointing-who-plea_b_243810.html.

120. 884 F. Supp.2d 127, 151 (S.D.N.Y. 2012).

ernment should continue and accelerate efforts to increase the purchase of animal-product alternatives for its procurement programs (that is, foods that do not rely on meat, milk, or eggs). The focus should be on those alternatives which have a substantially lesser environmental impact than meat from CAFOs. This Note argues that the government should focus initial efforts in this area on the National School Lunch Program. The School Lunch Program moves a lot of food, and a shift towards plant-based eating would have substantial benefits on the overall environment. The School Lunch Program also implicates childhood health and nutrition, topics of increasing importance in national dialogue and policy, and plant-based foods, which are demonstrably healthier than animal-based meals.

There are signs that the national taste for meat is diminishing, if slowly. According to USDA projections, meat consumption is on the decline in the United States.[121] And while only about 7% of Americans identify as "vegetarian" (abstaining from all meat, including fish and poultry, but still eating some dairy and eggs), younger generations are increasingly exploring the "meatless spectrum."[122] To some extent, rising commodity costs are playing a role, putting meat and other animal products out of reach of lower-income consumers.[123] Aside from financial considerations, though, many people are choosing to eat less meat for health, ethical, and environmental reasons.[124] Books and documentary films on the topic, not to mention a seemingly constant stream of undercover slaughterhouse exposés by animal-protection groups, are fueling the movement towards reduced meat consumption.[125] The livestock industry is finding that increased media attention on animal wel-

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121. *See* INTERAGENCY AGRIC. PROJECTIONS COMM., U.S. DEP'T OF AGRIC., LONG-TERM PROJECTIONS REPORT OCE-2012-1, USDA AGRICULTURAL PROJECTIONS TO 2021 (2012), *available at* http://usda.gov/oce/commodity/archive_projections/USDAAgriculturalProjections2021.pdf.

122. Steve Baragona, *As World Meat Consumption Grows, US Appetite Wanes*, VOICE OF AM. (Apr. 3, 2013), http://voanews.com/content/as_world_meat_consumption_grows_americas_appetite_wanes/1634222.html.

123. *See* RONALD TROSTLE ET AL., U.S. DEP'T OF AGRIC., OUTLOOK NO. WRS-1103, WHY HAVE FOOD COMMODITY PRICES RISEN AGAIN? (2011), *available at* http://ers.usda.gov/media/126752/wrs1103.pdf.

124. *See, e.g.*, Jolene Ketzenberger, *Meatless Meals Gain in Popularity for Budget, Health Reasons*, USA TODAY, Mar. 9, 2012, http://yourlife.usatoday.com/fitness-food/story/2012-03-10/Meatless-meals-gain-in-popularity-for-budget-health-reasons/53445804/1; *'Flexitarians' Driving Global Move Away From Meat Consumption: Study*, INDEP., Aug. 31, 2011, http://independent.co.uk/life-style/flexitarians-driving-global-move-away-from-meat-consumption-study-2346860.html.

125. *See, e.g.*, MICHAEL POLLAN, THE OMNIVORE'S DILEMMA: A NATURAL HISTORY OF FOUR MEALS (The Penguin Press 2006); FORKS OVER KNIVES (Monica Beach Media 2011); FOOD, INC. (Participant Media 2008); *Undercover Investigations: Exposing Animal Abuse*, MERCY FOR ANIMALS, http://mercyforanimals.org/investigations.aspx (last visited Feb. 8, 2014).

fare[126] and the environmental impacts of meat production[127] are having significant negative effects on meat demand. Rather than address the legitimate concerns of consumers and activists, the meat, dairy, and egg industry is instead cracking down on whistle-blowers by pushing for "ag-gag" laws that criminalize undercover investigations of CAFOs and other facilities.[128] These so called "ag-gag" laws have been roundly condemned, and serve as one more reason why consumers are increasingly wary of the CAFO system of production and the companies behind it.[129]

Meanwhile, major companies are paying attention to the shift towards meatless eating. Even traditionally meat-centric companies, like Burger King, now prominently feature meat-free meals like "Veggie Burgers" in advertisements alongside animal-based meals.[130] Meanwhile, the former CEO of McDonald's has a fundamental re-think of fast food in mind, with plans to roll out a healthy fast-food chain called Lyfe Kitchen, featuring a wide selection of plant-based/vegan dishes, and many other plant-based fast-food options.[131] Meanwhile, major companies are paying attention to the shift towards meatless eating. Also, despite popular misconceptions to the contrary, a plant-based diet can be cheaper than a diet based on animal products (including a "Mediterranean" diet consisting primarily of vegetables, whole grains, vegetable oils, fruits, beans, nuts, and bread).[132]

Even though meat consumption has decreased in the United States, it is growing around the globe, particularly in rapidly-modernizing countries like China, India, and Brazil. If we hope to provide sustainable protein sources for nine billion people or even a fraction of that total, we need to, as a practical matter, diversify

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126. *See* GLYNN T. TONSOR & NICOLE J. OLYNK, KAN. STATE UNIV. DEP'T OF AGRIC. ECON., PUB. NO. MF-2951, U.S. MEAT DEMAND: THE INFLUENCE OF ANIMAL WELFARE MEDIA COVERAGE (2010), *available at* http://agmanager.info/livestock/marketing/animalwelfare/MF2951.pdf.

127. *See* Rick McCarty, *Consumers Say They're Reducing Beef Consumption to Lessen Greenhouse Gas Emissions*, BEEF ISSUES Q. (2010), http://beefissuesquarterly.com/Consumerssaytheyrereducingbeefconsumptiontolessengreenhousegasemissions.aspx.

128. Richard A. Oppel, Jr., *Taping of Farm Cruelty Is Becoming the Crime*, N.Y. TIMES, Apr. 6, 2013, http://nytimes.com/2013/04/07/us/taping-of-farm-cruelty-is-becoming-the-crime.html.

129. Editorial, *Eating With Our Eyes Closed*, N.Y. TIMES, Apr. 9, 2013, http://nytimes.com/2013/04/10/opinion/eating-with-our-eyes-closed.html.

130. BURGER KING VEGGIE BURGER, BURGER KING http://bk.com/en/us/menu-nutrition/lunch-and-dinner-menu-202/fire-grilled-burgers-220/bk-veggie-burger-m122/index.html (last visited Feb. 8, 2014).

131. Mark Bittman, *Yes, Healthful Fast Food Is Possible. But Edible?*, N.Y. TIMES, Apr. 3, 2013, http://nytimes.com/2013/04/07/magazine/yes-healthful-fast-food-is-possible-butedible.html?_r=1&.

132. *Yumi Media Explores the Financial Benefits of Plant-Based, Mediterranean Diet*, PR WEB (Apr. 5, 2013), http://prweb.com/releases/prweb2013/4/prweb10597236.htm.

into plant-based/cultured protein sources.[133] Private industry is already moving down this path. The government can and should encourage this trend, and embrace the health and environmental benefits it offers. Not only will this produce positive gains for our shared environment, it will put American businesses in a strong position to take advantage of the trend towards plant-based food production and establish themselves as leaders in the international market.

For some, any involvement of the government into people's diets is a sensitive topic. Some conservative critics specifically decry attempts to revamp the School Lunch Program as wasteful, "Nanny State" politics.[134] However, this discussion should not be about the government *discouraging* meat consumption; instead, it should be about taking a hard look at the environmental and health impacts of the American diet. Then, the government should craft sensible policies that allow consumers to choose while also encouraging the development of sustainable food sources. As the costs of intensive animal agriculture become painfully obvious and the slow process of internalizing these costs continues, meat will likely become more expensive. This will surely be a political battleground for many years to come. In the meantime, the government would do well to ease the problem by encouraging the consumption of healthy alternatives to animal products. The public schools are a great place to start.

A. Why the School Lunch Program?

The government is a big customer; it has a wide variety of procurement programs that it could use to support sustainability in the food system. Among all these programs, the School Lunch Program presents a unique opportunity. The School Lunch Program is

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133. Michael Hanlon, *Fake Meat: Is Science Fiction on the Verge of Becoming Fact?,* GUARDIAN (June 22, 2012), http://theguardian.com/science/2012/jun/22/fake-meat-scientific-breakthroughs-research ("Eating meat is bad for the environment, of that there is no doubt. And the moral arguments against killing animals are compelling. Humans currently slaughter about 1,600 mammals and birds every second for food – that is half a trillion lives a year, plus trillions more fish, crustaceans and molluscs [*sic*]. The total biomass of all the world's livestock is almost exactly twice that of humanity itself. And while crops that feed people cover just 4% of the Earth's usable surface (land that is not covered by ice or water, or is bare rock), animal pastureland accounts for a full 30%. Our meat, in other words, weighs twice as much as we do and takes seven times as much land to grow. . . . And we are going to have to feed a lot more people in the coming decades. The world's population stands at a little over 7 [billion]; by 2060 this will have risen to perhaps 9.5 [billion], and that is a fairly optimistic scenario. Not only are there more and more of us, but we are eating more and more meat. Demand for it is expected to double by 2050. . . .").

134. *See, e.g.*, *Michelle Obama's School Lunch Menu Forces Kids to Find Back-Alley Meals*, RUSH LIMBAUGH SHOW (Dec. 20, 2011), http://www.rushlimbaugh.com/daily/2011/12/20/michelle_obama_s_school_lunch_menu_forces_kids_to_find_back_alley_meals.

a vital source of nutrition for many children and the health of the country's children is a major concern. Unfortunately, childhood obesity is a public health problem of increasingly dire proportions. According to the Centers for Disease Control and Prevention, the percentage of children in the United States aged six to eleven who were obese increased from 7% in 1980 to nearly 20% in 2008.[135] This extra weight can create severe health consequences for children as they age. Obese children are more at risk for serious adult health problems like heart disease, type two diabetes, stroke, several types of cancer, and osteoarthritis.[136] The medical-care costs of obesity in the United States are staggering. In 2008, these costs totaled to about $147 billion annually.[137] In addition, researchers isolated the total direct medical costs attributed to meat consumption as being anywhere between 28.6 and 61.4 billion dollars; and these result were from 1992.[138] Moreover, school lunches have been directly implicated in the growth of childhood obesity rates.[139]

There is already political momentum behind improving childhood nutrition through the School Lunch Program. Several prominent political figures, most notably First Lady Michelle Obama, have joined the movement to improve school lunches.[140] Additionally, nationwide programs, like "Meatless Monday," are catching on in schools, hospitals, and other institutions, further pushing people along the path to healthier eating. One elementary school in Queens, New York, became the first public school in the country to adopt an entirely vegetarian menu in its cafeteria.[141] In Los Angeles, every public school has adopted Meatless Monday per a reso-

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135. *Childhood Obesity Facts*, CDC, http://cdc.gov/healthyyouth/obesity/facts.htm (last updated July 10, 2013).

136. DAVID SATCHER, U.S. DEP'T OF HEALTH & HUMAN SERVS., THE SURGEON GENERAL'S VISION FOR A HEALTHY AND FIT NATION (2010), *available at* http://ncbi.nlm.nih.gov/books/NBK44656/#background.s4.

137. Eric A. Finkelstein et al., *Annual Medical Spending Attributable to Obesity: Payer- and Service-Specific Estimates*, HEALTH AFF., (2009), *available at* http://dhss.alaska.gov/ahcc/Documents/meetings/200908/pdf/obesity.pdf.

138. Neal D. Barnard et al., *The Medical Costs Attributable to Meat Consumption*, 24 PREVENTATIVE MED. 646, 646 (1995), *available at* http://birdflubook.com/resources/Barnard_1995_PM_24_646.pdf.

139. *See* Daniel L. Millimet et al., *School Nutrition Programs and the Incidence of Childhood Obesity*, 45 J. HUM. RESOURCES 640, 642 (2009), *available at* http://gsu.edu/~ecort/MTH2010.pdf; *see also* Roni Caryn Rabin, *Childhood: Obesity and School Lunches*, N.Y. TIMES, Feb. 8, 2011, at D6, *available at* http://nytimes.com/2011/02/08/health/research/08childhood.html?_r=0.

140. *USDA Unveils Historic Improvements to Meals Served in America's Schools: New Standards Will Improve the Health and Wellbeing of 32 Million Kids Nationwide*, USDA (Jan. 25, 2012), http://usda.gov/wps/portal/usda/usdahome?contentid=2012/01/0023.xml&contentidonly=true.

141. *Queens Elementary School Adopts All-Vegetarian Menu*, NBC 4 N.Y.C. (Apr. 30, 2013), http://nbcnewyork.com/news/local/PS-24-Flushing-Queens-Elementary-School-All-Vegetarian-Menu--205458481.html.

lution of the City Council.[142] Likewise, in Baltimore, meatless options are offered each Monday in every school in the city as a way to improve student health, with an added focus on healthy foods that help boost academic performance.[143]

By adjusting the guidelines, reimbursement structure, and compliance model of the School Lunch Program to increase the use of meat alternatives, the government can accomplish important sustainability goals while also improving the health of our nation's children. Further, teaching kids good eating habits today will have substantial positive health effects long into the future. Exposing schoolchildren to healthy and delicious meat alternatives early on in life could substantially reduce meat consumption and help make the American food system more sustainable over the long-term. Finally, by incorporating non-animal foods into the School Lunch Program, the government could be an active force in encouraging the development of the plant-based food industry, which is already getting a lot of attention from investors and philanthropists who recognize both the compelling health and environmental need for these alternatives, as well as the substantial amounts of money to be made in the process.

B. Overview of the National School Lunch Program

The National School Lunch Program was originally created by the Richard B. Russell National School Lunch Act in 1946.[144] The School Lunch Program is available to over fifty million children each school day, many for free or at reduced-cost: "An average of 31.7 million children per day ate a reimbursable lunch in fiscal year . . . 2010." Schools that participate in the School Lunch Program pay up front for much of the food they serve. These schools then receive federal reimbursement for lunches that meet program requirements. In addition, schools receive certain "USDA Foods" (donated commodities) for free. Typically, these foods vary from season to season and a lot depends on which commodities are in surplus for that year. In exchange for reimbursement and USDA Foods, "schools serve meals at no cost or at a reduced price to in-

142. Melissa Palmer, *Los Angeles City Council Embraces "Meatless Mondays",* NBC S. CAL. (Nov. 9, 2012), http://nbclosangeles.com/news/local/Los-Angeles-City-Council-Embraces-Meatless-Mondays-Vegetarian-178244541.html.

143. Laura Vozzella, *Eat Hearty, Local: 'Meatless Monday,' Aimed At Delivering Healthier Food For Less, Comes To City Schools*, BALT. SUN, Sept. 24, 2009, http://articles.baltimoresun.com/2009-09-24/news/0909230124_1_schools-in-maryland-city-schools-school-lunches.

144. Pub. L. No. 79-396, § 2, 60 Stat. 230, 230 (1946) (codified as amended at 42 U.S.C. §§ 1751-1763 (2006)).

come-eligible children." In the 2010 fiscal year, federal meal reimbursements and USDA Foods amounted to $13.7 billion.[145]

The National School Lunch Act, as amended, has several important health-related components. For example, the Act directs the Secretary of Agriculture to "purchase the widest variety of healthful foods that reflect the most recent Dietary Guidelines for Americans."[146] As mandated by Congress, the Secretaries of Agriculture and Health and Human Services jointly publish the "Dietary Guidelines for Americans" (DGA) every five years.[147] In January 2012, the Food and Nutrition Service of the USDA promulgated a final rule entitled "Nutrition Standards in the National School Lunch and School Breakfast Programs."[148] These standards, required by the "Healthy and Hunger-Free Kids Act of 2010,"[149] set forth new guidelines for the School Lunch Program, effective March 26, 2012. The USDA expects the new guidelines will add $3.2 billion to school meal costs over five years. The new guidelines put an emphasis on expanding whole grains, fruits, and vegetables in the School Lunch Program, in line with the latest DGA.[150]

C. Increased Utilization of Meat Alternatives

Meat-free meals are much easier on the environment than meals containing meat and dairy.[151] Plant-based and cultured foods also represent a vastly more efficient use of resources than animal-based foods. Three to eight pounds of grain are needed to produce one pound of farmed-animal body weight. The majority of the animal body weight is water and by-product, meaning the actual conversion of grain to edible meat is even less efficient.[152] Plant-based and cultured meat production may play dual roles in satisfying the future consumer meat demand while staving off global hunger and civil unrest in the most economically vulnerable

145. Nutrition Standards in the National School Lunch and School Breakfast Programs, 77 Fed. Reg. 4088 4109 (Jan. 26, 2012) (codified at 7 C.F.R. §§ 210, 220 (2012)).

146. 42 U.S.C. § 1758(a)(4)(C)(iii) (2006).

147. 7 U.S.C. § 5341 (2012).

148. 77 Fed. Reg. 4088-4167.

149. Pub. L. No. 111-296, 124 Stat. 3183 (2010) (codified in scattered sections of 42, 7 U.S.C.).

150. Nutrition Standards in the National School Lunch and School Breakfast Programs, 77 Fed. Reg. at 4088.

151. Harold J. Marlow et al., *Diet and the Environment: Does What You Eat Matter?*, 89 AM. J. CLINICAL NUTRITION 1699S, 1701S-02S (2009), *available at* http://ajcn.nutrition.org/content/89/5/1699S.full.pdf+html; Lucas Reijnders & Sam Soret, *Quantification of the Environmental Impact of Different Dietary Protein Choices*, 78 AM. J. CLINICAL NUTRITION 664S, 667S-68S (2003), *available at* http://ajcn.nutrition.org/content/78/3/664S.full.pdf+html.

152. Marlow, *supra* note 151, at 1701S.

populations who depend upon grain products for their dietary sustenance.

Meat-free meals also offer substantial health benefits. The government already recognizes the benefits of a plant-based diet. In June 2011, USDA replaced the iconic Food Guide Pyramid with a new guideline called "MyPlate."[153] Based on nutritional science, MyPlate recommends everyone eat a greater proportion of fruits, vegetables, and whole grains; and, significantly, it refers to "protein" generically instead of specifically suggesting meat as a protein source—a substantial departure from previous nutritional guidance.[154] The American Dietetic Association (ADA) reports that appropriately planned vegetarian and vegan diets are healthy and nutritionally adequate. Furthermore, the ADA has found that vegetarians are at lower risk for type two diabetes, high cholesterol, high blood pressure, and certain cancers as compared to non-vegetarians.[155]

As noted above, nationwide programs like "Meatless Monday" are catching on in schools, hospitals, and other institutions. A number of school districts have already had success introducing vegetarian options to their lunch offerings, with a good reception from students.[156] There is a growing wealth of resources available to school meal planners and district purchasers looking to expand meat-free offerings in their schools.[157] There are also efforts to increase the use of organic and local produce in the schools, which offer additional environmental and health benefits.[158]

As consumers learn more about the meat and dairy industry, the interest in meat and dairy alternatives has grown significant-

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153. CHOOSE MY PLATE, http://www.choosemyplate.gov (last visited Feb. 8, 2014).

154. *Id*. The USDA also publishes "Tips for Vegetarians," and states that "[v]egetarian diets can meet all the recommendations for nutrients." *Tips for Vegetarians*, USDA, http://choosemyplate.gov/healthy-eating-tips/tips-for-vegetarian.html (last visited Feb. 8, 2014).

155. Winston J. Craig & Ann Reed Mangels, *Position of the American Dietetic Association: Vegetarian Diets*, 109 J. AM. DIETIC ASS'N. 1266, 1267 (2009), *available at* http://vrg.org/nutrition/2009_ADA_position_paper.pdf.

156. *See, e.g.*, *Queens Elementary School Adopts All-Vegetarian Menu*, NBC N.Y.C. (Apr. 30, 2013, 5:17 PM), http://nbcnewyork.com/news/local/PS-24-Flushing-Queens-Elementary-School-All-Vegetarian-Menu--205458481.html; Melissa Palmer, *Los Angeles City Council Embraces "Meatless Mondays"*, NBC S. CAL. (Nov. 9, 2012, 11:26 PM), http://www.nbclosangeles.com/news/local/Los-Angeles-City-Council-Embraces-Meatless-Mondays-Vegetarian-178244541.html; Jane Black, *Baltimore's Head of School Lunches Is Transforming the City's Program*, WASH. POST, May 6, 2009, http://washingtonpost.com/wp-dyn/content/article/2009/05/05/AR2009050500876.html.

157. PHYSICIANS COMM. FOR RESPONSIBLE MED., VEGETARIAN OPTIONS FOR SCHOOL LUNCH PROGRAMS, (2008), http://www.pcrm.org/pdfs/health/School_Lunch_Guide.pdf.

158. FOOD & NUTRITION SERV., U.S. DEP'T OF AGRIC., PUB. NO. FNS-316, SMALL FARMS/SCHOOL MEALS INITIATIVE: TOWN HALL MEETINGS—A STEP-BY-STEP GUIDE ON HOW TO BRING SMALL FARMS AND LOCAL SCHOOLS TOGETHER (2000), *available at* http://www.fns.usda.gov/sites/default/files/small.pdf.

ly.[159] There are a growing number of businesses catering to the demand for meat alternatives, and in recent years the number of meat-free options has grown significantly.[160] Visibility in the marketplace alongside familiar animal-based foods is making plant-based foods more competitive, and making the meat and dairy industry nervous.[161] In addition to making the food system more sustainable, the inclusion of more meat alternatives in the School Lunch Program presents a substantial business opportunity for those companies that are ready to meet the demand.

Members of Congress have already made attempts to get more meat-alternatives in school lunches. The Healthy School Meals Act of 2010 would have directed the Secretary to institute pilot programs to provide plant-based protein options for the School Lunch Program.[162] The bill did not pass, but it demonstrates the interest in expanding the use of meat alternatives in school lunches. Those interested in passing this kind of legislation would help the cause by incorporating arguments about the environmental benefits of meat alternatives in addition to health-based arguments. A shift toward a plant-based, cultured diet will lead to substantial economic benefit in the long-term, including negating many as-of-yet uncaptured externalities such as wastewater pollution, carbon emissions, antibiotic-resistant bacteria infections, and other risk factors.

D. Putting Conditions on USDA Purchases to Enhance Sustainability

The meat in the School Lunch Program is already subject to a number of requirements under federal law. For instance, there are several laws and regulations that apply to federally-inspected slaughterhouses. The Humane Methods of Slaughter Act, for one, requires that certain animals be "rendered insensible to pain" before being slaughtered.[163] There are also a number of laws specifi-

159. *See* Tiffany Hsu, *More Vegans, Vegetarians Fuel Meatless Market. Soy Burger Anyone?*, L.A. TIMES, Mar. 20, 2012, http://www.latimes.com/business/money/la-fi-mo-meatless-vegans-vegetarians-20120320,0,3945988.story.

160. *See* Caryn Ginsberg, *The Market for Vegetarian Foods*, VEGETARIAN RESOURCE GROUP, http://vrg.org/nutshell/market.htm#market (last visited Feb. 8, 2014). *See also* VEGETARIAN MEANS BUSINESS, http://vegetarianmeansbusiness.com (last visited Feb. 8, 2014).

161. *See* TIRTHA DHAR & JEREMY D. FOLTZ, IS SOY MILK? THE ECONOMICS OF THE SOY MILK MARKET 1 (2005), *available at* http://aae.wisc.edu/jdfoltz/Is%20Soy%20Milk.pdf. The dairy industry fought the placement of soy, almond, and other dairy-free milks in cold shelves, arguing they do not require refrigeration; increasingly, supermarkets and other retailers are displaying animal- and plant-based products side-by-side.

162. H.R. 4870, 111th Cong. (2010).

163. 7 U.S.C. § 1902 (2012).

cally directed at animal health and the cleanliness of meat.[164] These laws, and regulations promulgated under them, create a floor for the School Lunch Program. However, the record of enforcement of these laws is spotty at best.[165] Additionally, it has been reported that the standards utilized by the USDA for purchasing meat for school lunches are lower than those used by most fast-food restaurants.[166] Of further concern from the sustainability standpoint is the fact that there are currently no standards in place under the School Lunch Program that address the environmental risks and impacts of meat production.

Notwithstanding the requirements for meat destined for school lunches, there have been documented cases where these standards are not upheld and the health of school children was put at serious risk. In 2008, an undercover investigation by the Humane Society of the United States (HSUS) at the Hallmark slaughter facility in Chino, California, revealed that workers there were using forklifts and other methods to force "non-ambulatory" cattle onto the slaughter line.[167] Non-ambulatory cattle, also known as "downed cattle," are those animals that are too sick to move or are otherwise unable to stand.[168] These cattle are statistically much likelier to be afflicted with diseases like Mad Cow Disease.[169] These animals are generally allowed to be slaughtered and enter the food supply, but must go through additional post-mortem inspection over and above the standard for ambulatory animals since they do pose a higher risk of contamination.[170] Many of the animals being slaughtered at the Hallmark facility were destined for school lunches through the USDA commodity program. The investigation led to the largest recall of beef in American history (143 million pounds in total) and sparked outrage among parents of school children and many others, who were justifiably upset that the government allowed such blatant and dangerous violations of federal

164. *See, e.g.*, Animal Health Protection Act, 7 U.S.C. §§ 8301-8320 (2012); Meat Inspection Act, 21 U.S.C. §§ 601-695 (2012); Poultry Products Inspection Act, 21 U.S.C. §§ 451-472 (2012).

165. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-203, HUMANE METHODS OF SLAUGHTER ACT: ACTIONS ARE NEEDED TO STRENGTHEN ENFORCEMENT (2010), *available at* http://gao.gov/new.items/d10203.pdf.

166. *See* Peter Eisler et al., *Fast-food Standards for Meat Top Those for School Lunches*, USA TODAY, Dec. 9, 2009, http://usatoday.com/news/education/2009-12-08-school-lunch-standards_N.htm.

167. *Rampant Animal Cruelty at California Slaughter Plant*, HUMANE SOC'Y OF THE U.S. (Jan. 30, 2008), http://humanesociety.org/news/news/2008/01/undercover_investigation_013008.html.

168. *Id.*

169. *Id.*

170. *See* 9 C.F.R. § 309.

law to occur under its watch.[171] The fact that a nongovernmental animal advocacy group discovered this, and not the government, raises serious concerns about the ability of regulators to protect the nation's schoolchildren from potentially dangerous meat. Furthermore, the fact that the animal food industry, or at least segments thereof, wish to make such investigations illegal should set off alarms for all consumers of American animal products.

The School Lunch Program is politically vulnerable; any indication that the government is feeding schoolchildren substandard food will understandably be met with public outcry from parents and other concerned individuals. In 2012, it came to light that schoolchildren, among countless other Americans, were routinely being fed beef containing "lean finely textured beef," known to some as "pink slime." This product is produced by removing the scraps of muscle and connective tissue that remain on cows' bones after butchering, combining them together, and then treating the mass with ammonium hydroxide to kill bacteria like *E. coli*. The product is then used as filler in several common beef products, including ground beef. The meat industry maintains that the product is safe,[172] but the story caused uproar among many parents and childhood health advocates.[173] USDA has stated that, despite the public outcry over pink slime, it will continue to supply this product to schools through the School Lunch Program, though schools are able to opt out if they so choose.[174]

The USDA likely lacks the authority right now to put strictly environmental criteria on its meat purchases for the School Lunch Program. However, it is empowered, and is in fact directed, to put health-based criteria in place. As it stands, food that is healthier for children will also generally be easier on the environment. In this way, the USDA can address both issues simultaneously without even necessarily speaking to the environment. However, for the long term, the government should empower the USDA to attach environmental criteria to the School Lunch Program. This will not only facilitate the use of meat alternatives in the schools, but could also encourage meat producers to adopt more sustainable

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171. FOOD SAFETY & INSPECTION SERV., U.S. DEP'T OF AGRIC., RECALL PRESS RELEASE: CALIFORNIA FIRM RECALLS BEEF PRODUCTS DERIVED FROM NON-AMBULATORY CATTLE WITHOUT THE BENEFIT OF PROPER INSPECTION, (2008), *available at* http://www.fsis.usda.gov/shared/PDF/Recall_005-2008_Release.pdf.

172. *See Facts About Lean Finely Textured Beef*, MEATSAFETY.ORG, http://meatsafety.org/ht/d/sp/i/76540/pid/76540 (last visited Feb. 8, 2014).

173. *See* Kathey Matheson, *'Pink Slime' to be Dropped from Some School Lunches*, USA TODAY, Mar. 16, 2012, http://www.usatoday.com/news/health/story/health/story/2012-03-16/Pink-slime-to -be-dropped-from-some-school-lunches/53564888/1.

174. LAURA CASTRO, U.S. DEP'T OF AGRIC., POLICY NO. FD-121, DONATED FOODS POSSIBLY CONTAINING LEAN FINELY TEXTURED (LFT) BEEF (2012), *available at* http://www.fns.usda.gov/fdd/policymemo/pmfd121_NSLP_LFT_Beef.pdf.

practices in order to remain viable suppliers to the government, which is no small customer.

E. Business Opportunities for Producers of Plant-Based/Cultured Meat Alternatives

Meat and dairy alternatives are big business, and business is growing. For example, sales of soy-based meat in the United States "totaled $1.9 billion in 2007, up from $1.7 billion in 2005."[175] In comparison, sales of meat products in the United States were over "$100 billion in 2007," that there is plenty of room for growth in sales of meat and dairy analogs.[176] There are also a growing number of companies that specialize in meat alternatives and "meat analogs,"[177] and many large corporations market meat and dairy alternatives alongside their menu of traditional animal-derived products.[178] There are also a growing number of restaurants catering to the demand for meat alternatives,[179] and many fast food restaurants now carry veggie burgers and other meat alternatives.[180] Advocacy groups are also busy at work trying to convince other major chains, like Subway, to carry more vegetarian options.[181] As commodity costs rise, many are finding that a plant-based diet including a "Mediterranean diet" of oils, whole grains, vegetables, fruits, beans and other plant-based foods,[182] can be cheaper than a diet based on animal products.

While animal food production has remained relatively stagnant over the last hundred years (despite genetic modification, concentration in CAFOs, and a shift to grain over grass and other vegetation), there is tremendous room for growth and innovation in the realm of animal-free protein production. One of the most exciting new technologies, and one taken straight from the pages of science

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175. GOODLAND & ANHANG, *supra* note 61, at 16.

176. *Id.* at 16-17.

177. *See Why Meat Alternatives?*, NEW HARVEST, http://new-harvest.org/meat-substitutes (last visited Feb. 8, 2014). Some of the largest marketers of exclusively vegetarian alternatives include Turtle Island Foods.

178. Prominent examples of large corporations that market meat and dairy alternatives include Kellogg's (Gardenburger), Sysco Corporation, Kraft Foods, and Archer Daniels Midland. *See* Bryan Salvage, *Are Meat Analogs in Industry's Future?*, (Mar. 7, 2012), MEATPOULTRY.COM http://meatpoultry.com/Writers/Bryan%20Salvage/Are%20meat%20analogs%20in%20industrys%20future.aspx.

179. For an extensive listing of restaurants offering meat-free options, see HAPPY COW, http://www.happycow.net (last visited Feb. 8, 2014).

180. Jeanne Yacoubou, *Veggie Options at Quick-Service Restaurant Chains*, VEGETARIAN RESOURCE GROUP, http://vrg.org/journal/vj2008issue2/veggieRestaurantChains.htm (last visited Feb. 8, 2014).

181. WE LOVE SUBWAY AND WANT TO MAKE IT BETTER, http://welovesubway.com (last visited Feb. 8, 2014).

182. *Yumi Media Explores the Financial Benefits of Plant-Based, Mediterranean Diet*, PR WEB (Apr. 5, 2013), http://www.prweb.com/releases/2013/4/prweb10597236.htm.

fiction, is "cultured meat." Cultured meat, called such because it is grown in a cell culture instead of in an actual animal, is perhaps best understood as "dietary nutrition cultivated from animal stem cells and harvested independently of the growth and slaughter of animals."[183] In the summer of 2013, a British scientist offered to the world the first lab-grown burger, constructed using stem cells.[184] At about $325,000, the lab-burger isn't cheap. And while there are a number of technical details[185] that need to be figured out (including how to develop a lattice structure to encourage cells to grow into familiar, yet complex, shapes like steaks), the interest, and need, is there. Venture capitalists are already showing a lot of interest in cultured meat.[186] In the Netherlands, researchers have been busy working on cultured meat for decades, providing a framework for future research including, eventually, commercial application.[187] Far from just a novel science experiment, these researchers are tooling up for large-scale industrial production.[188] The environmental impacts of this meat are projected to be vastly smaller than those related with livestock production.[189] As for regulating the production and sale of cultured meat, a number of analyses have already been done, concluding that FDA is the most likely authority to be responsible for regulating commercial cultured meat.[190] Other analyses have projected that cultured meat could go a long way toward nearly eliminating carbon emissions,

183. Kris Notaro, *The Crusade for a Cultured Alternative to Animal Meat: An Interview with Nicholas Genovese, PhD, PETA*, IEET (Oct. 5, 2011), *available at* http://ieet.org/index.php/IEET/print/4924 ("When produced, cultured meat will be cultivated under aseptic conditions from a self-renewing animal stem cell 'seed stock' source into an edible tissue. The first cultured meat products available to consumers will most likely lack the complex structure of whole meat cuts and be used as ground meat. A long-term goal for cultured meat is to produce whole tissues such as muscle, liver and fat from poultry, swine and cattle. Alternatively, artesian meats of novel species stem cell composition or combinations thereof could be cultivated according to consumer preference. To the extent cultured meat is produced in a manner free from animal-derived components, it will be a wholesome, nutritious, delicious and authentic meat distinct from conventional meat products harvested from slaughtered animals.").

184. Henry Fountain, *Building a $325,000 Burger*, N.Y. TIMES, May 12, 2013, http://nytimes.com/2013/05/14/science/engineering-the-325000-in-vitro-burger.html?pagewanted=all&_r=0.

185. Mark J. Post, *Cultured Meat From Stem Cells: Challenges and Prospects*, 92 MEAT SCI. 297 (2012), *available at* http://new-harvest.org/wp-content/uploads/2013/03/post_2012_cultured_meat_from_stem_cells_challenges_and_prospects.pdf.

186. Jenna Wortham & Claire Cain Miller, *Venture Capitalists Are Making Bigger Bets on Food Start-Ups*, N.Y. TIMES, Apr. 28, 2013, http://nytimes.com/2013/04/29/business/venture-capitalists-are-making-bigger-bets-on-food-start-ups.html?pagewanted=all&_r=1&.

187. Fountain, *supra* note 184.

188. *See* Industrial Production of Meat Using Cell Culture Methods, U.S. Patent No. 7,270,829 B2 (filed May 9, 2005) (issued Sept. 18, 2007).

189. Hanna L. Tuomisto & M. Joost Teixeira de Mattos, *Environmental Impacts of Cultured Meat Production*, 45 ENVT'L SCI. & TECH. 6117, 6117-23 (2011).

190. *See* Zachary Schneider, *In Vitro Meat: Space Travel, Cannibalism, and Federal Regulation*, 50 HOUS. L. REV. 991, 996 (2013).

wastewater runoff, and other environmental hazards associated with animal protein production.[191] A study from Harvard projected that a shift to cultured meat would produce substantial environmental, health, and ethical benefits.[192] Cultured meat has received increased attention as the environmental and health costs of intensively-raised farmed animal production have come to light and has been projected to fundamentally change the way we consume meat.[193]

The concentration of the American livestock industry in a handful of corporations has contributed to a number of environmental problems.[194] On the bright side, those corporations that rule the livestock industry are not inextricably tied to animal production. Rather, these companies will produce what consumers want and increasingly are responding to consumer demands for meat and dairy alternatives.[195] Some large corporations have been busy buying up producers of meat alternatives. While this has been met with criticism from some, these companies have shown willingness to respond to consumer concerns. For example, Kraft purchased Boca, producer of the popular meat-free Boca Burger, in 2000. In 2009, animal rights groups campaigned against the use of eggs from CAFO battery cages in Boca Burgers and, just two months after the start of the campaign, Kraft announced it was removing eggs from all Boca products.[196] Over the next decade, as research continues and costs continue to come down, consumers can expect to see cultured meat, dairy-free cheese, and a variety of other plant-based and animal-free food products on store shelves alongside traditional animal-based products.

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191. Patrick D. Hopkins & Austin Dacey, *Vegetarian Meat: Could Technology Save Animals and Satisfy Meat Eaters?*, 21 J. AGRIC. ENVTL. ETHICS 579, 585 (2008), *available at* http://new-harvest.org/wp-content/uploads/2013/03/hopkins_2009_jaee_21_579.pdf (predicting that in vitro meat production could help eliminate environmental harm caused by raising livestock).

192. Matthew Lincicum, Synthetic Meat: An Ethical, Environmental, and Regulatory Analysis (Mar. 29, 2010) (unpublished student paper, Harvard Law School) (on file with Harvard Law School), *available at* http://nrs.harvard.edu/urn-3:HUL.instRepos:8789567.

193. *See, e.g.*, Bryan Walsh, *10 Ideas That Make A Difference*, TIME, Mar. 13, 2013, *available at* http://ideas.time.com/2013/03/14/10-big-ideas. *See also* Hank Hyena, *Eight Ways In-Vitro Meat will Change Our Lives*, H PLUS, Nov. 17, 2009, *available at* http://hplusmagazine.com/2009/11/17/eight-ways-vitro-meat-will-change-our-lives/.

194. MACDONALD & MCBRIDE, *supra* note 18, at 5-13 (2009).

195. For example, agricultural industry giant Cargill has developed a dairy-free cheese alternative called Lygomme. Among the benefits of the product, Cargill cites price stability, increased healthfulness, and suitability for vegan or lactose-intolerant consumers. Press release, Cargill, Cargill Creates Breakthrough for Dairy-Free Analogue Cheese Prod. with Lygomme ACH Optimum Functional Sys. (Sept. 17, 2009) (on file with author), *available at* http://www.cargill.com/news/releases/2009/NA3020258.jsp.

196. *See Campaign Victory: BOCA to Stop Using Eggs by End of 2009!,* BOCA EGG FACTS CAMPAIGN, http://boca-egg-facts.com (last visited Feb. 8, 2014).

For companies marketing meat alternatives, it is important to emphasize the message that "[a]nalogs are less expensive, less wasteful, easier to cook, and healthier than livestock products."[197] Children in particular are susceptible to marketing, a fact that has traditionally been taken advantage of by marketers of meat and dairy products (in addition to a variety of other advertisers). Producers of meat analogs should direct advertising towards children in order to expand their customer base while also supporting health, nutrition, and environmental sustainability.[198] Most companies have spent less time and money marketing meat alternatives as easier on the environment, but they should do this more in the future as consumers become increasingly aware of the environmental costs of meat and dairy production.

Additionally, companies specializing in meat and dairy alternatives are likely to find welcome sources of investment from investors seeking to slow climate change. Nowadays, most "green" investments are focused on reducing GHG emissions in the energy and transportation sectors. These investments, important as they are, will require massive long-term capital investment. Compared with investments in green power and transportation projects, analog meat production can be implemented or up-scaled relatively quickly, as many of the production and input streams are already in place. Furthermore, the payoffs in terms of GHG emissions mitigated could be just as substantial, if not more so, as those accruing from investments in green energy and transportation.[199]

Including more meat and dairy alternatives in the School Lunch Program would encourage investment in those companies producing alternatives for two major reasons: one, the School Lunch Program itself represents a substantial market and, two, exposing kids to meat alternatives at a young age will engrain the habit of consuming these products, creating a reliable long-term market for them. There is great potential for producers of animal-product alternatives to market directly to the USDA. And while some are concerned about giant corporations having too much sway over the market for meat alternatives, these companies have shown willingness to address the concerns of consumers. Furthermore, these large companies have the ability to market meat alternatives far and wide, putting them in an ideal position to provide the large quantity of meat alternatives that the USDA would need to supply the School Lunch Program. The primary goal of the School Lunch Program should be to provide schoolchildren with

197. GOODLAND & ANHANG, *supra* note 60, at 17.
198. *Id.*
199. *Id.* at 18.

safe and nutritious food. But there is no reason why the program should not also be used as a springboard for encouraging the consumption of meat alternatives that are better for body and planet, and that could help put American businesses in the driver's seat of revolutionary (and lucrative) food technologies.

F. Potential Problems with the School Lunch Program Approach

Despite efforts to make school lunches more wholesome, there continue to be many setbacks, and there is still a lot of work to be done. One issue is industry capture; some critics argue that the USDA is too beholden to corporate interests, citing pink slime as the most recent example. It is also problematic that the agricultural lobby has so much political sway; any perceived attempt to take revenue away from the big players by reducing government purchases of meat will surely be met with resistance. One way to deal with this is by encouraging these large companies to produce healthy meat analogs as a complement to their meat businesses. Several companies are already doing this and could respond quickly to an increase in demand for these products. Another problem is that the USDA reportedly does not always do an adequate job of ensuring that public schools are complying with the federal nutrition guidelines. In order for any conditions to contribute to sustainability, there will have to be more emphasis placed on ensuring that schools are actually complying with the terms of the School Lunch Program. Fortunately, local school districts are showing far more initiative and are not waiting for the federal government. The USDA is aware of the challenges of introducing healthier foods into school lunches, and urges creativity on the local level,[200] as demonstrated in the Baltimore public schools.[201] This focus on state- and local-level initiatives ought to be encouraged—there is no one-size-fits-all approach.

Additionally, a major concern of the USDA, school districts, and other program administrators is "plate waste"; if meat alternatives are not presented in an appetizing way, many students will reject these "healthier" foods in the cafeteria and, instead, eat

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200. CYNTHIA LONG, U.S. DEP'T OF AGRIC., CODE SP 26-2013, EXTENDING FLEXIBILITY IN THE MEAT/MEAT ALTERNATE AND GRAINS MAXIMUMS FOR SCHOOL YEAR 2013-14 (2013), *available at* http://www.fns.usda.gov/cnd/governance/Policy-Memos/2013/SP26-2013os.pdf.

201. "[P]ublic school food czar" Tony Geraci, who pushed through Meatless Monday in all Baltimore schools and is also pushing for locally-grown and organic produce, encourages experimentation and creativity in the cafeteria to get kids to try—and enjoy— new foods. *See* Jane Black, *supra* note 156; *The Movement Goes Global*, MEATLESS MONDAY, June 21, 2009, *available at* http://meatlessmonday.com/articles/the-movement-goes-global.

junk food or nothing at all.[202] For this reason, the government should institute pilot programs to determine which meat alternatives are the most palatable for students. In addition, meat alternatives should be phased in over time and offered as a choice for students, rather than a compulsion. To help encourage consumption, the USDA and the schools should develop outreach campaigns to educate students about the benefits of meat alternatives. As more students come of age in the climate-change era, where vegetarianism is less of a fringe idea, they will be more likely to be interested in experimenting with meat alternatives. Additionally, the incorporation of animal-product alternatives in the School Lunch Program could be a boon for producers of these products, thereby leading to research and development into truly delectable, animal-free dishes.

VI. CONCLUSION

What we eat has a direct impact on the ecological health of the planet. As animal-food production becomes increasingly industrialized and concentrated, the environmental issues are only going to get more acute. There is a growing consensus that in order to forestall serious environmental damage, consumers will need to move away from diets centered on animal products. It is also becoming clear that government regulation alone will not be sufficient to deal with these issues.

On the bright side, consumers are beginning to embrace meat and dairy alternatives for a number of reasons. The government should tap into this trend. Incorporating meat/dairy alternatives in the School Lunch Program will accomplish multiple goals at once: first, it will help improve childhood health, which is becoming increasingly worse as obesity rates continue to climb; second, it will expose children to a variety of healthy meat alternatives at a young age and help them become more educated consumers later in life; and third, encouraging the consumption of meat alternatives will accomplish critical environmental sustainability goals by feeding more people with less of an impact on the environment. And all of this without the need for potentially legally-deficient environmental regulation.

202. *See* Dan Flynn, *Healthy School Lunches Bomb in Los Angeles*, FOOD SAFETY NEWS, (Dec. 20, 2011), http://foodsafetynews.com/2011/12/healthy-school-lunches-bomb-in-los-angeles/#.UnbK0_lP_so.

RECENT DEVELOPMENTS

ERIK WOODY*

I. NOTABLE FEDERAL CASES

A. Los Angeles County Flood Control District v. Natural Resources Defense Council, Inc.

The flow of water out of a concrete channel within a river did not rank as a "discharge of a pollutant" under the CWA.

The petitioner, Los Angeles County Flood Control District (District), operated a "municipal separate storm sewer system" (MS4), a drainage system that collected, transported, and discharged stormwater into the waters of the United States.[1] Because stormwater is often heavily polluted from various non-point sources, the Clean Water Act (CWA) and its implementing regulations require certain MS4s to obtain a National Pollutant Discharge Elimination

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1. L.A. Cnty. Flood Control Dist. v. Natural Res. Def. Council, Inc., 133 S. Ct. 710, 710 (2013).

System (NPDES) permit before stormwater can be discharged into navigable waters.[2] Between 2002 and 2008, monitoring stations in the Los Angeles River and San Gabriel River detected water pollution levels that exceeded its MS4 permit in its stormwater channel system.[3] Some of these exceedances included high levels of aluminum, copper, cyanide, fecal coliform bacteria, and zinc.[4]

Respondents, Natural Resources Defense Council, Inc. (NRDC) and Santa Monica Baykeeper (Baykeeper) filed a citizen enforcement action against the District and other defendants, and alleged that the District violated the NPDES permit and the Clean Water Act (CWA), which was evident by the quality measurements from the monitoring stations.[5]

The District Court granted summary judgment to the District, because the NRDC was unable to prove that the stormwater, discharged from the District's MS4, contained the exceeded pollutants detected at the downstream monitoring stations.[6] The Ninth Circuit reversed, holding that a discharge of pollutants had occurred under the CWA when polluted water "flowed out of the concrete channels" and entered downstream portions of the waterways lacking concrete linings.[7] The U.S. Court of Appeals held that the District was liable for the discharge of pollutants that occurred when the polluted stormwater detected at the monitoring stations flowed out of the concrete-lined portions of the rivers, where the monitoring stations were located, into lower, unlined portions of the same rivers.[8]

The U.S. Supreme Court granted certiorari only on the following question: "Under the CWA, does a 'discharge of pollutants' occur when polluted water 'flows from one portion of a river that is navigable water of the United States, through a concrete channel or other engineered improvement in the river,' and then 'into a lower portion of the same river'?"[9] The Court answered no and thus reversed the Ninth Circuit's ruling.[10] In the opinion, the Court relied on a previous Supreme Court holding under *South Florida Water Management District v. Miccosukee Tribe of Indians*.[11] In *Miccosukee*, the Court held that merely transferring pol-

2. *Id.* at 710.
3. *Id.*
4. *Id.* at 712.
5. *Id.*
6. *Id.*
7. *Id.*
8. *Id.*
9. *Id.* at 712-13.
10. *Id.* at 713.
11. *Id.* The Court explained that "[i]n *Miccosukee*, polluted water was removed from a canal, transported through a pump station, and then deposited into a nearby reservoir." *Id.*

luted water through different parts of the same bodies of water does not establish a discharge of pollutants under the CWA.[12] This holding was derived from the CWA text.[13] Under the CWA, a pollutant must be added to navigable waters from any point source in order for a pollutant to be considered discharged.[14] Therefore, the Court held that the flow from an improved portion of a navigable waterway into an unimproved portion of the same waterway did not constitute a "discharge of a pollutant" under the CWA and thus reversed the Ninth Circuit's ruling.[15]

The NDRC and Baykeeper believed that the District Court of Appeals was correct in reversing the trial court's decision, albeit for the wrong reason.[16] The NRDC and Baykeeper sought to argue that the exceedances revealed at the monitoring stations themselves met the requirements in establishing the liability of the District under the CWA for its upstream discharges.[17] However, that was not the reason the Court granted certiorari to evaluate the court of appeals ruling.[18] Therefore, the Court did not address this argument and remanded the case.[19]

B. Arkansas Game and Fish Commission v. United States

> Government-induced flooding, temporary in duration, gains no automatic exemption from Takings Clause inspection.

Arkansas Game and Fish Commission (Commission) owned a Wildlife Management Area (Management Area) that consisted of 23,000 acres.[20] The Management Area was operated as a wildlife and hunting preserve, and the Commission also used it as a timber resource.[21] The hardwood oak species accounted for eighty percent of the trees in the Management Area and was essential to the Area's reputation as a home for migratory birds and a place for recreation and hunting.[22]

In 1948, the U.S. Army Corps of Engineers (Corps) built the Clearwater Dam (Dam) located 115 miles upstream from the Man-

12. *Id.*
13. *Id.*
14. *Id.*
15. *Id.*
16. *Id.*
17. *Id.* at 713-14.
18. *Id.* at 714.
19. *Id.*
20. Ark. Game & Fish Comm'n v. United States, 133 S. Ct. 511, 515 (2012).
21. *Id.* at 515-16.
22. *Id.* at 516.

agement Area.[23] A Water Control Manual (Manual) was created to determine how much water would be released from the Dam depending on the season.[24] Between 1993 and 2000, however, at the request of farmers, the Corps deviated from this plan by releasing water during the timber-growing season of the Management Area.[25] The Corps proposed revisions to the Manual that would make the temporary deviations part of the permanent water-release plan.[26] The Commission objected several times to the temporary deviations and was against any permanent revision to the Manual because the Management Area was adversely affected by the departures from the original water release plan.[27] Eventually, the Corps abandoned the proposal to permanently revise the Manual when the Corps tested the effect of the deviations on the Management Area.[28] In addition, the Corps abandoned its temporary deviations in 2001.[29]

In 2005, the Commission sued the United States arguing that the temporary flooding of its Management Area, and consequent damage of timber, constituted a taking of property for which it was entitled to compensation under the Fifth Amendment's Takings Clause.[30] The Court of Federal Claims ruled in favor of the Commission and awarded it $5.7 million for the lost timber and the cost of reforesting.[31] The U.S. Court of Appeals for the Federal Circuit reversed the latter ruling on the basis that there could be no takings claim unless the flooding was "permanent or inevitably recurring."[32] The U.S. Supreme Court granted certiorari to resolve the question of whether the government-induced temporary flooding must be permanent or unavoidably recurring to constitute a taking of property.[33]

The U.S. Supreme Court answered this question by reviewing 140 years of Takings Clause flood cases.[34] In 1872, the Court held that government induced flooding could constitute a taking.[35] Following the latter case, the Court held that "seasonally recurring flooding can constitute as takings."[36] It wasn't until the World War

23. *Id.*
24. *Id.*
25. *Id.*
26. *Id.*
27. *Id.*
28. *Id.*
29. *Id.*
30. *Id.*
31. *Id.* at 517.
32. *Id.*
33. *Id.* at 517-18.
34. *Id.* at 518.
35. *Id.* (citing Pumpelly v. Green Bay Co., 80 U.S. 166, 167 (1871)).
36. *Id.* at 518-19 (citing United States v. Cress, 243 U.S. 316, 317 (1917)).

II era that the Court began recognizing just compensation for temporary takings.[37] During the World War II era, the government began taking temporary possession of properties.[38] The Court recognized that these actions by the government qualified as compensable temporary takings.[39] The Court noted that takings claims are not limited to physical possession of the property involved.[40] A previous case by the Court held that when a government action occurred outside the property, a taking claim could still be sustained so long as the interference was direct and immediate to the enjoyment and use of the land.[41] Furthermore, the Court held that the government was required to retroactively compensate a property owner for a temporary regulatory.[42] In support of the precedent cases, in which the Court determined that government-induced flooding can constitute a taking and that a taking need not be permanent for compensation, the Court was able to hold that government-induced flooding, limited in duration, may be compensable and thus reversed the court of appeals' holding.

The government relied on *Sanguinetti v. United States*, and argued that a temporary flooding is an exception to the Takings Clause.[43] In the *Sanguinetti* decision, the Court stated that a flooding must "constitute an actual, permanent invasion of the land."[44] The Court held that the *Sanguinetti* ruling was not definitive.[45] The Court noted *Sanguinetti* was decided in 1924, and the ruling summarized the flooding cases the Court had come across up to that point.[46] These cases merely involved permanent government-induced flooding, rather than temporary, government-induced flooding.[47] Therefore, no distinction between permanent and temporary flooding was material to the result in *Sanguinetti*.[48]

After reversing the court of appeals' decision, the Court evaluated when a government-induced flooding should be considered a taking.[49] The Court held that "[f]looding cases . . . should be assessed with reference to the 'particular circumstances of each

37. *Id.* at 519.
38. *Id.*
39. *Id.*
40. *Id.*
41. *Id.* (quoting United States v. Causby, 328 U.S. 256, 266 (1946)).
42. *Id.* (quoting First English Evangelical Lutheran Church of Glendale v. Cnty. of L.A., 482 U.S. 304, 321 (1987)).
43. *Id.* at 520.
44. *Id.* (quoting Sanguinetti v. United States, 264 U.S. 146, 149 (1924)).
45. *Id.*
46. *Id.*
47. *Id.*
48. *Id.* at 521.
49. *Id.*

case.' "[50] The Court reviewed several factors that may be considered in determining whether flooding may be a taking, largely based on the *Penn Central* analysis of a regulatory taking.[51] Time is a factor in determining the existence of a compensable taking when regulation or temporary physical invasion by the government interferes with private property.[52] The Court insisted that some attention should be paid to "the property owner's distinct investment-backed expectations, a matter often informed by the law in force in the State in which the property is located."[53] It also found relevant "the degree to which the invasion is intended or is the foreseeable result of authorized government action."[54]

The Supreme Court acknowledged that the Court of Federal Claims found that the flooding was foreseeable and that the interference with the Commission's property was severe.[55] The government, however, challenged several of the trial court's findings, including those relating to causation, foreseeability, substantiality, and the amount of damages.[56] Since the court of appeals rested its decision only on the temporary duration of the flooding, the Court remanded the case in order for the court to address these issues.[57]

C. Koontz v. St. Johns River Water Management District

> Government's demand for property from a land-use permit application must satisfy the *Nollan* and *Dolan* requirements even when it denies the permit.[58] Furthermore, the Court held that the government's demand from a land-use permit applicant must satisfy the *Nollan* and *Dolan* requirements even when its demand is for money.[59]

This case arose from a dispute between St. Johns River Water Management District (District) and Coy Koontz Sr., whose estate was represented by the landowner.[60] In 1994, Koontz sought permits from the District, which had jurisdiction over Koontz's land, to develop an area of his property that was primarily wetlands.[61]

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50. *Id.* (quoting United States v. Cen. Eureka Mining Co., 357 U.S. 155, 168 (1958)).
51. *Id.* (citing Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978)).
52. *Id.* at 522.
53. *Id.*
54. *Id.*
55. *Id.* at 523.
56. *Id.*
57. *Id.*
58. Koontz v. St. Johns River Water Mgmt. Dist., 133 S. Ct. 2586, 2589 (2013).
59. *Id.*
60. *Id.* at 2588-89.
61. *Id.*

Since Koontz wished to develop on wetlands, he was required by Florida law to apply for a special permit.[62] The District could require Koontz to "offset the resulting environmental damage" before granting his permit.[63] Koontz proposed deeding a conservation easement to the District on almost three-quarters of his property in order to abate the environmental effects of developing his land.[64] The District rejected this proposal and refused to approve his project unless he made certain modifications.[65] The District proposed he "(1) [reduce] the size of his development and, *inter alia,* [deed] to the District a conservation easement on the resulting larger remainder of his property or (2) [hire] contractors to make improvements to District-owned wetlands several miles away."[66] Koontz believed the District's two options were excessive, so he filed suit under a state law permitting him to seek damages for any agency action that is an "unreasonable exercise of the state's police power constituting a taking without just compensation."[67]

The trial court ruled in favor of Koontz.[68] The court based its decision on the requirements under *Nollan v. California Coastal Comm'n* and *Dolan v. City of Tigard*, which the District failed to meet.[69] These U.S. Supreme Court cases held that the government may not condition the approval of a land-use permit on the owner's surrendering of a portion of his property unless there is a " 'nexus' and 'rough proportionality' between the government's demand and the effects of the proposed land use."[70] "Under *Nollan* and *Dolan* the government may choose whether and how a permit applicant is required to mitigate the impacts of a proposed development, but it may not leverage its legitimate interest in mitigation to pursue governmental ends that lack an essential nexus and rough proportionality to those impacts."[71] The Fifth District Court of Appeals (Fifth DCA) affirmed the trial court's decision.[72] On appeal, the Florida Supreme Court reversed the decision on two grounds.[73] First, the trial court incorrectly used *Nollan* and *Dolan*, because unlike those cases, the District denied the permit application rather than accepting it.[74] Second, the standard under *Nollan* and

62. *Id.* at 2592; *see* FLA. STAT. § 373.403(5) (2010).
63. *Koontz*, 133 S. Ct. at 2589.
64. *Id.*
65. *Id.*
66. *Id.*
67. *Id.* at 2593 (citing FLA. STAT. § 373.617(2) (2010)).
68. *Id.* at 2603.
69. *Id.* at 2588.
70. *Id.* at 2591.
71. *Id.* at 2595.
72. *Id.* at 2593.
73. *Id.*
74. *Id.* at 2593-94.

Dolan applies to a specific burden on a property interest, not a demand for the payment of money.[75]

The U.S. Supreme Court reversed the Florida Supreme Court's decision.[76] In a 5-4 decision, the Court held that a government's demand for property from a land-use permit applicant must satisfy the *Nollan* and *Dolan* requirements even when the government denies the permit and even when it asks for money rather than an interest in land.[77]

As to the first issue, the District argued that they denied the permit, and therefore the principles of *Nollan* and *Dolan* should not apply.[78] The Court rejected the District's argument.[79] The Court held that *Nollan* and *Dolan* applied equally to situations where the government denied a permit and where the government granted a permit with conditions.[80] In other words, if a property owner refuses to agree to outrageous conditions in a permit, and the government denies that permit, the government cannot later argue that there was no constitutional violation because the permit was never granted.[81] The majority opinion stated that these principles remain the same whether the government approves a permit on the condition that the applicant turn over property or denies a permit because the applicant refuses to turn over property, as both forms of coercion may burden constitutionally enumerated rights.[82]

The District and the Florida Supreme Court's contrary rule would be illogical in this case because the government would be able to phrase its demands for land as a condition precedent to permit approval and thus avoid the limitations of *Nollan* and *Dolan*. For example, an order would be subject to *Nollan* and *Dolan* if it stated, "we will give you the permit but you have to do x, y and z."[83] On the other hand, if the order stated, "we won't give you the permit unless you do x, y, and z," it would not be subject to the standard.[84] The Florida Supreme Court had trouble understanding how the government's demand for property violated the Takings Clause even though no property was taken.[85] The Supreme Court noted that under the unconstitutional conditions doctrine, "extor-

75. *Id.* at 2594.
76. *Id.* at 2595.
77. *Id.* at 2602.
78. *Id.* at 2595.
79. *Id.*
80. *Id.*
81. *Id.*
82. *Id.*
83. *Id.* at 2596.
84. *Id.*
85. *Id.*

tionate demands" for property in the land-use permitting context goes against the Takings Clause because they "impermissibly burden the right not to have property taken without just compensation."[86]

As to the second issue, the District argued that because it demanded money (in this case, to pay for the work of outside contractors working on District-owned land) and not an interest in real property, *Nollan* and *Dolan* do not apply.[87] The District and the dissent took the same position "for the proposition that an obligation to spend money can never be the basis for a takings claim."[88] According to the Court, *Eastern Enterprises v. Apfel* did not apply to this case.[89] *Eastern Enterprises* held that the "Takings Clause does not apply to government-imposed financial obligations that 'd[o] not operate upon or alter an identified property interest.' "[90] It also held that "[u]nlike the financial obligation in *Eastern Enterprises*, the demand for money at issue here did 'operate upon . . . an identified property interest' by directing the owner of a particular piece of property to make a monetary payment."[91] The monetary obligation, in this case, heavily burdened Koontz's ownership of a specific parcel of land.[92]

By comparing the practical effect of a "monetary exaction" with the type of easement demanded in *Nollan* and *Dolan*, the majority found that the protections afforded from *Nollan* and *Dolan* should also apply to the District's demand in requiring Koontz to pay for the work of the outside contractors working on District-owned land.[93] All that was required by the Court to apply *Nollan* and *Dolan* was a "direct link between the government's demand and a specific parcel of real property."[94]

D. Decker v. Northwest Environmental Defense Center

The Clear Water Act and its implementing regulations do not require National Pollutant Discharge Elimination System permits before channeled storm-water runoff from logging roads can be discharged into the navigable waters of the United States.

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86. *Id.*
87. *Id.*
88. *Id.* at 2599 (citing E. Enters. v. Apfel, 524 U.S. 498, 504 (1998)).
89. *Id.*
90. *Id.* (quoting E. Enters. v. Apfel, 524 U.S. 498, 540 (1998)).
91. *Id.*
92. *Id.*
93. *Id.*
94. *Id.* at 2600.

In *Decker v. Northwest Environmental Defense Center*, the U.S. Supreme Court considered whether the Clean Water Act (CWA) and its implementing regulations require states and industry to obtain permits for stormwater runoff from culverts and ditches built as part of logging roads.

In 1972, Congress passed the CWA to "restore and maintain . . . the Nation's waters."[95] The CWA requires individuals, corporations, and governments to secure National Pollutant Discharge Elimination System (NPDES) permits before they can discharge pollution from any "point source into the navigable waters of the United States."[96] While the CWA exempts most "discharges composed entirely of stormwater" from NPDES permits, Congress requires the EPA to continue to enforce permits for stormwater discharges that involved "industrial activity."[97] Since the CWA did not define industrial activity, the EPA adopted a regulation (Industrial Stormwater Rule) defining this term.[98] The EPA defined *associated with industrial activity* as covering only discharges "from any conveyance that is used for collecting and conveying storm water [sic] and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant."[99] In the rule, the EPA created a list of industries whose stormwater discharges would be regulated under the title Standard Industrial Classification 24.[100] These facilities are considered engaging in "industrial activity" for purposes of the Industrial Stormwater Rule.[101] This list identified industries involved in the field of "Lumber and Wood Products."[102] Included in the list was the *logging industry*, defined as "[e]stablishments primarily engaged in cutting timber and in producing . . . primary forest or wood raw materials."[103]

In 2006, the Northwest Environmental Defense Center (NEDC) brought suit against certain firms involved in logging and paper-products operations, including the Oregon State Forester, the Oregon Board of Forestry, and several logging companies that used the roads such as Stimson Lumber Company and Georgia Pacific.[104] "The suit alleged that the defendants caused discharges of

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95. Decker v. Nw. Envtl. Def. Ctr., 133 S. Ct. 1326, 1331 (2013) (quoting 33 U.S.C. § 1251(a) (2006)).

96. *Id.*

97. *Id.* at 1332 (quoting 33 U.S.C. § 1342(p)(1) (2006)) (internal quotation marks omitted).

98. *Id.*

99. *Id.* (quoting 40 C.F.R. § 122.26 (b)(14) (2013)) (internal quotation marks omitted).

100. *Id.*

101. *Id.*

102. *Id.*

103. *Id.*

104. *Id.* at 1333.

channeled stormwater runoff into two waterways . . . ."[105] The defendants had not obtained NPDES permits and therefore violated the CWA.[106]

The district court dismissed the claim after it concluded that the culverts, ditches, and channels were not point sources of pollution and therefore NPDES permits were not required.[107] The NEDC appealed the case to the U.S. Court of Appeals for the Ninth Circuit,[108] which reversed the decision, holding that the discharges were from an industrial activity and therefore not exempt from the NPDES permits.[109]

The U.S. Supreme Court determined that "under the [CWA], petitioners were required to secure NPDES permits for the discharges of channeled stormwater runoff only if the discharges were 'associated with industrial activity,' . . . as that statutory term is defined in the preamendment version of the Industrial Stormwater Rule."[110] Otherwise, the discharges would be considered exempt from NPDES permits under the CWA's general exemption.[111] The Supreme Court reversed the Ninth Circuit's holding.[112] The Court held that the Clean Water Act exempts the stormwater runoff from the NPDES permits because the runoff was not associated with industrial activity.[113]

First, the NEDC unsuccessfully argued that the statutory term " 'associated with industrial activity' unambiguously covers discharges of channeled stormwater runoff from logging roads."[114] The Supreme Court rejected this argument because the terms "industrial" and "industry" have multiple meanings and are thus ambiguous.[115] The words could be as general as referring to a business activity or as specific as an "economic activity concerned with the processing of raw materials and manufacture of goods in factories."[116] The definition does not specifically include outdoor timber harvesting.[117]

The Court was more attentive to the NEDC's second argument that the "Industrial Stormwater Rule unambiguously required a

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105. *Id.*
106. *Id.*
107. *Id.*
108. *Id.* at 1333-34.
109. *Id.*
110. *Id.* at 1336 (quoting 33 U.S.C. § 1342(p)(2)(B) (2006)); *see also* 40 C.F.R. § 122.26(b)(14) (2006).
111. *Decker*, 133 S. Ct. at 1336 (citing 33 U.S.C. § 1342(p)(1) (2006)).
112. *Id.* at 1338.
113. *Id.*
114. *Id.* at 1336.
115. *Id.*
116. *Id.*
117. *Id.*

permit for the discharges at issue."[118] The NEDC argued that under the rule, the NPDES permits are required for the "categories of industries" that discharge stormwater from access roads by carriers of raw materials.[119] The Court noted that this argument raised the question of whether logging is considered a category of industry identified by the section.[120] As mentioned earlier, the Industrial Stormwater Rule "identif[ies] a list of 'categories of facilities' that 'are considered to be engaging in "industrial activity" for purposes' of the Industrial Stormwater Rule."[121] Logging was included in the list under the Standard Industrial Classification 24 section.[122] Therefore, the NEDC asserted that logging was among the categories of industries that needed a NPDES permit.[123]

The EPA argued that they created the Standard Industrial Classification 24 "to regulate traditional *industrial* sources such as sawmills."[124] The EPA highlighted the Industrial Stormwater Rule's reference to "facilities" and the Standard Industrial Classification 24's reference to "establishments," which advocated more fixed and permanent industrial sites instead of outdoor timber-harvesting operations.[125] The Court noted that the Industrial Stormwater Rule's definition of discharges associated with industrial activity supported the EPA's claim "that the regulation does not cover temporary, outdoor logging installations."[126] Thus, the Court held that it was reasonable for the EPA to conclude that the conveyances at issue were directly related only to the harvesting of raw materials rather than to "manufacturing, processing or raw materials storage areas at an industrial plant."[127]

Finally, the Court noted that it typically gives deference to an agency when the agency interprets its own regulation, assuming the interpretation is not "plainly erroneous or inconsistent with the regulation."[128] The Court held that the EPA's interpretation was permissible.[129]

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118. *Id.*
119. *Id.*
120. *Id.*
121. *Id.* (quoting 40 C.F.R. § 122.26(b)(14) (2006)).
122. *Id.*
123. *Id.*
124. *Id.*
125. *Id.* at 1336-37.
126. *Id.* at 1337.
127. *Id.*
128. *Id.* (quoting Chase Bank USA, N.A. v. McCoy, 131 S. Ct. 871, 880 (2011)) (internal quotation marks omitted).
129. *Id.*

E. American Trucking Ass'ns v. City of Los Angeles

> The Federal Aviation Administration Authorization Act of 1994 preempts provisions of the Los Angeles Port's Clean Truck Program that were backed by criminal penalties. In addition, given the pre-enforcement posture of the case, there was no basis for finding that the Port would ever use the agreement's penalty provision in a manner that would conflict with the ruling of *Castle v. Hayes*.

In *American Trucking Ass'ns v. City of Los Angeles*, the U.S. Supreme Court decided whether the Federal Aviation Administration Authorization Act of 1994 (FAAAA) preempted the parking and placard provisions of an agreement that trucking companies must sign before they could transport cargo at the Port of Los Angeles (Port).[130] In addition, the Court decided whether, under *Castle v. Hayes Freight Lines, Inc.*, the Port lacked authority to suspend or revoke the right of companies that failed to comply with other, non-preempted provisions from operating on the premises.[131]

The Port owned marine terminal facilities, which it leased to "terminal operators" that load and unload cargo from docking ships.[132] Drayage trucks transport the cargo in and out of the Port.[133] The City's Board of Harbor Commissioners (Board) runs the Port and in the late 1990s decided to expand the Port.[134] Environmental groups did not agree with the expansion, arguing that it would increase congestion and air pollution and create an unsafe environment.[135] To answer these concerns, the Board created a Clean Truck Program.[136] A concession agreement was created to control the relationship between the Port and any trucking company operating in the Port.[137] In exchange for complying with requirements under the concession agreement contract, a company could transport cargo at the Port.[138] In addition, the Board enforced a criminal prohibition on terminal operators in order to make trucking companies that provided drayage services enter in-

130. Am. Trucking Ass'ns v. City of Los Angeles, 133 S. Ct. 2096, 2099 (2013).
131. *Id.*
132. *Id.*
133. *Id.*
134. *Id.* at 2100.
135. *Id.*
136. *Id.* at 2100.
137. *Id.* The Court explained that, the "[t]rucking companies contracted with terminal operators to transport cargo, but did not enter into agreements with the Port itself." *Id.* at 2099.
138. *Id.* at 2100.

to the concession agreement.[139] If a terminal provider allowed an unregistered truck to enter the Port, the terminal provider would be fined up to $500 or sentenced to up to six months in prison.[140]

The American Trucking Associations (ATA) is a national trade association representing the trucking industry, including drayage companies that operate at the Port.[141] ATA filed a suit against the Port and Los Angeles.[142] ATA sought an injunction against five provisions of the concession agreement.[143] ATA claimed that section 14501(c)(1) of the FAAAA preempted those requirements.[144] This section states, "[A] State [or local government] may not enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of any motor carrier . . . with respect to the transportation of property."[145]

In addition, ATA argued that even if the above statute did not preempt these provisions, "the Port could not enforce them by withdrawing a defaulting company's right to operate at the Port."[146] ATA relied on *Castle*, which held that "Illinois could not bar a federally licensed motor carrier from its highways for prior violations of state safety regulations."[147] The U.S. Supreme Court in *Castle* ruled that Illinois's action "conflicted with federal law providing for certification of motor carriers; and ATA argued here that a similar conflict would inhere in applying the concession agreement to suspend or revoke a trucking company's privileges."[148]

The district court held that the FAAAA section did not preempt the provisions and that *Castle* did not apply.[149] The court of appeals affirmed most of the district court's holding.[150] The Ninth Circuit decided that the section preempted only the contract's employment provision.[151] However, the agreement's placard and parking requirements were not preempted because they did not "ha[ve]

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139. *Id.*
140. *Id.*
141. *Id.*
142. *Id.*
143. *Id.* ("The two directly at issue here compel the company to (1) affix a placard on each truck with a phone number for reporting environmental or safety concerns . . . and (2) submit a plan listing off-street parking locations for each truck when not in service. Three other provisions in the agreement, formerly disputed in this litigation, relate to the company's financial capacity, its maintenance of trucks, and its employment of drivers.").
144. *Id.*
145. *Id.* at 2100-01 (quoting 49 U.S.C. § 14501(c)(1) (2006)) (internal quotation marks omitted).
146. *Id.* at 2101.
147. *Id.*
148. *Id.*
149. *Id.*
150. *Id.*
151. *Id.*

the force and effect of law."[152] The court found that the Port was acting as a market participant rather than a government regulator.[153] The court noted that those requirements advanced the Port's own business interest in managing its facilities instead of regulating the drayage market.[154] In addition, the court rejected ATA's *Castle* argument.[155] The court reasoned that unlike *Castle*, where the ban was on all of Illinois's freeways, the ban to access a single port did not keep motor carriers from participating in interstate commerce.[156]

The U.S. Supreme Court reversed the Ninth Circuit's decision in part.[157] The Court only ruled on whether the placard and parking requirements were preempted under section 14501(c)(1) of the FAAAA and whether *Castle* precluded the City from enforcing the penalty clause "to suspend or revoke trucking company's privileges."[158]

In regard to the placard and parking requirements, the only question at issue was whether those requirements "ha[d] the force and effect of law."[159] The Port argued that the concession contract was similar to a private agreement, which was created to further their commercial and proprietary interests.[160] The Supreme Court acknowledged that section 14501(c)(1) makes a distinction between "a government's exercise of regulatory authority" and contractual "participation in a market."[161] The Court ruled that the Port "exercised classic regulatory authority—complete with the use of criminal penalties—in imposing the placard and parking requirements at issue here."[162] The Board sought to require parties who wanted to access the Port for purposes of providing drayage services to enter into concession agreements.[163] To accomplish this objective, it required trucking operators to allow access to the Port only to drayage trucks who were "registered under such a concession agreement."[164] If the trucking operators failed to comply, they could be punished.[165] The trucking companies, which included drayage trucks, were private parties and not under contract with

152. *Id.* (quoting 49 U.S.C. § 14501(c)(1) (2006)) (internal quotation marks omitted).
153. *Id.*
154. *Id.*
155. *Id.*
156. *Id.*
157. *Id.*
158. *Id.*
159. *Id.* at 2102.
160. *Id.*
161. *Id.* (citing Am. Airlines, Inc. v. Wolens, 513 U.S. 219, 221 (1995)).
162. *Id.* at 2103.
163. *Id.*
164. *Id.*
165. *Id.*

the Port.[166] Therefore, "the contract here function[ed] as part and parcel of a governmental program wielding coercive power over private parties, backed by the threat of criminal punishment."[167] The Port had "forced terminal operators—and through them, trucking companies—to alter their conduct by implementing a criminal prohibition punishable by time in prison."[168] The Court held that this "counts as an action having the force and effect of law."[169]

The Supreme Court declined to decide on the case's present, pre-enforcement posture whether *Castle* limited the way the Port could enforce the financial-capacity and truck-maintenance requirements upheld by the Ninth Circuit.[170] *Castle* rejected Illinois's attempt to bar a federally licensed motor carrier from its highways for past infringements of state safety regulations.[171] However, "*Castle* does not prevent a State from taking a vehicle off the road that is contemporaneously out of compliance with such regulations."[172] At the time of the Supreme Court's decision, there was no basis for finding that the Port would actually use the concession agreement's penalty provision as *Castle* excluded.[173] The Court explained that there was no reason for it to predict what the Port would do later.[174]

Justice Thomas filed a concurring opinion highlighting what he saw as a constitutional concern.[175] He noted that the Commerce Clause gave power to Congress "[t]o regulate commerce . . . *among* the several states."[176] This included regulating the Port of Los Angeles.[177] However, it did not include regulations of parking or required placards on trucks that were not on the Port's property.[178] Justice Thomas joined the opinion since Los Angeles did not raise these constitutional questions.[179]

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166. *Id.* at 2100.
167. *Id.* at 2103.
168. *Id.*
169. *Id.*
170. *Id.* at 2105.
171. *Id.*
172. *Id.*
173. *Id.*
174. *Id.*
175. *Id.* (Thomas, J., concurring).
176. *Id.* at 2106.
177. *Id.*
178. *Id.*
179. *Id.* at 2107.

II. NOTABLE FLORIDA CASES

A. Jass Properties, LLC v. City of North Lauderdale

> Section 180.135, *Florida Statutes*, does not preclude the City from requiring landlords, instead of tenants, to contract with the city for water and sewer services, and, therefore, does not conflict with the city's local ordinance section 70-4(c).

A residential landlord brought action against the City of North Lauderdale (City) for determination of lawfulness of a city policy that required the City to compel landlords to contract with the City for water and sewer services.[180] The Circuit Court entered summary judgment for the City and the landlord appealed.[181]

Section 180.135, *Florida Statutes*, provides in part that a municipality may not "refuse . . . or discontinue utility . . . services to the owner . . . or tenant" of a rental unit "for nonpayment of service charges incurred by a former tenant."[182] Thus the contract for utility services is between the municipality and the prior tenant, not the municipality and the new tenant or owner.[183]

The City of North Lauderdale was the exclusive provider of water and sewer services within the city.[184] In order to ensure payment for its utility services, the City adopted an ordinance that required "landlords, but not their tenants," to contract with the City "for water and sewer services, even though" the tenants were directly benefited by the utility services.[185] Under the ordinance, the City was not required to open an account in a tenant's name. Thus, if the landlord did not contract with the City for utility services, the tenants would not receive those services and, consequently, would render the residential unit uninhabitable.[186]

Section 70-4(c) of the City of North Lauderdale's Code of Ordinances, which the City acted under the authority of, provides, "[w]ater, sewer and stormwater management accounts shall be established in the name of the property owner."[187]

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180. Jass Props., LLC v. City of N. Lauderdale, 101 So. 3d 400, 401 (Fla. Dist. Ct. App. 2012).

181. *Id.*

182. *Id.* at 401-02 (quoting FLA. STAT. § 180.135 (2010)) (internal quotation marks omitted).

183. *Id.* at 401.

184. *Id.*

185. *Id.*

186. *Id.*

187. *Id.*

One landlord, Jass Properties, LLC, (Jass) sued the City alleging that the ordinance conflicted with section 180.135, and was therefore invalid.[188]

The Fourth District Court of Appeal acknowledged that "a municipality may not enact a local ordinance that conflicts with a state statute."[189] However, the court disagreed with Jass and held that the City's ordinance did not directly conflict with the state statute.[190] The court determined that state statute "[s]ection 180.135 [did] not expressly prohibit the City from declining to contract with tenants . . . and restricting [its] agreements for utility services to property owners."[191] Because there was no express prohibition in the state statute, there was no conflict with state law.[192] Therefore, the City's ordinance was valid.[193]

The court noted that "[b]y requiring landlords to actively manage their private business interests, [the] City avoids the burden of dealing with perhaps hundreds or thousands of individual tenants who might be behind on their bills."[194] Subsequently, the court saw nothing in the statute that prevented the City from creating an ordinance designed to constrain costs that might otherwise be endured by the taxpayers.[195]

B. Alachua Land Investors, LLC v. City of Gainesville

> An inverse condemnation claim is not ripe for review absent at least one meaningful application, a final decision by the reviewing entity, and a showing that additional applications to the reviewing entity would be futile.

This case arose due to the denial of a developer's petition for "plat approval for the final development phase of a residential subdivision."[196] Alachua Land Investors, LLC (ALI) owned and was in the process of developing 300 acres of property as part of the Blues Creek subdivision in Gainesville, Florida.[197] Over the years,

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188. *Id.*
189. *Id.* at 402 (citing City of Kissimmee v. Fla. Retail Fed'n, Inc., 915 So. 2d 205, 209 (Fla. Dist. Ct. App. 2005)).
190. *Id.*
191. *Id.*
192. *Id.*
193. *Id.*
194. *Id.*
195. *Id.*
196. Alachua Land Investors, LLC v. City of Gainesville, 107 So. 3d 1154, 1156 (Fla. Dist. Ct. App. 2013).
197. *Id.* at 1156-57.

ALI developed the property through a series of units and phases.[198] The property involved in this case consisted of 127 acres.[199] Thirty-seven acres of the 127 acres were intended for residential development.[200] The remaining land consisted of ninety unimproved acres, as was assigned on the Master Plan as a "Drainage Easement, Developed Recreation and Conservation Area."[201] Within the conservation area, the most environmentally affected area in the Master Plan was almost surrounded by the developable residential land of the Blues Creek Subdivision.[202]

The Suwannee River Water Management District (SRWMD) initially permitted the ninety acres for retention of surface water from the surrounding land, but a third-party environmental group challenged the conservation area permit.[203] The challenge resulted in a 1988 negotiated settlement agreement between ALI, the landlord, and the environmental group.[204] The agreement became an amendment to the permit and included the following land-use restrictions:

> There shall be no construction or disturbance of the conservation area pre-or [sic] post-development, nor any developed recreation built in the conservation area, except for nature trails, walkover structures and gazebos which retain the land predominantly in its natural, scenic and wooded condition; or minor works necessary to control erosion or assure dispersion (sheetflow) of runoff entering the conservation area provided they are out of or at the boundary of the conservation area.[205]

The Master Plan contained similar language to this amendment.[206]

A city ordinance required that a plat application must follow current zoning requirements.[207] ALI submitted a petition for a plat application to the City Commission for review and vote on the request for design approval of the 127 acres.[208] The petition noted that "a sanitary sewer line was projected to go through the ninety-acre conservation area for approximately 300 feet."[209] The City

198. *Id.* at 1156.
199. *Id.*
200. *Id.* at 1156-57.
201. *Id.* at 1157.
202. *Id.*
203. *Id.*
204. *Id.*
205. *Id.*
206. *Id.*
207. *Id.*
208. *Id.*
209. *Id.*

Commission denied the petition because of the 1988 settlement, and ALI filed an inverse condemnation claim alleging a partial regulatory taking due to the City denying the plat approval.[210]

The trial court found that the proposed sewer line's nature and location violated the previous settlement agreement of 1988, which ALI's owner was a part of, and current zoning regulations.[211] During trial, the City addressed alternatives to the proposed sewer line.[212] ALI was given multiple options that would not violate the previous settlement agreement.[213] The City Commission emphasized that ALI failed to offer any revision of the application or to request a change or variance to accommodate the proposed development.[214] The trial court dismissed ALI's inverse condemnation claim for lack of ripeness, because ALI neither offered any revisions nor requested changes to correspond with its development plans.[215]

In order for ALI's claim to be considered ripe, the First District Court of Appeal (First DCA) held that they must prove that the petition was a meaningful application, that the City entered a final decision, and that it would be meaningless and futile to submit another application for plat design approval.[216]

On appeal, ALI argued that their petition was meaningful.[217] The City argued that the petition was not a meaningful application.[218] The City explained that their attempt to resolve the development was impermissibly ignored by ALI's failure to explore alternatives.[219] In addition, the petition did not seek to challenge or amend the zoning requirements.[220] The City's denial of the petition was not a final decision; instead, they were merely enforcing the 1988 settlement.[221] Thus the City was not able to fully deliberate in deciding how ALI could implement the developmental plans.[222] Therefore, the court held that the petition was not a meaningful application.[223]

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210. *Id.*
211. *Id.*
212. *Id.*
213. *Id.* One option was a lift station and the other option was to convert lots into an "estate lot" provided with a septic tank. *Id.*
214. *Id.*
215. *Id.* at 1158.
216. *Id.* at 1159.
217. *Id.*
218. *Id.* at 1160.
219. *Id.*
220. *Id.*
221. *Id.*
222. *Id.*
223. *Id.*

In regard to the City's denial of the petition being final, the court held that "the City Commission's vote denying Petition 76SUB lacked the requisite finality to render this case ripe for review on the merits."[224] At the City Commission hearing, a majority of the City's decision-makers wanted to reach a fair resolution of ALI's ultimate development plans.[225] The court also noted that both parties had a successful relationship.[226] The relationship between the landowner and governmental entity is relevant in determining whether a decision is final and whether it would be futile to submit another application.[227] The court found that the relationship history of the parties and the transcript of the hearing clearly demonstrated the City's interest in exploring alternatives with ALI.[228] Thus, the First DCA affirmed the trial court's decision, holding that ALI's claim was not ripe.[229]

C. Wendler v. City of Saint Augustine

> An inordinate burden is readily ascertainable, commencing the one-year period to file a claim under the Harris Act, at the time of enactment of a regulation with an objective standard or at the time a decision is rendered when the regulation contains a subjective standard. Additionally, the Fifth District Court of Appeal adopted the Fourth District's holding in *Russo*, finding that the statute of limitations for filing the Harris Act cause of action was four years from the date when the inordinate burden was ascertainable. The Court also found that the tolling provision in the Harris Act, section 70.001(11), *Florida Statutes*, only applied to the filing of the claim to the appropriate government entity.

Wendler v. City of Saint Augustine arose as an appeal from a trial court's dismissal of a suit brought by the Wendlers against the City of St. Augustine under the Harris Act, section 70.001, *Florida Statutes*, because the action was untimely.[230]

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224. *Id.* at 1161.
225. *Id.*
226. *Id.*
227. *Id.* (citing Lost Tree Vill. Corp. v. City of Vero Beach, 838 So. 2d 561, 573 (Fla. Dist. Ct. App. 2002).
228. *Id.* at 1163.
229. *Id.*
230. Wendler v. City of St. Augustine, 108 So. 3d 1141, 1142 (Fla. Dist. Ct. App. 2013) (citing FLA. STAT. § 70.001 (2010)).

Between 1998 and 2006, the Wendlers bought eight parcels of real property consisting of seven structures located in a National Register of Historic Places District in St. Augustine, Florida.[231] The parcels were subject to a city ordinance, which governed the relocation or demolition of certain historic structures.[232] In 2005, the City amended the ordinance, allowing the City's Historic Architectural Review Board (HARB) to deny demolition or relocation requests for three types of structures, including those considered "contributing property to a National Register of Historic Places District."[233] Because of this new amendment, on December 5, 2007, HARB denied the Wendlers' application, which sought to demolish the seven structures and rezone all eight parcels to allow for a commercial use.[234] HARB found that six of the seven structures were contributing historic structures.[235] The Wendlers appealed to the City Commission, but the City Commission affirmed HARB's orders.[236] The Wendlers filed a petition for a writ of certiorari and a complaint for declaratory and injunctive relief against the City's denial, but dismissed the suit on April 5, 2010.[237]

A month after the dismissal, the Wendlers submitted a Harris Act claim to the City.[238] Under the Harris Act, property owners can "be compensated by a governmental entity if a government regulation inordinately burdens an existing or vested property right."[239] Under the Harris Act, *inordinate burden* is defined to mean "a specific action by a governmental entity that directly restricts or limits the use of real property."[240]

The City properly responded to the Wendlers' Harris Act claim with a settlement and a ripeness decision.[241] However, the Wendlers rejected the City's offer and, on July 14, 2011, filed their suit in the circuit court under the Harris Act.[242]

The trial court relied on a Fifth District Court of Appeal (Fifth DCA) decision in *Citrus County v. Halls River Development, Inc.,* to hold that the Wendlers' complaint was untimely because the im-

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231. *Id.*
232. *Id.*
233. *Id.*
234. *Id.* at 1143. ("The Wendlers used the structures on their property as residential rentals, but . . . decided to convert the properties to a commercial use.").
235. *Id.* Because the structures were contributing historic structures, the Wendlers were required by the ordinance to prove undue economic hardship or adequate justification for the demolition. *Id.*
236. *Id.*
237. *Id.*
238. *Id.*
239. *Id.* at 1144 (citing FLA. STAT. § 70.001 (2010)).
240. *Id.*
241. *Id.* at 1143.
242. *Id.*

pact of the 2005 amendment of the ordinance was readily ascertainable to the Wendlers at the time of the enactment.[243] Therefore, the one-year limitation to file the Harris Act claim to the City began at the time of the enactment.[244]

On appeal, the Fifth DCA distinguished *Halls River* from the immediate case finding the ordinance here was a "generally applicable development standard, not an objective, readily determined standard as was present in *Halls River*."[245] The ordinance gave the City significant discretion to approve or deny permits, and therefore the impact of the amended ordinance was not readily ascertainable to the Wendlers until the application was denied.[246] Thus the Fifth DCA held that the lower court erred in believing that the impact of the ordinance was readily ascertainable at the enactment.[247]

After the Fifth DCA ruled when the inordinate burden was ascertainable, it ruled on whether the cause of action was timely filed under the Harris Act and its tolling provisions.[248] The Fifth DCA recited the language of the statute, stating the following:

> *A cause of action* may not be commenced under this section if *the claim* is presented more than 1 year after a law or regulation is first applied by the governmental entity to the property at issue. *If an owner seeks relief* from the governmental action through lawfully available administrative or judicial proceedings, *the time for bringing an action under this section is tolled until the conclusion of such proceedings*.[249]

The Wendlers argued that the Harris Act had a precondition of filing an action within the one year limit and the tolling provision only applied to that precondition.[250] The City interpreted the stat-

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243. *Id. Halls River* held:

> [I]f the impact of a new law or regulation is "readily ascertainable" to the property owner, a claim must be made against the local government within one year of that new regulation's enactment in order to preserve the right to timely file an action in court founded in the Harris Act.

Id. at 1145 (quoting Citrus Cnty. v. Halls River Dev., Inc., 8 So. 3d 413, 423 (Fla. Dis. Ct. App. 2009)). In that case, "the impact of the CL designation of the property was readily ascertainable in 1997, i.e., one housing unit per twenty acres of land." *Halls River*, 8 So. 3d at 422-23.

244. *Wendler*, 108 So. 3d at 1143.

245. *Id.* at 1145.

246. *Id.*

247. *Id.*

248. *Id.* at 1145-46.

249. *Id.* (internal quotation marks omitted).

250. *Id.* at 1146.

ute as providing two options.[251] The landowner has one year to file the claim after the denial of the permit. If the landowner chooses to appeal the denial, then he foregoes filing the claim and, therefore, has one year after the appeal process concludes to file the Harris Act cause of action.[252]

The Fifth DCA first noted that they previously held in *Halls River* that filing the claim within one year was a precondition to filling the Harris Act cause of action.[253] The Fifth DCA then noted that they did not address whether the one-year period applied to the Harris Act cause of action.[254] The court addressed that issue in agreeing with the Fourth District Court of Appeal's decision in *Russo Associates, Inc. v. City of Dania Beach Code Enforcement Board*, which held that the statute of limitations to file the Harris Act claim of action was four years starting from the government action that constituted the inordinate burden.[255] In the Wendlers' case, they had four years to file their Harris Act claim of action from when their petition was denied on December 5, 2007.[256]

The Fifth DCA found that the Wendlers timely filed the Harris Act claim to the City within the one-year period of limitations because only six months had elapsed outside the applicable tolling provision.[257] They were in constant litigation outside of the five month period between when the permit was denied on December 5, 2007, and their first challenge to the permit denial in circuit court on May 23, 2008, as well as the one month period between their voluntary dismissal of the petition for writ of certiorari on April 5, 2010, and their presentation of their Harris Act claim to the city.[258]

The Fifth DCA further found, by applying the *Russo* holding, that the Wendlers timely filed their Harris Act cause of action before the four-year period, which commenced on the date of the permit denial on December 5, 2007, had ended.[259]

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251. *Id.*
252. *Id.*
253. *Id.*
254. *Id.*
255. *Id.* (citing Russo Assocs., Inc. v. City of Dania Beach Code Enforcement Bd., 920 So. 2d 716 (Fla. Dist. Ct. App. 2006)).
256. *Id.*
257. *Id.*
258. *Id.*
259. *Id.*

D. Clipper Bay Investments, LLC v. State of Florida

> The Marketable Record Title Act's exception in section 712.03(5), *Florida Statutes*, is applicable to land held as a fee estate for the purpose of a right-of-way, so long as competent, substantial evidence establishes the land is held for such a purpose.

Clipper Bay Investments, LLC (Clipper Bay) acquired seven acres of land adjacent to Interstate 10 (I-10) in 2006 and 2007.[260] In 2008, Clipper Bay filed an action for quiet title and ejectment against Florida Department of Transportation (FDOT) and Santa Rosa County alleging that, under the Marketable Record Title Act (MRTA), it was entitled to a marketable title that would extinguish any claims FDOT might have in the land in question.[261] Clipper Bay believed this to be true as long as they could demonstrate a valid title transaction from at least thirty years ago that created an estate in its predecessor in interest.[262] Clipper Bay alleged its ownership interest was conveyed from Julio DeJoris, recorded in 1970.[263] On the other hand, FDOT considered the disputed land part of its I-10 right-of-way even though the disputed land lay outside of the I-10 fence line and, therefore, counterclaimed for quiet title.[264] FDOT claimed that it acquired the land that was in dispute in 1965 through a single recorded deed from Julio DeJoris and others.[265] The only portion of the disputed land that was used was leased by FDOT to Santa Rosa County for the construction and maintenance of a county road.[266]

At trial, FDOT introduced an unrecorded FDOT right-of-way map from 1965 demonstrating that the disputed land was part of the I-10 construction project.[267] However, Clipper Bay argued that FDOT's right-of-way for I-10 did not extend into any of the disputed land, which lay north of the I-10 fence line; rather, the right-of-

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260. Clipper Bay Invs., LLC v. State of Florida, 117 So. 3d 7, 9 (Fla. Dist. Ct. App. 2013).

261. *Id.* at 9.

262. *Id.* at 10 (citing FLA STAT. § 712.02 (2008)). The statute states that:

> Any person having the legal capacity to own land in this state, who, alone or together with her or his predecessors in title, has been vested with any estate in land of record for 30 years or more, shall have a marketable record title to such estate in said land, which shall be free and clear of all claims except the matters set forth as exceptions to marketability in s.712.03.

FLA STAT. § 712.02 (2008).

263. *Id.* at 9.

264. *Id.*

265. *Id.*

266. *Id.*

267. *Id.*

way was only the interstate and immediate adjoining fenced area.[268] The trial court established that Clipper Bay had a valid root of title.[269] However, the court also found that a portion of the land was excepted from the operation of MRTA under section 712.03(5), *Florida Statutes*, and that portion was given to FDOT.[270] Thus the trial court quieted title in favor of Clipper Bay for all land north of the limited access right-of-way line on the 1965 FDOT map and quieted title for FDOT all land south of the line.[271] In addition, pursuant to a Santa Rosa County lease with FDOT, the court awarded Santa Rosa County fee title for the county road, which it built across the disputed property.[272]

The First District Court of Appeal (First DCA) and the parties involved recognized that the case turned on whether the MRTA exception in section 712.03(5) for rights-of-way could be applied to the property at issue.[273] Under Section 712.03(5), such marketable record title shall not affect or extinguish the following rights:

> Recorded or unrecorded easements or rights, interest or servitude in the nature of easements, rights-of-way and terminal facilities, including those of a public utility or of a governmental agency, so long as the same are used and the use of any part thereof shall except from the operation hereof the right to the entire use thereof. No notice need be filed in order to preserve the lien of any mortgage or deed of trust or any supplement thereto encumbering any such recorded or unrecorded easements, or rights, interest, or servitude in the nature of easements, rights-of-way, and terminal facilities. However, nothing herein shall be construed as preserving to the mortgagee or grantee of any such mortgage or deed of trust or any supplement thereto any greater rights than the rights of the mortgagor or grantor.[274]

Clipper Bay argued that the plain language of subsection (5) pertained to easements and rights-of-ways, not fee estates. Clipper Bay noted that section 712.03 does not define easements or rights-of-way.[275] Therefore, since the statute does not define the terms, the court should look to the dictionary for the plain and ordinary

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268. *Id.*
269. *Id.*
270. *Id.*
271. *Id.*
272. *Id.*
273. *Id.*
274. *Id.* at 11 (quoting FLA. STAT. § 712.03 (2008) (internal quotation marks omitted).
275. *Id.*

meaning of these words.[276] According to Black's Law Dictionary, easements are recognized as a right-of-way.[277] Further, the dictionary defined a *right-of-way* as the " 'right to pass through property *owned by another*,' the 'right to build and operate a railway line or a highway on land *belonging to another*,' and the 'strip of land subject to a *nonowner's* right to pass through.' "[278] Under this definition, Clipper Bay was arguing that fee estates were not included in easements or rights-of-way.[279]

In response, FDOT noted that section 334.03(22) of the Florida Transportation Code defined right-of-way as "land in which the state, the department, a county, or a municipality *owns the fee* or has an easement devoted to or required for use as a transportation facility."[280] Under this definition, fee title is considered a right-of-way.[281] FDOT argued that the dictionary meaning should not be interpreted because the said statute defined the word at issue.[282]

The First DCA examined two cases: *Department of Transportation v. Dardashti* and *Water Control District of South Brevard v. Davidson*, which discussed the issue of whether the exceptions in section 712.03(5) applied to land held in fee title.[283] However, the *Dardashti* and *Davidson* decisions conflicted with each other.[284] The First DCA held that the MRTA exceptions found in section 712.03(5) were ambiguous.[285] Thus, the First DCA was required to construe the statutory exception.[286]

The First DCA noted that the whole point of this section was to protect land used for easements or rights-of-way.[287] This is similar to the public policy laid out in *City of Jacksonville v. Horn*, that "rights or easements once acquired for the use and benefit of the public are not easily lost or surrendered."[288] The First DCA concluded that the focus for the exceptions in section 712.03(5) was not on the manner in which the state holds the land, but rather on

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276. *Id.*

277. *Id.* (citing BLACK'S LAW DICTIONARY (9th ed. 2009)).

278. *Id.* at 11-12 (quoting BLACK'S LAW DICTIONARY (9th ed. 2009)).

279. *Id.*

280. *Id.* at 12 (quoting FLA. STAT. § 334.03(22) (2008)) (internal quotation marks omitted).

281. *Id.*

282. *Id.*

283. *Id.*

284. *Id.* at 14 ("*Dardashti* directly stands for the proposition that the exception in section 712.03(5) cannot apply to land held in fee by the government. *Davidson*, on the other hand, is confusing because it applies the section 712.03(5) exception to land held in fee by a governmental entity; however, the court also appears to rely on reservation language contained in deeds to the private property owners.").

285. *Id.*

286. *Id.*

287. *Id.*

288. *Id.* (quoting City of Jacksonville v. Horn, 496 So. 2d 204, 208 (Fla. Dist. Ct. App. 1986)) (internal quotation marks omitted).

the reason or purpose it was held.[289] It pointed out the obvious illogicality of a result that would find land being utilized as a right-of-way without any fee title claim to be protected from the exceptions in the MRTA, while land used for the same purpose, but held in fee title, would be subject to forfeiture under the MRTA.[290] Further, the court agreed with FDOT's argument that the definition in section 334.03(22) of right-of-way including land held in fee was important because, "(1) it [was] legislative recognition that land utilized for right-of-way by the government may be held in fee title; (2) it indicate[d] that many governmental rights-of-way may be held in fee title; and (3) it provide[d] a definition that [was] lacking in section 712.03(5)."[291] Accordingly, section 712.03(5) was applied to rights-of-way held in fee title.[292]

After determining that section 712.03(5) was applicable to rights-of-way held in fee title, the First DCA considered whether FDOT presented competent, substantial evidence that the land at issue was a part of its I-10 right-of-way.[293] Based on section 334.03(22), rights-of-way must be land that is "devoted to or required for use as a transportation facility."[294] FDOT believed that any land purchased in conjunction with a roadway project or any land owned by FDOT would automatically be protected as a right-of-way under MRTA.[295] The First DCA rejected this argument because FDOT failed to present any valid evidence that the land in question was devoted to or required for use as a transportation facility.[296] The unrecorded 1965 right-of-way map was not supported with any testimony explaining the import of the map or whether the land was utilized in the manner outlined by the map.[297] FDOT argued that, because they leased a part of the disputed land to Santa Rosa County for the construction of a county road, the rest of the disputed land was a part of the right-of-way.[298] The court agreed that this made the county road subject to the exception, but concluded that FDOT had not provided sufficient evidence that the rest of the land was part of its I-10 right-of-way.[299] FDOT failed to present competent, substantial evidence that the land north of the I-10 fence line was part of its right-of-way.[300] Thus the First DCA

289. *Id.*
290. *Id.*
291. *Id.* at 15.
292. *Id.*
293. *Id.*
294. *Id.*
295. *Id.*
296. *Id.*
297. *Id.*
298. *Id.* at 15-16.
299. *Id.* at 16.
300. *Id.*

reversed the trial court's award of a portion of the land north of the I-10 fence line and remanded with instructions to quiet title all of the land north of the I-10 fence line in Clipper Bay except for the portion used by Santa Rosa County.[301]

E. Nieto v. Mobile Gardens Ass'n of Englewood, Inc.

A homeowners' association lacks standing to enforce restrictive covenants unless it is the direct assignee of the developer's right to enforce deed restrictions or it is a successor in interest of the developer.

This case arose as an appeal from a trial court ruling that granted judgment permanently enjoining homeowners from violation of deed restrictions that were put into effect by the homeowners' association.[302]

Mobile Gardens, a mobile home subdivision in Englewood, Florida, was developed in 1960.[303] Standard deed restrictions were recorded by the Mobile Gardens subdivision developer, which regulated the construction of buildings and maintenance of the property.[304] Shortly after, a homeowners' association, Mobile Gardens Association of Englewood, Inc. (Mobile Gardens I), was incorporated.[305] Mobile Garden I was properly assigned the deed restrictions from the developer in 1972.[306] A couple years, later Mobile Garden I dissolved, and fourteen years later, a new corporation was created with the same name as the dissolved corporation (Mobile Gardens II).[307] However, there was no link between the two.[308] The new articles and bylaws did not contain any suggestions that Mobile Gardens II was a continuation of Mobile Gardens I.[309]

In 2000, Mobile Gardens II created a new document that was intended to assign to it the rights to administer and enforce the deed restrictions that were created by the initial developer of the subdivision.[310] Following the creation of the new document, Mobile Gardens II began reviving and amending the 1960 deed re-

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301. *Id.*
302. Nieto v. Mobile Gardens Ass'n of Englewood, Inc., 38 Fla. L. Weekly D835 (Fla. Dist. Ct. App. 2013).
303. *Id.* at 1.
304. *Id.*
305. *Id.*
306. *Id.*
307. *Id.*
308. *Id.*
309. *Id.*
310. *Id.*

strictions.[311] The homeowners' association sought to enforce these revitalized covenants, which included an age restriction.[312]

In 2010, Mobile Gardens II brought suit against a single unit homeowner for violating the age restrictions and sought to remove from the subdivision two minor children residing in their home.[313] Thereafter, other homeowners brought suit against Mobile Gardens II for declaratory judgment, contesting that it did not have the power to enforce the amended restrictions because the Mobile Gardens II revival and amendment of the deed restrictions were not valid.[314] The two cases were consolidated for trial.[315]

The trial court granted judgment, permanently enjoining the homeowners for violation of deed restrictions.[316] The trial court found that the deed restrictions announced by the homeowners' association were legal and enforceable against the residents of the Mobile Gardens II subdivision.[317] In addition, the judgment demanded that appellants Rosalba Nieto and Faviola Rodriguez preclude minors from residing on their property because the subdivision was defined by the deed restriction as an age-restricted community.[318]

On appeal, the appellants claimed that Mobile Gardens II did not have standing to enforce the restrictive covenants.[319] In order to have standing to sue to enforce restrictive covenants, a homeowners' association must be an "assignee of the developer's right to enforce the restrictive covenants, or it is the direct successor of the developer's interest."[320]

Mobile Gardens II believed that they were the assignee of the developer because of the 2000 assignment they enacted.[321] However, the Second District Court of Appeal (Second DCA) noted that "the developer had already assigned those rights to Mobile Gardens I in 1972 leaving it with nothing to assign in 2000."[322] When Mobile Gardens II was formed, it did not attempt to revive Mobile Gardens I, which was dissolved in 1974.[323] Therefore, Mobile Gardens I still holds the assignment.[324] Since Mobile Gardens II was

311. *Id.*
312. *Id.*
313. *Id.*
314. *Id.*
315. *Id.*
316. *Id.*
317. *Id.*
318. *Id.*
319. *Id.* at 2.
320. *Id.*
321. *Id.*
322. *Id.*
323. *Id.* at 1.
324. *Id.* at 2.

not an assignee of the developer, the Second DCA agreed with the appellants and ruled that the trial court erred in finding that Mobile Gardens II had the power to enforce the amended restrictions.[325]

III. NOTABLE FLORIDA LEGISLATION

A. Environmental Regulation
Chapter 2013-92 / House Bill No. 999

This bill relates to a wide range of environmental regulations.[326] The bill touches on numerous Florida statutes.[327] It enables "the Department of Environmental Protection to adopt rules . . . incentivizing electronic submission of forms, documents, fees, or reports."[328] The bill limits the number of times a county or municipality can request information from an applicant applying for a development permit to three requests, unless the applicant waives the requirement in writing.[329] After a second request, the applicant must be offered a face-to-face meeting to resolve outstanding issues.[330] The term *development permit* does not include building permits.[331]

Pursuant to section 211.3103, *Florida Statutes*, an excise tax is levied "upon each person engaging in the business of severing phosphate rock from the soils or waters of this state for commercial use."[332] The proceeds of these taxes are paid into the State Treasury and used only for phosphate-related expenses.[333] This bill changes *phosphate-related expenses* to include "environmental education, . . . maintenance and restoration of reclaimed lands and county environmental lands which were formerly phosphate lands, [and] community infrastructure on . . . county-owned environmental lands which were formerly phosphate lands . . . ."[334]

A completely new statutory section has been created dealing with lease of sovereignty submerged lands for boatyards, marinas, and marine retailers.[335] The new statute creates guidelines for cer-

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325. *Id.*

326. Act effective July 1, 2013, ch. 2013-92, § 25, 2013 Fla. Laws (amending FLA. STAT. § 163.3184 (2011)).

327. *Id.*

328. *Id.* § 1 (amending FLA. STAT. § 20.255(8)).

329. *Id.* § 2 (amending FLA. STAT. § 125.022 (1); FLA. STAT. § 166.033).

330. *Id.*

331. *Id.* (amending FLA. STAT. § 125.022(3)).

332. FLA. STAT. § 211.3103(1) (2013).

333. *Id.* § 211.3103(6).

334. Act effective July 1, 2013, ch. 2013-92, 2013 Fla. Laws, § 4, 2013 Fla. Laws (amending FLA. STAT. § 211.3103(6)(c)).

335. *Id.* § 6.

tain marinas to obtain annual lease discounts.[336]

The bill also gives the water management district, delegated local government, or local county health department the sole responsibility to issue water well permits.[337] Additionally, "[o]ther local government entities may not [establish] . . . duplicate requirements or fees . . . [for] activities reasonably associated with the installation and abandonment of a groundwater well."[338]

The bill gives stronger remedial rights to a person bringing a cause of action resulting from a discharge or other condition of pollution covered by sections 376.30 through 376.317, *Florida Statute*s.[339] The new amendment allows a person to bring all damages to the court.[340]

B. Stormwater Permit
Chapter 2013-176 / Senate Bill No. 934[341]

This bill creates a provision requiring that "rules for environmental resource permitting provide for conceptual permits" for local governments "that create[ ] a stormwater management master plan for urban infill and redevelopment areas or community redevelopment areas."[342] In addition, the master plan becomes part of the conceptual permit and the rules must "provide for an associated general permit for the construction and operation of urban redevelopment projects that meet the criteria established in the conceptual permit."[343] The bill adds that before a conceptual permit is granted, the municipality or county must show that the stormwater discharging from the urban redevelopment area is not violating the water quality standards.[344] The municipality or county must show a "net improvement in the quality of the discharged water" on the approval date of the conceptual permit.[345]

The purpose of the bill is to address the quantity and quality of stormwater discharges for the redevelopment or infill area so as not to violate water quality standards.[346]

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336. *Id.*
337. *Id.* § 12 (amending FLA. STAT. § 373.308(1)).
338. *Id.*
339. *Id.* § 16.
340. *Id.* (amending FLA. STAT. § 376.313(3)).
341. Act effective July 1, 2013, ch. 2013-176, § 2, 2013 Fla. Laws (amending FLA. STAT. § 373.4131).
342. *Id.* § 1 (amending FLA. STAT. § 373.4131(1)(b)).
343. *Id.* (amending FLA. STAT. § 373.4131(1)(b)(1)-(5)).
344. *Id.* (amending FLA. STAT. § 373.4131(1)(b)(2)).
345. *Id.*
346. *Id.*

C. Everglades Restoration
Chapter 2013-59 / House Bill 7065

This bill amends the Everglades Forever Act, located in section 373.4592, *Florida Statutes*.[347] The bill amends the intent and findings for the improvement and management of the Everglades.[348] It provides a legislative finding that the implementation of best management practices (BMPs), "funded by the owners and users of land in the [Everglades Agricultural Area (EAA)], effectively reduces nutrients in waters flowing into the Everglades Protection Area."[349] The bill updates the definition of *Long-Term Plan*, adding the South Florida Water Management District's Restoration Strategies Regional Water Quality Plan, dated April 27, 2012.[350]

The bill amends the Everglades Program, by adding an additional requirement for the district to follow after the completion of all projects and improvements in the Long-Term Plan.[351] Under this new requirement, the district must "complete a use attainability analysis to determine if those projects and improvements will achieve the water quality based effluent limits established in permits and orders authorizing the operation of those facilities."[352]

The bill further deals with the Everglades agricultural privilege tax.[353] It amended the section to require payment of a $25 per acre agricultural privilege tax on property classified as agricultural within the EAA until November 2026, extending the previous date of November 2016.[354] The Everglades agricultural privilege tax drops to $20 per acre for tax notices mailed on November 2027 through 2029, $15 per acre for tax notices mailed on November 2030 through 2035, and $10 per acre for tax notices mailed on November 2036 and thereafter.[355] In addition, the bill provides that "[p]roceeds from the tax shall be used for design, construction, and implementation of the Long-Term Plan, including operation and maintenance, and research for the projects and strategies in the Long-Term Plan, including the enhancements and operation and maintenance of the Everglades Construction Project."[356] The Legislature found that the Everglades agricultural privilege tax impact-

347. Act effective July 1, 2013, ch. 2013-59, § 2, 2013 Fla. Laws (amending FLA. STAT. § 373.4592).
348. *Id.* § 1 (amending FLA. STAT. § 373.4592(1)(g)).
349. *Id.*
350. *Id.*
351. *Id.* (amending FLA. STAT. § 373.4592(4)(h)).
352. *Id.*
353. *Id.* (amending FLA. STAT. § 373.4592(6)(c)(6)).
354. *Id.*
355. *Id.*
356. *Id.*

ed Florida as a whole and thus "intend[ed] this act to be a general law authorization" under Section 9, Article VII of the State Constitution, which "fulfills the obligations of owners and users of land under [section] 7(b), Article II of the State Constitution."[357]

The bill adds a section to the Act, appropriating "the sum of $12 million in recurring general revenue funds and $20 million in recurring funds from the Water Management Lands Trust Fund" to the Department of Environmental Protection for the Restoration Strategies Regional Water Quality Plan, "[b]eginning in the 2013-2014 fiscal year, and each year thereafter through the 2023-2024 fiscal year."[358]

D. Water Supply
Chapter 2013-177 / Senate Bill No. 948[359]

This bill provides a legislative declaration that creates "[c]ooperative efforts between municipalities, counties, utility companies, private landowners, water consumers, water management districts, and the Department of Environmental Protection, and the Department of Agriculture and Consumer Services" to adequately and dependably meet water needs.[360]

The bill directs the governing board of a water management district to assist self-suppliers in meeting water supply needs.[361]

"Each regional water supply plan must be based on at least a 20-year planning period and must include . . . a water supply development component for each water supply planning region identified by the district . . . ."[362] Agriculture demand projections will be included in the water supply development component.[363] It is used for determining the needs of agricultural self-suppliers and must be based upon the best available data.[364] The best available data is determined by the district, in which they "consider the data indicative of future water supply demands provided by the Department of Agriculture and Consumer Services pursuant to s. 570.085 . . . ."[365]

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357. *Id.* (amending FLA. STAT. § 373.4592(6)(h)).
358. *Id.* § 2.
359. Act effective July 1, 2013, ch. 2013-177, § 6, 2013 Fla. Laws (amending FLA. STAT. § 373.701).
360. *Id.* § 1 (amending FLA. STAT. § 373.701(3)).
361. *Id.* § 2 (amending FLA. STAT. § 373.703(1)).
362. *Id.* § 3 (amending FLA. STAT. § 373.709(2)(a)(1)(b)).
363. *Id.*
364. *Id.*
365. *Id.*

The bill also requires the department to establish an agricultural water supply planning program, which includes numerous requirements.[366]

366. *Id.* § 5 (amending FLA. STAT. § 570.085(2)(a)-(d)).