



**VIA CERTIFIED MAIL AND EMAIL**

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**Re: 60-Day Notice of Intent to Sue BLM for Failing to Reinitiate Endangered Species Act Consultation regarding its Oil & Gas Leasing Activities in California**

Dear State Director Kenna,

The Center for Biological Diversity (“the Center”) provides notice of our intent to sue the Bureau of Land Management (“BLM”) for failing to reinitiate consultation regarding its oil and gas activities in California, in violation of the Endangered Species Act (“ESA”). 16 U.S.C. §§ 1531 *et seq.* Specifically, BLM continues to issue oil and gas leases and drilling permits that allow intensive, controversial, and environmentally destructive hydraulic fracturing (“fracking”) techniques, but the agency relies on outdated biological opinions that fail to evaluate the substantial impacts these techniques – and the consequent increase in drilling these techniques facilitate – may have on ESA-listed species. If BLM does not reinitiate consultation and halt

ongoing oil and gas leasing and drilling activities within 60 days of this letter, the Center intends to file suit under the ESA citizen suit provision.<sup>1</sup> 16 U.S.C. § 1540(g).

## **A. New Hydraulic Fracturing Techniques Have Increased Interest in, and the Associated Risks of, of Drilling in California**

Portions of land managed by BLM's Hollister and Bakersfield Field Offices overlie the Monterey Shale Formation, which extends through the San Joaquin Valley, including portions of Monterey, Fresno, Kern, and Kings Counties. The U.S. Energy Information Agency ("EIA") estimates the Monterey Shale may contain between 13.7 and 15 billion barrels of shale oil, or almost half of the nation's total shale oil resources.<sup>2</sup> While BLM has authorized oil and gas leases and drilling in both the Hollister and Bakersfield areas for decades, new and intensified drilling techniques, referred to as "fracking," have substantially increased the economic feasibility and the environmental risks of drilling.

### **1. Hydraulic Fracking**

The first oil and gas deposits discovered and exploited consisted of porous reservoirs in geologic formations capped by impervious traps that would contain migrating fluids, such as oil, natural gas, and water.<sup>3</sup> Within these reservoirs, the fluids would arrange by density, so that natural gas would be on top, with oil under it, and water on the bottom.<sup>4</sup> This layered arrangement of natural gas, oil, and water within a reservoir contained by a trap is called a conventional deposit and has historically provided most of the oil and natural gas produced.<sup>5</sup> The permeability of these formations permits the easy flow of oil or gas toward a well when the extraction of the resource drops pressure around the well.<sup>6</sup> This allows a single, simple wellbore to easily extract resources from a relatively large area, making the extraction economically attractive.<sup>7</sup>

However, much of the world's store of fossil fuel is not contained in these conventional deposits, but rather is inside the pores and cracks of relatively impermeable sedimentary rock,

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<sup>1</sup> On February 24, 2009 and June 8, 2009 respectively, the Center filed two separate 60-day notices, both alleging BLM violated the ESA by approving various oil and gas lease sales in the Bakersfield and Hollister Field Office areas. *See* Ex. A and B. We incorporate these letters and the allegations therein by reference, including allegations that BLM has failed to ensure against jeopardy for the endangered San Joaquin kit fox.

<sup>2</sup> U.S. Energy Information Administration, *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays* at 4 (Jul. 2011) ("USEIA 2011") (noting the Monterey/Santos play may contain 15 billion barrels, or 64 percent of the nation's shale resources); U.S. Energy Information Administration, *Annual Energy Outlook 2012*, DOE/EIA-0383(2012) at 58 (June 2012) ("USEIA 2012") (noting the Monterey/Santos play may contain 13.7 billion barrels, or 41 percent of total resources).

<sup>3</sup> Behrens, Carl E. et al., *U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary*, Congressional Research Service at 6 (Dec. 28, 2011) ("Behrens"); Mathias, Simon, *Hydraulic fracturing of shale gas reservoirs – implications for the surrounding environment* at 3 (Sept. 2010) ("Mathias"); McDonald, Robert, *California's Silent Oil Rush*, *New Times* at 3 (Aug. 31, 2011) ("McDonald"); Paleontological Research Institution, *Understanding Drilling Technology*, Marcellus Shale at 1 (Jan. 2012).

<sup>4</sup> Behrens at 6.

<sup>5</sup> *Id.*

<sup>6</sup> Crain, E.R., *Permeability Basics*, Crain's Petrophysical Handbook at 1.

<sup>7</sup> *See* Behrens at 6; Mathias at 3; McDonald at 3.

and is distributed over a larger area.<sup>8</sup> Shale is one such impermeable formation, and shale deposits can hold huge amounts of shale oil – called “tight oil” to avoid confusion with oil shale – and shale gas.<sup>9</sup> The geologic processes of sedimentation and compaction that create shale make both horizontal and vertical migration of oil and gas through the shale especially difficult.<sup>10</sup> Thus, while shale can contain huge amounts of oil and/or gas, its low permeability means that typically these resources cannot be economically recovered through conventional drilling methods.<sup>11</sup>

Recently, industry has overcome this low permeability by combining multi-stage slickwater hydraulic fracturing with horizontal drilling, which makes possible the profitable production of shale gas and shale oil.<sup>12</sup> Elements of these technologies have been used individually for decades. However, the combination of practices employed by industry recently is new, as “[m]odern formation stimulation practices have become more complex and the process has developed into a sophisticated, engineered process.”<sup>13</sup>

The first aspect of this multi-stage fracking method is the hydraulic fracturing of the rock. When the rock is fractured, the resulting cracks in the rock serve as passages through which gas and liquids can flow, increasing the permeability of the fractured area.<sup>14</sup> To fracture the rock, the

<sup>8</sup> *Id.*

<sup>9</sup> National Petroleum Council, *Prudent Development* at 13 (Sept. 2011) (“NPC”); USEIA 2012 at 58; USEIA 2011 at 75-77.

<sup>10</sup> Arthur, J. Daniel et al., *Hydraulic Fracturing Considerations for Natural Gas Wells of the Marcellus Shale* at 2 (Sept. 2008) (“Arthur”).

<sup>11</sup> Mathias at 3-4.

<sup>12</sup> CITI, *Resurging North American Oil Production and the Death of the Peak Oil Hypothesis* at 9 (Feb. 15, 2012) (“CITI”); USEIA 2011 at 4; Orszag, Peter, *Fracking Boom Could Finally Cap Myth of Peak Oil* (Jan. 31, 2011) (“Orszag”). The New York Department of Environmental Quality provides the following overview of technological milestones for hydraulic fracturing:

<b>Hydraulic Fracturing Technological Milestones</b>	
Early 1900s	Natural gas extracted from shale wells. Vertical wells fractured with foam
1983	First gas well drilled in Barnett Shale in Texas
1980-1990s	Cross-linked gel fracturing fluids developed and used in vertical wells
1991	First horizontal well drilled in Barnett Shale
1991	Orientation of induced fractures identified
1996	Slickwater fracturing fluids introduced
1996	Microseismic post-fracturing mapping developed
1998	Slickwater refracturing of originally gel-fractured wells
2002	Multi-stage slickwater fracturing of horizontal wells
2003	First hydraulic fracturing of Marcellus Shale
2005	Increased emphasis on improving the recovery factor
2007	Use of multi-well pads and cluster drilling

New York State Department of Environmental Conservation, *Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs* at 5-5 (Sept. 7, 2011) (“NYS SGEIS”).

<sup>13</sup> Arthur at 9.

<sup>14</sup> Mathias at 5-9.

well operator injects hydraulic fracturing fluid at tremendous pressure.<sup>15</sup> Generally, this frack fluid, also called “slickwater,” is primarily water. However, it also contains a “proppant,” typically sand, that becomes wedged in the fractures and holds them open so that passages remain after pressure is relieved, and a mixture of chemicals that help provide the characteristics of the fluid that facilitates fracturing.<sup>16</sup> In particular, the chemicals are used to increase the viscosity of the fluid, to keep proppants suspended, to impede bacterial growth or mineral deposition, and for a variety of other purposes.<sup>17</sup> Halliburton developed the practice of injecting fluids into wells under high pressure in the late 1940s;<sup>18</sup> however, companies began using today’s slickwater much later, in the mid-1990s.<sup>19</sup>

It is difficult to know exactly what is in fracturing fluid because industry has resisted the disclosure of the constituents of frack fluid.<sup>20</sup> Nevertheless, it is clear that fracking fluids often contain dangerous chemicals.<sup>21</sup> A congressional report sampling incomplete industry self-reports found that “[t]he oil and gas service companies used hydraulic fracturing products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act.”<sup>22</sup> Recently published scientific papers also describe the harmfulness of the chemicals often in fracking fluid. One study reviewed a list of 944 fracking fluid products containing 632 chemicals, 353 of which could be identified with Chemical Abstract Service numbers.<sup>23</sup> The study concluded that more than 75 percent of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems; approximately 40 to 50 percent could affect the brain/nervous system, immune, and cardiovascular systems, and the kidneys; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations.<sup>24</sup> Another study reviewed exposures to fracking chemicals and noted that trimethylbenzenes are among the largest contributors to non-cancer threats for people living within a half mile of a well, while benzene is the largest contributor to cumulative cancer risk for people, regardless of the distance from the wells.<sup>25</sup>

Because shale oil and shale gas formations are relatively thin layers of rock that are typically located far below the surface, merely adding hydraulic fracturing to the conventional drilling process is often insufficient to allow profitable extraction of these resources.<sup>26</sup> The zone

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<sup>15</sup> *Id.*

<sup>16</sup> *Id.*; Arthur at 10; United States House of Representatives, Committee on Energy and Commerce, Minority Staff, *Chemicals Used in Hydraulic Fracturing* (Apr. 2011) (“House Fracking Report”).

<sup>17</sup> Arthur at 10.

<sup>18</sup> Tompkins, *How will High-Volume (Slick-water) Hydraulic Fracturing of the Marcellus (or Utica) Shale Differ from Traditional Hydraulic Fracturing?*, Marcellus Accountability Project at 1 (Feb. 2011).

<sup>19</sup> NYS SGEIS at 5-5.

<sup>20</sup> House Fracking Report at 11-12.

<sup>21</sup> House Fracking Report; *see also* Colborn, Theo et al., *Natural Gas Operations for a Public Health Perspective*, 17 Human and Ecological Risk Assessment 1039 (2011) (“Colborn 2011”); McKenzie, Lisa et al., *Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources*, *Sci Total Environ* (2012), doi:10.1016/j.scitotenv.2012.02.018 (“McKenzie 2012”).

<sup>22</sup> *Id.* at 8.

<sup>23</sup> Colborn 2011 at 1.

<sup>24</sup> Colborn 2011 at 1.

<sup>25</sup> McKenzie 2012 at 5.

<sup>26</sup> *See* CITI at 9; USEIA 2011 at 4; Orszag.

of increased permeability created by hydraulic fracturing only extends a certain radius away from the well bore, and drilling that deep to extract resources from a narrow vertical cylinder of the shale layer can be uneconomic.<sup>27</sup> To address this problem, companies developed horizontal drilling. This practice first began appearing in the early 1990s.<sup>28</sup> It allows an operator to drill down to the shale layer and then turn the well to extend along it.<sup>29</sup> The operator can then fracture the shale formation and extract oil and gas from a much larger area, as compared to a vertical well.<sup>30</sup> Further, well pads constructed for horizontal drilling are typically larger than those used in traditional vertical well drilling, and the industrial activity taking place on the pads is more intense.<sup>31</sup>

The development of long horizontal wells made increasing pressure in the well harder, and also raised the potential for a single well to encounter varying conditions. Thus, starting in 2002, “to maintain sufficient pressure to fracture the entire length of the wellbore, to achieve better control of fracture placement and to allow changes from stage to stage to accommodate varying geological conditions along the wellbore,”<sup>32</sup> industry began employing multi-stage fracking. In multi-stage fracking, the operator treats only part of the wellbore at a time, typically 300 to 500 feet.<sup>33</sup> Each stage “may require 300,000 to 600,000 gallons of water,” and consequently, a frack job that is two or more stages can contaminate and pump into the ground over a million gallons of water.<sup>34</sup>

This new combination of multi-stage slickwater hydraulic fracturing and horizontal drilling (hereinafter “fracking”) has opened up production of oil and gas deposits that only a few years ago were generally viewed as uneconomical to develop.<sup>35</sup> In large part through the use of fracking, the oil and gas sector is now producing huge amounts of oil, and especially gas, throughout the United States, rapidly transforming the domestic energy outlook. The EIA has estimated that by using these recently developed techniques, at least 750 trillion cubic feet of shale gas and 23.9 billion barrels of shale oil are now technically recoverable in the United States.<sup>36</sup> For shale gas, the EIA states that the largest plays are the Marcellus in the Northeast (410.3 trillion cubic feet, 55 percent of the total), the Haynesville in the South (74.7 trillion cubic feet, 10 percent of the total), and the Barnett in the Southwest (43.4 trillion cubic feet, six percent of the total).<sup>37</sup> For shale oil, the EIA reports that there could be more than 23.9 billion barrels in the continental United States.<sup>38</sup> Significant shale oil extraction has already occurred in the Bakken play in North Dakota and Eagle Ford play in Texas, which the EIA estimated holds approximately 3.6 billion barrels and 3.4 billion barrels of shale oil, respectively.<sup>39</sup> These plays are potentially dwarfed by the Monterey Shale play in California, which is estimated to hold over

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<sup>27</sup> Arthur at 8 (Figure 4).

<sup>28</sup> Venoco, Inc., Monterey Shale Focused Analyst Day Slide Show at 23 (May 26, 2010) (“Venoco Slide Show”).

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*; USEIA 2012 at 63.

<sup>31</sup> NYS SGEIS at 7.

<sup>32</sup> NYS SGEIS at 5-93.

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> CITI at 9; USEIA 2011 at 4; Orszag.

<sup>36</sup> USEIA 2011 at 4.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

40 percent of the total shale oil reserves in the continental United States, or over 13 billion barrels of shale oil.<sup>40</sup>

Initially, fracking was used successfully in the Barnett Shale of the Fort Worth Basin in Texas, with production ramping up rapidly in the mid- to late-90s.<sup>41</sup> Once its success in the Barnett Shale became clear, companies began adopting the new techniques, and fracking spread across the country. Fracking is now occurring in the eastern United States' Marcellus Shale, North Dakota's Bakken Shale Formation, and Texas's Eagle Ford Formation.<sup>42</sup>

The effect of hydraulic fracturing on the oil and gas markets has been tremendous, with many reports documenting the boom in domestic energy production. A recent congressional report notes that “[a]s a result of hydraulic fracturing and advances in horizontal drilling technology, natural gas production in 2010 reached the highest level in decades.”<sup>43</sup> An EIA report notes how recently these changes have occurred, stating that “only in the past 5 years has shale gas been recognized as a ‘game changer’ for the U.S. natural gas market.”<sup>44</sup> Another recent report highlights how recent advances in technology have driven and will continue to drive this change:

From 2007 to 2009, the average lateral length of horizontal drilling for shale rock resources increased by a factor of five, allowing for a tripling of the initial production rate in some shale formations. This technological advance substantially lowered costs and allowed for greater technical access to the shale gas resource in-place. Currently in North America, break-even prices for some of the more prolific shales are estimated to be as low as \$3 per thousand cubic feet (mcf), with a large majority of the resource accessibility at below \$6/mcf. Ten years ago, costs were three to four times higher. As firms continue to make cost reducing innovations, it is likely that the recoverable resource base is larger than presently estimated.<sup>45</sup>

Further, as the Texas Supreme Court has noted, “the unprecedented success of fracking in the Barnett Shale in north central Texas has prodded exploration elsewhere, and spurred efforts to produce gas in many other areas and geological formations that were previously considered unrecoverable or uneconomic.”<sup>46</sup>

With respect to oil, the EIA notes that oil production has been increasing, with the production of shale oil resources pushing levels even higher over the next decade:

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<sup>40</sup> *Id.*

<sup>41</sup> Arthur at 1, 3.

<sup>42</sup> Arthur at 3; USEIA 2012 at 95; McDonald.

<sup>43</sup> House Fracking Report at 1.

<sup>44</sup> USEIA 2011 at 4.

<sup>45</sup> Jaffe, Amy Myers et al., *The Status of World Oil Reserves: Conventional and Unconventional Resources in the Future Supply Mix* at 12-13 (Oct. 2011) (“Jaffe”).

<sup>46</sup> Wiserman, Hannah, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 Fordham Env'tl. Law Rev. 115, 122 (2009) (“Wiserman”).

Domestic crude oil production has increased over the past few years, reversing a decline that began in 1986. U.S. crude oil production increased from 5.0 million barrels per day in 2008 to 5.5 million barrels per day in 2010. Over the next 10 years, *continued development of tight oil*, in combination with the ongoing development of offshore resources in the Gulf of Mexico, pushes domestic crude oil production higher.

As the shale gas experience demonstrates, one outcome of the recent price spikes of the 2000s is that higher prices encouraged innovations in the exploration of hydrocarbon resources that were previously too expensive or considered technologically infeasible. As these techniques are increasingly utilized, experience allow firms to “learn by doing,” and thereby lower the overall development cost of producing unconventional resources, leaving continued development feasible even as prices sink again cyclically.<sup>47</sup>

Thus, it is evident that industry is still exploring new locations to develop, and the nation has not yet seen the full extent of fracking’s impact on oil and gas development and production.

The meteoric rise of fracking around the country and the scale of the practice, along with the scope and uncertainty of the risks involved with the practice, have caught the public and governments by surprise. In response, concerned over impacts to groundwater, air quality, and habitat, some cities, states, and countries have placed a moratorium or outright ban on fracking. For instance, in 2011 France became the first country to ban the practice.<sup>48</sup> In May, Vermont became the first state to ban fracking. Vermont’s governor called the ban “a big deal” and stated that the bill “will ensure that we do not inject chemicals into groundwater in a desperate pursuit for energy.”<sup>49</sup> New York has halted the practice while it researches the issue, and Governor Andrew Cuomo is considering allowing fracking only in communities with ordinances allowing it.<sup>50</sup> Also, New Jersey’s legislature recently passed a bill that would prevent fracking waste, like toxic wastewater and drill cuttings, from entering its borders,<sup>51</sup> and Pennsylvania has banned “natural-gas exploration across a swath of suburban Philadelphia.”<sup>52</sup> Numerous cities and communities, like Buffalo, Pittsburgh, Raleigh, Woodstock, and Morgantown have banned fracking.<sup>53</sup> Further, various legislative proposals are now moving in California that would increase regulation of fracking, including one bill that would place a moratorium on fracking in the state.

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<sup>47</sup> USEIA 2012 at 2.

<sup>48</sup> Castelvechi, Davide, *France becomes first country to ban extraction of natural gas by fracking*, Scientific American (Jun. 30, 2011).

<sup>49</sup> CNN Staff Writer, *Vermont first state to ban fracking*, CNN U.S. (May 17, 2012).

<sup>50</sup> Esch, Mary, *New York Fracking Moratorium Causes Drilling Company to Shut off Gas in Avon, NY*, Huffinton Post (Jul. 9, 2012).

<sup>51</sup> Tittel, Jeff, *Opinion: Stop fracking waste from entering New Jersey’s borders* (Jul 14, 2012).

<sup>52</sup> Editorial, *Fracking ban is about our water*, The Inquirer (Jul. 11, 2012).

<sup>53</sup> CBS, *Pittsburgh Bans Natural Gas Drilling*, CBS/AP (Dec 8, 2010); Wooten, Michael *City of Buffalo Bans Fracking* (Feb. 9, 2011); The Raleigh Telegram, *Raleigh City Council Bans Fracking Within City Limits* (Jul. 11, 2012); Kemble, William, *Woodstock bans activities tied to fracking*, Daily Freeman (Jul. 19, 2012); MetroNews.com, *Morgantown Bans Fracking* (June 22, 2011), <http://www.wvmetronews.com/news.cfm?func=displayfullstory&storyid=46214>.

## 2. Increased Hydraulic Fracking in California's Monterey Shale

The Monterey Shale Formation, which is located partially within the areas administered by BLM, is a massive shale formation the EIA estimates to contain over 13 billion barrels of shale oil, or over 40 percent of the nation's total shale oil resources.<sup>54</sup> The importance of the Monterey Shale Formation to the oil industry in California cannot be overestimated. A recent industry report states:

The largest shale reserves could be in California . . . In theory, at least, these reserves are easier and less expensive to tap into than resources elsewhere in the US. The main prospect is Monterey/Santos shale, which has its own specific geological features, and increasingly well understood through seismic imaging and drilling of exploratory wells.<sup>55</sup>

Most of the oil produced to date from the Monterey Shale Formation has been the “easy” oil – oil that was naturally released from the shale into other, permeable formations over geologic time scales and then pooled near the surface where it could be extracted with conventional drilling techniques.<sup>56</sup> However, most of the remaining shale oil in the Monterey formation remains locked within the shale itself, and in order to recover that oil, industry must employ techniques such as fracking to bring oil economically to the surface.<sup>57</sup>

While there has been relatively light exploration and extraction of oil directly from the Monterey Shale Formation to date, there has very recently – just over the last few years – been an increase in industry activity. Companies are now pursuing development of the vast tight oil deposits contained in the formation and reports that those “reserves are easier and less expensive to tap into than resources elsewhere in the US.” For instance, Venoco, one of the State's largest and most active drilling companies, is planning a “major program” to drill the Monterey Shale.<sup>58</sup> Venoco's CEO has expressed the company's dedication to its new program to investors, and indicates that actual drilling operations just started in 2010:

[W]e were able to double the Monterey Shale budget and not only drill additional vertical wells, but also drill our first horizontal wells in the play. We are very early in the process of applying new drilling, coring, logging, completion and petrophysics to the Monterey. Before 2010, we'd invested five years to identify the resource, to build a solid lease position and to hire key personnel to pursue this play. We have made very good progress in 2010 by getting the bit into the ground.<sup>59</sup>

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<sup>54</sup> USEIA 2011 at 4.

<sup>55</sup> CITI at 14 (emphasis in original).

<sup>56</sup> McDonald at 3.

<sup>57</sup> See Arthur at 2-3.

<sup>58</sup> See, e.g., Williams, Peggy, *Monterey Shale a Marvelous Target*, EP Magazine (May 25, 2010), [http://www.epmag.com/item/print/Monterey-Shale-marvelous-target\\_60504](http://www.epmag.com/item/print/Monterey-Shale-marvelous-target_60504).

<sup>59</sup> Venoco, *Venoco Announces Reserves and Operations Update* (Dec 31, 2010)

<http://investor.venocoinc.com/phoenix.zhtml?c=193733&p=irol-newsArticle&ID=1525229&highlight=> (internal quotation marks omitted).



The company appears to be expanding this operation, as it is currently searching for “Sr. Reservoir Engineers” to work in one of its California offices:<sup>60</sup>

These Engineering positions will report to either the Manager of Unconventional Resources supporting our upcoming shale projects or the Development Manager supporting other active fields in Venoco’s Southern California Region. . . . Candidates for the Unconventional Resources positions should have extensive experience in unconventional shale plays including hands-on assignments in *horizontal/long lateral wells with multi-frac completions in shale formations*.<sup>61</sup>

The same California office also is seeking a drilling engineer that has experience with work “in shale plays that utilized the latest unconventional drilling techniques.”<sup>62</sup>

Particularly, Venoco is aiming these expanding efforts at “the San Joaquin . . . basin [ ] and the Salinas Valley,” two areas in which BLM owns or administers lands and mineral resources.<sup>63</sup> Venoco has been particularly aggressive in asserting its right to frack wells in Monterey County and appears to have already fracked multiple wells there.<sup>64</sup>

Moreover, contrary to state and federal agency talking points on fracking in California, companies are already using the modern techniques and tools that are the hallmark of modern fracking in the state. For instance, an Oil & Gas Journal report highlights Venoco’s use of not just hydraulic fracturing, but also horizontal drilling and multi-stage frack jobs:

[Venoco] has drilled its first two Monterey horizontal wells in the Santa Maria basin and awaits four-stage fracs expected in a few weeks to test that technology vs. acid treatments that have worked well in the Monterey elsewhere. It is also drilling a horizontal Monterey well in the Salinas Valley.<sup>65</sup>

Companies are also already using dangerous fracking fluid in California. One company has injected trimethylbenzene into the ground in Los Angeles County.<sup>66</sup> As described above, a

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<sup>60</sup> Venoco, Employment Opportunities, <http://www.venocoinc.com/employment.php?area=2> (last visited July 30, 2012).

<sup>61</sup> *Id.* (emphasis added).

<sup>62</sup> *Id.*

<sup>63</sup> Petzet, Alan, *Venoco gears to probe California Monterey on land*, Oil and Gas Journal (Jan. 24, 2011) (“Petzet”), <http://www.ogj.com/articles/print/volume-109/issue-4/general-interest/venoco-gears-to-probe-california-monterey.html>.

<sup>64</sup> Rubin, Sara, *A Fracking Ordeal: Community Group Seeks Answers to Regulatory Loopholes*, Monterey County Weekly (Feb. 10, 2011), <http://www.montereycountyweekly.com/news/2011/feb/10/fracking-ordeal/> (the Hames Valley is at the southern end of the Salinas Valley); Letter from James G Moose, Counsel for Venoco, Inc. to Charles J. McKee, County Counsel for Monterey County regarding Venoco Use Permit Number PLN 080321 (Mar. 17, 2011) (“Venoco Letter to Monterey County”) (“Venoco is currently drilling two wells in Monterey County . . . and has two other approved exploratory well permits . . . for which drilling may commence in the near future. None of the Existing Permits restricts the down-hole procedures that Venoco may use to evaluate the commercial potential its wells. Hydraulic fracturing is among various techniques commonly in use in the oil and gas industry. The last well Venoco drilled in Monterey County . . . was hydraulically fractured.”).

<sup>65</sup> *Id.*

<sup>66</sup> FracFocus, Hydraulic Fracturing Fluid Product Component Information Disclosure, API Number 0403726720, Los Angeles County, Fracture Date Sep. 15, 2011.

study has found trimethylbenzene to be of the most important contributors to non-cancer hazards from fracking fluids. For Venoco, the composition of the fracking fluid the company is using in its frack jobs remains unclear; however, in its application to Monterey County, “Venoco described its chemical mix as ‘acid, friction reducers, surfactant, gelling agent, PH adjusting agent, oxygen scavenger, breaker, crosslinker, Iron Control, Corrosion Inhibitor, and an Antibacterial Agent.’”<sup>67</sup> This indicates the use of a host of dangerous chemicals. For instance, companies use methanol, which can be fatal in high enough doses, as a corrosion inhibitor; and they use naphthalene, which is a carcinogen and which can cause death if inhaled, as a surfactant.<sup>68</sup>

Further, the tight oil operations that are currently being pursued on the Monterey Shale are large in scale. An industry report states that “Venoco and Oxy, two of the major companies in Monterey, together shot California’s largest ever 3-D seismic shoot. And drilling activity increased throughout 2011, hitting 40 rigs in October, and up 100 wells in 2011 compared to the year before.”<sup>69</sup> Another report notes that this seismic survey covered 520,000 acres, and that the survey’s “data will help in planning horizontal wells.”<sup>70</sup>

Thus, it is clear that fracking, including fracking using the newest techniques that have been associated with serious adverse impacts in other areas of the country, is already occurring in California and is poised to expand. Hundreds of fracked wells in nine counties (Kern, Los Angeles, Monterey, Sacramento, Santa Barbara, Ventura, Colusa, Glenn, and Sutter) are now listed on the website Frac Focus, on which companies voluntarily disclose partial information about their wells.<sup>71</sup> The total number of fracked wells almost certainly reaches into the thousands.<sup>72</sup> For Kern County, according to Halliburton, in the fall of 2011, 50 to 60 percent of new wells being drilled were hydraulically fractured.<sup>73</sup>

Moreover, fracking is occurring in the absence of any adequate federal or state oversight. California’s Division of Oil, Gas, and Geothermal Resources (“DOGGR”), charged with regulating oil and gas activities and protecting California’s water, public health, and environment, has asserted that it is “unable to identify where and how often hydraulic fracturing occurs within the state,” and that “there are neither reporting requirements nor regulatory parameters of “when, how and what needs to be reported when applying for permits.”<sup>74</sup> The

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<sup>67</sup> McDonald.

<sup>68</sup> FracFocus.org, What Chemicals Are Used, <http://fracfocus.org/chemical-use/what-chemicals-are-used> (“FracFocus, Chemicals”) (last visited July 30, 2012); Earthworks, Hydraulic Fracturing 101, [http://www.earthworksaction.org/issues/detail/hydraulic\\_fracturing\\_101](http://www.earthworksaction.org/issues/detail/hydraulic_fracturing_101) at 9 (last visited July 16, 2012) (“Earthworks I”); see also Colborn 2011 at 1041.

<sup>69</sup> CITI at 14. A 3-D seismic shoot creates 3-D images of subsurface structures so that companies can better assess the where fossil fuel reservoirs are and the geology of the area in which the resources are found. This practice has increased the drilling success rate, especially in shale plays. One report indicates that 3-D seismic surveying has increased the drilling success rate to 90 percent. Basin Oil & Gas, 3-D seismic increases drilling success rate (Jan 2009), <http://www.fwbog.com/index.php?page=article&article=75>.

<sup>70</sup> Petzet at 27.

<sup>71</sup> FracFocus.org home page <http://fracfocus.org> (“FracFocus home”).

<sup>72</sup> Environmental Working Group, California Regulators: See No Fracking, Speak No Fracking at 6 (2012).

<sup>73</sup> *Id.*

<sup>74</sup> Letter from Elena M. Miller, State Oil and Gas Supervisor, California Division of Oil, Gas, & Geothermal Resources, to The Honorable Fran Pavley, California State Senate, February 16, 2011 at 2.

current informational and regulatory void on the state level makes it even more critical that BLM comply with its own duties to review, analyze, and consult with relevant wildlife agencies to mitigate the impacts of its oil and gas leasing decisions.

## **B. Fracking Affects Numerous ESA-Listed Species on California BLM Lands**

Numerous threatened and endangered species inhabit the areas where fracking has and is likely to occur on both Hollister and Bakersfield BLM-administered lands. BLM is required to consult regarding the impacts of both fracking and the associated increase in drilling that fracking is likely to facilitate on each of these listed species. Below, we discuss several of these species and potential impacts are discussed below, although we note numerous other listed plants and animals are likely affected by BLM's oil and gas activities.

### **1. California Condor**

The California condor's range covers portions of Monterey and Kern Counties within the Hollister and Bakersfield BLM areas. California condors were listed as an endangered species in 1967 and remain one of the most endangered vertebrates.<sup>75</sup> Historically, condors ranged from British Columbia to Baja but, because of human activity, their numbers dropped to the brink of extinction. In the late 1980's all remaining wild California condors were captured for an intensive recovery effort, resulting in their reintroduction to the wild in 1991. Condors have slowly recolonized some of their former habitat, including BLM-administered lands. And while recovery efforts have allowed condor numbers to rise, the species still faces numerous human-induced threats and is not currently considered to be self-sustaining.<sup>76</sup> The condor is the subject of one of the largest species recovery efforts in U.S. history, and the U.S. Fish & Wildlife Service has spent upwards of \$40 million to stave off its extinction. In a comment letter to the Forest Service regarding a leasing proposal in the Los Padres National Forest, the Department of Justice noted the "superhuman" efforts of the Fish & Wildlife Service's ("FWS") captive condor breeding program and went on to state that the Forest Service's "proposed oil leasing puts the future success of this effort in jeopardy."<sup>77</sup> As of February 29, 2012, there were only about 386 California condors left in the world, and 118 in the wild in California.<sup>78</sup>

A significant amount of condor habitat has been lost or has severely degraded due to oil and gas projects. In one National Wildlife Refuge that allowed oil and gas development, FWS estimated that 63 percent of critical condor habitat was lost.<sup>79</sup> Condors are known to use a wide acreage of habitat; they separate their nesting area from their foraging areas and have been known to fly more than 200 km and traverse their entire habitat range in one day.<sup>80</sup>

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<sup>75</sup> 32 Fed. Reg. 4,001 (1967).

<sup>76</sup> Meretsky, Vicky J. et al., Demography of the California Condor: Implication for Reestablishment, Conservation Biology 14(4): 957-967 (2002) ("Meretsky 1992").

<sup>77</sup> U.S. Department of Justice, Comments on Oil and Gas Leasing Proposal for the Los Padres National Forest, (April 19, 2002).

<sup>78</sup> U.S. Fish and Wildlife Service, California Condor Recovery Program Overview Page (March 31, 2012). Available at <http://www.fws.gov/hoppermountain/CACORecoveryProgram/CurrentStatus.html>; see also U.S. Fish and Wildlife Service, Condors, Eagles and Wind Energy: Why Have This Workshop? (2012).

<sup>79</sup> GAO Report.

<sup>80</sup> Meretsky 1992.

Construction of oil and gas production facilities, in addition to road and pipeline construction associated those facilities, eliminate habitat and wildlife food sources.<sup>81</sup> Oil and gas infrastructure also breaks up existing habitat connectivity, and invites greater disturbances to wildlife from new human activity, provides additional pathways to predators, and increases the spread of invasive species. Habitat fragmentation is of particular concern because all California condors come from only a small number of captive condors and have a very limited amount of genetic variability.<sup>82</sup> To prevent the condors from becoming too inbred, retaining maximum habitat connectivity is essential.

Further, general human activity associated with oil and gas extraction could discourage condors' use of habitat that may otherwise be suitable for nesting, perching, roosting, or foraging.<sup>83</sup> Project-related noise, such as from detonations, gas compressors, diesel-powered electric generators, and truck engines could cause adult birds to repeatedly flush from, or eventually abandon, an active nest, or prevent them from choosing otherwise suitable habitat as a nest site. Activity at an oil and gas site can take place 24 hours per day, seven days per week, without any breaks.

Condor expert Dr. Allen Mee provided commentary in response to one BLM leasing project that was not ultimately approved. Dr. Mee stated that high levels of noise from an oil pad caused a noticeable reaction in a pair of condor parents at their nesting site. Abnormal behavior included abandoning their care for their less than one month old chick, which is much earlier than any condors have been documented abandoning a chick before or since.<sup>84</sup>

Moreover, condors have been documented landing on oil pads and other production equipment, presenting a threat to their health and safety and reducing their fear of humans.<sup>85</sup> In commenting on a leasing project, Dr. Allen Mee noted that:

[T]here is little or no evidence to suggest that adults are “avoiding” oil pads. Condors in southern California have tended to show a seasonal pattern of use of oil pads and the ingestion of trash continues to be the most serious nestling mortality factor. During my intensive observations of the population, especially in 2002, 2003, 2004 & 2005, the oil pads in the Hopper Mt. area were heavily used in late winter and spring with, on occasion, the whole population landing on oil pads. Oil pad use by many condors was constant during this period and required much intervention by USFWS staff to keep condor from spending periods of time at pads. Undoubtedly, condors have and continue to land at pads, especially early in the morning, when FWS staff are not present.<sup>86</sup>

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<sup>81</sup> U.S. GAO Report.

<sup>82</sup> Cohn, J.P., *The Flight of the California Condor*, *BioScience*. 43 (4): 206-209 (1993).

<sup>83</sup> USFWS & USDOJ Biological Opinion on the Proposal to Lease Oil and Gas Resources within the Boundaries of the Los Padres National Forest, California (February 23, 2005).

<sup>84</sup> Mee, A., Comments from Dr. Allen Mee on Environmental Assessment for two APDs near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge (June 5, 2007) (“Mee 2007”).

<sup>85</sup> Meretsky 1992.

<sup>86</sup> Mee 2007.

Proximity to oil or gas facilities presents condors with serious risks of injury. In 2002, FWS had to flush a condor from an oil pad and remove oil from its face and wings. FWS concluded that the condor became immersed in oil while trying to tear an oily rag from a pipe. FWS has found numerous other condors with oil on their heads, while photographs and reports demonstrate habituation of condors to oil drilling equipment.<sup>87</sup>

There has been at least one documented incident involving a condor coating itself with oil from exposed pools associated with oil development in the Hopper Mountain National Wildlife Refuge.<sup>88</sup> Oil and gas operations have been very harmful to nesting condors as well. At least one chick has died after its father dipped its head in a pool of oil and rubbed against the chick.<sup>89</sup>

FWS has documented that oil and gas waste pits present significant risks to wildlife. Pits can “entrap and kill migratory birds and other wildlife . . . . Birds are attracted to reserve pits by mistaking them for bodies of water. . . . The sticky nature of oil entraps birds in the pits and they die from exposure and exhaustion.”<sup>90</sup> In addition, the New Mexico Department of Game and Fish has expressed concern about the hazards of hydrocarbon toxicity to wildlife including “acute and chronic ingestion or absorption toxicity, loss of thermal stability from oiling of fur or feathers, and reproductive failure due to absorption of chemicals from the maternal bird body through the shell of eggs.”<sup>91</sup>

Each of the impacts listed above are increased by the additional use of fracking in and near condor habitat. Fracking increases the intensity of drilling activities, including more noise and more waste, and fracking will facilitate more drilling across BLM areas, multiplying the already existing oil and gas impacts.

## 2. San Joaquin Kit Fox

San Joaquin kit foxes inhabit portions of Kern, Kings, and Fresno Counties, including areas within the Hollister and Bakersfield Field Offices’ jurisdiction.<sup>92</sup> The San Joaquin kit fox has been under California Endangered Species Act protection for over 39 years and under federal Endangered Species Act protection for over 43 years. Despite decades of conservation efforts, kit fox populations – and the amount of suitable habitat available to the species – continues to decline.

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<sup>87</sup> *Id.* at 5.

<sup>88</sup> *Id.* at 17.

<sup>89</sup> *Id.* at 17.

<sup>90</sup> U.S. Fish & Wildlife Service, Region 6 Env'tl. Contaminants Program, Reserve Pit Mgmt.: Risks to Migratory Birds (2009).

<sup>91</sup> Kirkpatrick, Lisa, Letter from Lisa Kirkpatrick, Conservation Services Division Dept of Fish and Game, to New Mexico Oil and Conservation Division, Environmental Bureau re OCD Rule “Pits and Below-Grade Tanks” NMAC 19.15.2.40; NMGF Project No. 11251 (Feb 2, 2007).

<sup>92</sup> U.S. Fish and Wildlife Service, San Joaquin Kit Fox – 5 year review (2010) (“Kit Fox 5-Year Review”). Available at

[www.fws.gov/ecos/ajax/docs/five\\_year\\_review/doc3222.pdf](http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3222.pdf).

Modeling suggests that the San Joaquin kit fox is threatened with extinction in the San Joaquin Valley by 2022,<sup>93</sup> making the peripheries of its range and corridor areas even more important for the species' survival. In the 1998 Recovery Plan for the Upland Species of the San Joaquin Valley, FWS noted that the loss of kit fox habitat from oil and gas development presents a threat to the species. FWS highlighted "habitat loss due to grading and construction for roads, well pads, tank settings, pipelines, and settling ponds" and noted "[h]abitat degradation derives from increased noise, ground vibrations, venting of toxic and noxious gases, and release of petroleum products and waste waters. Traffic-related mortality is also a factor for kit foxes living in oil fields."<sup>94</sup> FWS's 2010 5-year review confirmed that only three core areas for the kit fox remain in the species' range and that satellite and corridor areas are critical to future survival.<sup>95</sup> The review also noted that oil and gas production remains a threat to the species: "The most significant effect of oil-field development appears to be lowered carrying capacity for populations of both kit fox and their prey species due to changes in habitat characteristics, and to loss and fragmentation of habitat."<sup>96</sup>

As with condors, in addition to the general impacts of oil and gas drilling on kit fox, fracking in particular creates a large risk of harm for the species because of extremely the large amount of activity that is required around the well. As described above, fracking requires massive amounts of water that must be trucked to the lease location and later disposed of as wastewater. This activity could result in additional harassment and increased kit fox mortality, for example, from vehicle strike.

### 3. Blunt-nosed Leopard Lizard

Oil and gas development impacts the blunt-nosed leopard lizard, particularly in western Kern, Kings, and Fresno Counties, including on lands under BLM jurisdiction. This species has been listed under the ESA for over 40 years and is also protected under California law. FWS's recent five-year review for the lizard recognizes that oil and gas activities threaten the species' recovery, and that affirmative steps must be taken to prevent these activities from causing further harm.<sup>97</sup> As FWS noted in its Recovery Plan: "Construction of facilities related to oil and natural gas production, such as well pads, wells, storage tanks, sumps, pipelines, and their associated service roads degrade habitat and cause direct mortality to leopard lizards, as do leakage of oil from pumps and transport pipes and storage facilities."<sup>98</sup> Further, "[d]umping of waste oil and highly saline wastewater into natural drainage systems also degrades habitat and causes direct mortality."<sup>99</sup> Like many species, fracking also creates additional impacts to blunt-nosed leopard

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<sup>93</sup> Eve McDonald-Madden et al., Subpopulation triage: How to allocate conservation effort among populations. *Conservation Biology* 22(3): 656-665 (2008).

<sup>94</sup> U.S. Fish and Wildlife Service, Recovery Plan for the Upland Species of the San Joaquin Valley, California.130 (1998) ("USFWS Recovery Plan") *available at* <http://esrp.csustan.edu/publications/pubhtml.php?doc=sjvrp&file=cover.html>.

<sup>95</sup> *See* Kit Fox 5-Year Review at 66.

<sup>96</sup> *Id.* at 22.

<sup>97</sup> U.S. Fish and Wildlife Service, Blunt-nosed leopard lizard – 5 year review (2010). Available at [http://www.fws.gov/ecos/ajax/docs/five\\_year\\_review/doc3209.pdf](http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3209.pdf).

<sup>98</sup> U.S. Fish and Wildlife Service, Recovery Plan for Upland Species of the San Joaquin Valley, California Recovery Plan (1998), at 119. Available at: [http://ecos.fws.gov/docs/recovery\\_plan/980930a.pdf](http://ecos.fws.gov/docs/recovery_plan/980930a.pdf).

<sup>99</sup> *Id.*

lizards, as activity around the well site is more intense, requires more traffic, and creates additional wastewater that can impact habitat.

#### **4. Steelhead**

Both the Bakersfield and Hollister BLM areas contain habitat or are upstream of habitat for listed steelhead, including the South-Central California Coast, Southern California, Central Valley, and Central California Coast populations.<sup>100</sup> The various California steelhead populations were ESA listed in 2006, and their statuses were confirmed by NMFS 2011.<sup>101</sup> Fracking requires an enormous amount of water and creates an equally enormous amount of wastewater or flowback. Groundwater pumping or the use of surface water to provide this water can directly affect flows in steelhead streams and their tributaries, to the detriment of steelhead populations. Potential contamination of surface waters from wastewater or fracking fluids can also directly impact habitat.

#### **5. Giant Kangaroo Rat**

The giant kangaroo rat's range was once extensive, but the species now occurs in six fragmented populations, including portions of Fresno, Kings, and western Kern Counties.<sup>102</sup> The giant kangaroo rat was declared a federally-listed species in 1987. According to FWS, “[h]abitat loss in general remains the greatest factor negatively affecting giant kangaroo rat existence.”<sup>103</sup> However, “[o]il and gas exploration and development continue to degrade giant kangaroo rat habitat in western Kern, Kings, and Fresno Counties. The construction of facilities related to oil and natural gas production, such as well pads, wells, storage tanks, sumps, pipelines, and their associated service roads degrade habitat.”<sup>104</sup> These impacts will only intensify due to fracking.

### **C. The Endangered Species Act and BLM's Consultation Obligations**

In enacting the ESA in 1973, Congress established its policy that “all Federal . . . agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the [ESA] purposes.” 16 U.S.C. § 1531(c)(1). To implement this policy, Section 7(a)(2) of the ESA requires that each federal agency consult with the U.S. Fish and Wildlife Service (“FWS”) or the National Marine Fisheries Service (“NMFS,” collectively “the Services”)<sup>105</sup> to “insure that any action authorized, funded, or carried out by such agency . . .

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<sup>100</sup> Bakersfield Proposed Resource Management Plan & Final Environmental Impact Statement at 812 (Aug. 2012); Concurrence Letter from Dick Butler, NMFS, to Rick Cooper, BLM (Dec. 21, 2006).

<sup>101</sup> 71 Fed. Reg. 834 (Jan. 5, 2006); 76 Fed. Reg. 76,386 (Dec. 7, 2011).

<sup>102</sup> U.S. Fish and Wildlife Service, Kangaroo Rat – five year review at 19 (2010). Available at [http://ecos.fws.gov/docs/five\\_year\\_review/doc3215.pdf](http://ecos.fws.gov/docs/five_year_review/doc3215.pdf).

<sup>103</sup> *Id.*

<sup>104</sup> *Id.* at 22. Oil and gas development in the Bakersfield and Hollister BLM areas also may overlap with numerous other threatened and endangered wildlife species. Some of these species include the Tipton kangaroo rat, San Joaquin antelope squirrel, the California tiger salamander, and the California red-legged frog. Further, numerous plant species, including the California jewelflower and San Joaquin woolly threads, are threatened by continued oil and gas development in the areas.

<sup>105</sup> FWS and NMFS share administration of the ESA. 50 C.F.R. § 402.01(b). FWS typically maintains jurisdiction over terrestrial species, while NMFS's jurisdiction extends over aquatic species, such as steelhead.

is not likely to . . . jeopardize the continued existence of any endangered species or threatened species.” 16 U.S.C. § 1536(a)(2).

To facilitate compliance with Section 7(a)(2), an “agency shall . . . request” from the Services information regarding whether any listed species “may be present” in a proposed action area, and if so, the “agency shall conduct a biological assessment” to identify species likely to be affected. 16 U.S.C. § 1536(c). The agency must then initiate formal consultation with the Services if a proposed action “may affect” any of those listed species. 50 C.F.R. § 402.14(a); 51 Fed. Reg. 19,926 (June 3, 1986) (“may affect” broadly includes “[a]ny possible effect, whether beneficial, benign, adverse or of an undetermined character”).

After formal consultation, the Services issue a biological opinion to determine whether the agency action is likely to “jeopardize” any species’ existence. If so, the opinion may specify reasonable and prudent alternatives (“RPAs”) that avoid jeopardy. 16 U.S.C. § 1536(b); 50 C.F.R. 402.14(h)(3). If the Services conclude that the action or the RPAs will not cause jeopardy, the Services will issue an incidental take statement (“ITS”) that specifies “the impact, i.e., the amount or extent, of . . . incidental taking” that may occur. 50 C.F.R. § 402.14(h)(3).

An agency’s consultation duties do not end with the issuance of a biological opinion. Instead, an agency must reinitiate consultation when: (1) the amount of take specified in the ITS is exceeded, (2) new information reveals that the action may have effects not previously considered, or (3) the action is modified in a way not previously considered. 50 C.F.R. §§ 402.16; 402.14(h)(3). Finally, after consultation is reinitiated, ESA Section 7(d) prohibits the agency or any permittee from “mak[ing] any irreversible or irretrievable commitment of resources” toward a project that would “foreclos[e] the formulation or implementation of any reasonable and prudent alternative measures.” 16 U.S.C. § 1536(d). The 7(d) prohibition “is in force during the consultation process and continues until the requirements of section 7(a)(2) are satisfied.” 50 C.F.R. § 402.09.

Lastly, Section 9 of the ESA prohibits the “take” of endangered species. 16 U.S.C. § 1538(a)(1)(B). “‘Take’ means to harass, harm, . . . wound, kill, trap, [or] capture” an animal. *Id.* § 1532(19). It is also unlawful for any person to “cause [an ESA violation] to be committed,” and thus the ESA prohibits a governmental agency from authorizing any activity resulting in take. *Id.* § 1538(g); *see Strahan v. Coxe*, 127 F.3d 155 (1st Cir. 1997).

## **D. BLM’s Consultation History**

### **1. Hollister Field Office Area**

BLM’s Hollister Field Office manages approximately 284,000 acres of public land in central California, in addition to 588,000 acres of “split estates,” where the surface is owned by a non-Federal entity, but subsurface mineral resources are owned and administered by BLM. These parcels are scattered across eleven counties from the Pacific Ocean to the San Joaquin Valley, and some areas, including areas in Monterey County, overlie the Monterey Shale Formation.



In 1993, BLM issued an EIS for its oil and gas program in the Hollister area, making 182,000 acres of BLM lands and 273,000 acres of split estates available for leasing. BLM initiated formal ESA consultation with FWS on its oil and gas program EIS, and the resulting 1994 biological opinion found that BLM's oil and gas leasing "may affect" five listed animal species and three listed plant species.<sup>106</sup> However, because the RMP required mitigation, including lease stipulations that prohibit surface disturbing activity within a listed species' range without prior BLM approval, and, if necessary, FWS consultation, FWS determined the action would not cause jeopardy.<sup>107</sup> The biological opinion never mentions or considers fracking or its impacts.

In 2006, BLM amended its Resource Management Plan ("RMP") for the Hollister area.<sup>108</sup> To analyze the RMP's impacts, BLM developed a "Reasonably Foreseeable Development Scenario for Oil and Gas" ("RFD") and predicted very little oil and gas development would occur over the next 15 years under the RMP. Specifically, BLM estimated that a total of "no more than 15 wells w[ould] be drilled on BLM-managed land," disturbing only 74 acres of land.<sup>109</sup> BLM based its prediction of very low development – and its associated prediction of minimal environmental impacts – on "past oil and gas related activities" over the previous decade in which "not a single well on federal mineral estate" was drilled.<sup>110</sup> BLM found "[t]his trend is not likely to change much."<sup>111</sup> The RMP does not mention or evaluate the impacts of fracking techniques or the substantial expansion in oil and gas drilling that the techniques allow.

BLM consulted with FWS regarding its 2006 amended RMP, this time evaluating impacts on 15 listed animal species and seven plant species. Like BLM, FWS relied on BLM's Reasonably Foreseeable Development scenario to predict the RMP's impacts, also assuming that "74 acres may be disturbed for oil and gas development" over the next 15 years, without addressing the impacts of fracking.<sup>112</sup> FWS concluded BLM's amended RMP was not likely to jeopardize any listed species because the RMP required that all oil and gas leases include an Endangered Species Stipulation prohibiting "any surface disturbance activities" pending site-specific inventories and BLM approval.<sup>113</sup> However, FWS did not issue an ITS because its RMP-

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<sup>106</sup> U.S. FWS, Formal Section 7 Consultation Concerning Oil and Gas Leasing Identified in the Hollister Resource Management Plan (RMP) Amendment: 1-1-94-F-47 (Oct. 24, 1994).

<sup>107</sup> *Id.* at 2; *see id.* App. C: Special Stipulations: Endangered Species Stipulation (1994). BLM amended the biological opinion on February 24, 1995, altering and clarifying some of the requirements. U.S. FWS, Amendment of Biological Opinion Concerning Oil and Gas Leasing Identified in the Hollister Resource Management Plan (RMP): 1-1-95-I-482 (Feb. 24, 1995).

<sup>108</sup> BLM, Proposed Resource Management Plan/Final Environmental Impact Statement for the Southern Mountain Diablo Range and Central Coast of California (June 2006).

<sup>109</sup> *Id.* at 3.12-2.

<sup>110</sup> *Id.* at App. F, at F-1 (emphasis added).

<sup>111</sup> *Id.* at F-2.

<sup>112</sup> U.S. FWS, Formal Consultation on the Hollister Resource Management Plan and Final Environmental Impact Statement for the Southern Diablo Mountain Range and Central Coast of California: 1-8-07-F-19 at 149 (June 8, 2007) (assessing impacts of developing 74 acres on giant kangaroo rat); *see also id.* at 161 (same for California tiger salamander).

<sup>113</sup> *Id.* at 180.

level biological opinion did not contain sufficient detail to evaluate site-specific impacts, and instead FWS required new consultation for all project-level actions implementing the RMP.<sup>114</sup>

Finally, FWS's 2007 biological opinion concluded by expressly recommending that BLM consider reinitiating consultation for its oil and gas activities, stating:

BLM is currently conducting several resource management plans (e.g., grazing and *oil and mineral leasing*) under existing formal consultations [citing the 1994 biological opinion and a 1995 amendment]. Our understanding is that following BLM's approval of a Record of Decision on the RMP, they will evaluate these programs in consideration of new information on the distribution and regulatory status of federally listed species in the [Hollister area]. Following this evaluation, BLM will determine whether these programs may affect federally listed species and request reinitiation of the pre-existing consultations where appropriate.<sup>115</sup>

We believe BLM never reinitiated consultation on these programs, and instead, continues to rely on both the 1994 and the 2007 biological opinions to issue oil and gas leases.

BLM also initiated informal consultation with NMFS in 1996 regarding impacts of the RMP on listed steelhead, including the Central California Coast and South-Central California Coast DPS populations.<sup>116</sup> BLM determined the actions authorized in its RMP, including oil and gas activities, will have "no effect" on listed species, and NMFS concurred. Like the RMP, NMFS's concurrence does not address the impacts of fracking on these or any aquatic species, including increased demand for water and potential water contamination by fracking fluids and other materials.

## 2. Bakersfield Field Office Area

BLM's Bakersfield Field Office manages more than 400,000 acres of federal land and 750,000 acres of subsurface mineral estate, covering six counties stretching from the California coast to the crest of the Sierra Nevada range, south and east of the Hollister BLM area.<sup>117</sup> Over

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<sup>114</sup> FWS's failure to issue an incidental take statement with its biological opinion violates the ESA. *See See Ctr. for Biological Diversity v. Salazar*, 2012 U.S. App. LEXIS 17558, at \*37 (9th Cir. Alaska Aug. 21, 2012). Further, BLM regularly relies on the 2007 and 1994 biological opinions to authorize its oil and gas leasing activities in the Hollister area. *See, e.g.*, Sept. 14, 2011 Oil and Gas Competitive Lease Sale EA: DOI-BLM-CA-0900-2011-04-EA, at 9. However, the 2007 biological opinion analyzed only the RMP itself, and expressly does not cover "BLM's implementation of program activities described in the RMP." 2007 Biological Opinion at 181. Instead, the 2007 biological opinion requires "Project-level Biological opinions" that are "stand-alone documents." *Id.* Because BLM's oil and gas leasing activities implement the RMP, BLM may not rely on the "Plan-level" 2007 biological opinion to avoid consultation. Finally, to the extent BLM relies on the 1994 biological opinion to authorize leasing activities, that opinion does not cover multiple, more recently ESA-listed species, as well as the California condor, which now occurs in the planning area. Accordingly, BLM's continued authorization of leasing activities in the Hollister area may violate the ESA, notwithstanding the need for reinitiation of consultation described in this letter.

<sup>115</sup> 2007 Biological Opinion, at 182.

<sup>116</sup> Concurrence Letter from Dick Butler, NMFS, to Rick Cooper, BLM (Dec. 21, 2006).

<sup>117</sup> BLM, Bakersfield Proposed Resource Management Plan & Final Environmental Impact Statement at 5 (Aug. 2012). This only includes acres managed by BLM under its new Bakersfield RMP and does not include additional

the past decade, more than 95 percent of all drilling that has occurred on federal lands has occurred within the Bakersfield Office's jurisdiction, primarily in Kern County, which overlies the Monterey Shale Formation.<sup>118</sup> Most of the Bakersfield area is currently managed pursuant to the 1996 Caliente Resource Management Plan ("RMP"); however, in 2000, portions of lands in Madera and Fresno Counties were transferred from the Hollister Field Office to the Bakersfield Office's jurisdiction. BLM continues to manage those lands pursuant to the 1985 Hollister RMP.<sup>119</sup>

In its EIS for the 1997 Caliente RMP, BLM evaluated the effects of oil and gas development over 15 years using a Reasonably Foreseeable Development ("RFD") scenario.<sup>120</sup> Reviewing the past decade of declining oil and gas activity in the area, "[t]aken together with a depressed domestic oil market," BLM anticipated "[n]o change from current activity levels" and that "moderate to low drill rates paralleling the average over the last decade" would continue.<sup>121</sup> BLM noted that "most of the obvious as well as more obscure structural oil prospects have been drilled," and the high costs of exploration have "further depress[ed]" and "discourage[d] new drilling." The RMP EIS does not discuss or consider how fracking techniques may expand interest in or the success of drilling in the area, or evaluate the direct impacts of fracking on water resources, air, or wildlife. Accordingly, BLM forecasted that only between "150 and 260 federal wells" would be drilled per year, and the drilling and "[a]ssociated activities" would disturb between 100 and 215 acres annually.<sup>122</sup>

BLM consulted with FWS regarding the impacts of its 1997 RMP on 30 listed species.<sup>123</sup> FWS acknowledged that oil and gas development would affect many of these species, including crushing and harassment of wildlife and flora by vehicles, toxic contamination of condors, and habitat fragmentation. However, based on BLM's low estimate of oil and gas development and the application of a protected species stipulation, FWS found that BLM's RMP-level oil and gas leasing activities were not likely to incidentally take listed species.<sup>124</sup> FWS did not authorize any incidental take from oil and gas activities.

In 2001, BLM consulted with FWS regarding various site-specific oil and gas activities occurring in Kings and Kern Counties that implement the RMP.<sup>125</sup> The resulting biological

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acres in the Carrizo Plain National Monument and California Coastal National Monument, which are managed under separate RMPs.

<sup>118</sup> *Id.* at M-3.

<sup>119</sup> *Id.* at 5. Because BLM transferred the lands in 2000, they are not covered by the 2006 RMP amendment for the Hollister area.

<sup>120</sup> BLM, Caliente RMP Final Environmental Impact Statement (Dec. 1996).

<sup>121</sup> *Id.* at 83-84.

<sup>122</sup> *Id.* The "[a]ssociated activities" include "new processing facilities, pipelines, and seismic surveys." *Id.*

<sup>123</sup> U.S. FWS, Formal Consultation and Formal Conference for the Caliente Resource Management Plan: 1-1-97-F-64 (March 31, 1997). BLM incorporated by reference a 1996 oil and gas programmatic biological opinion for Kern and King County, 1-1-99-F-36.

<sup>124</sup> *Id.* at 10, 64. *See also id.* App. A at 83 (copy of RMP's RFD).

<sup>125</sup> U.S. FWS, Revised Formal Consultation on the Oil and Gas Programmatic Biological Opinion in Kings and Kern Counties, California: 1-1-F-0063 (Sept. 28, 2001). This Biological Opinion was later amended in 2003 to include oil and gas activities on 10,446 acres of lands within the Naval Petroleum Reserve No. 2 (NPR-2) when administration of the area was transferred from the Department of Energy to BLM. *See* U.S. FWS, Amendment to Section 7

opinion covers individual projects that disturb “less than 10 acres of habitat,” including geophysical exploration, drilling and operation of exploratory wells, construction of roads, well pads, and pipelines, and operation of wells. The biological opinion notes that operations may include “frac treatments (injections of steam/chemicals to enhance well production),” but does not describe or evaluate the impacts of that process.<sup>126</sup> The opinion anticipates the activities will disturb no more than 690 acres annually – substantially exceeding the “100 to 215 acres” of disturbance predicted in BLM’s RMP for the entire Bakersfield area.<sup>127</sup> The ITS authorizes the take of one kit fox, ten acres of giant kangaroo rat habitat, ten acres of Tipton kangaroo rat habitat, and 150 acres of blunt-nosed leopard lizard habitat and all animals found within those acres.<sup>128</sup>

Further, BLM did not consult with NMFS regarding either its 1997 RMP amendment or its 2001 oil and gas program proposal because BLM found the actions had “no effect” on any NMFS-listed species. However, since that time, several steelhead populations have been listed, yet we believe BLM has not consulted regarding even the general impacts of oil and gas leasing and drilling on the populations, much less the very serious impacts of fracking on the Bakersfield area.

On September 27, 2012, BLM issued a new Proposed Bakersfield RMP to supersede the 1997 Caliente RMP and the 1985 Hollister RMP.<sup>129</sup> BLM developed a new Reasonably Foreseeable Development scenario to evaluate impacts of oil and gas development in the area over the next 15 years. Specifically, BLM’s Final EIS states that, while most existing wells “are past their peak production rate,” “sustained higher oil prices and new technologies, such as enhanced oil recovery techniques . . . and horizontal drilling, can significantly increase the percentage of oil recovered profitably. It is possible that with new technology, these fields will have many more years of useful life.”<sup>130</sup> Further, BLM states that “[h]ydraulic fracturing is a common and important process to stimulate oil and gas well production,” and “it is likely that more California wells in the future will utilize hydraulic fracturing because of recent interest in deep shale prospects.”<sup>131</sup> BLM also notes that an average of only 191 wells were drilled per year during the last decade, but in FY 2010, 363 drilling permits were issued – *almost doubling* the ten-year average.<sup>132</sup>

Yet despite these acknowledgements and the documented growth of fracking in both California and nationwide, BLM’s new Reasonably Foreseeable Development scenario predicts only a small increase in drilling over the next 15 years, of up to 400 wells annually. BLM

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Biological Opinion on the Bureau of Land Management Programmatic to include NPR-2, Kern County, California: 1-1-03-F-0295 (May 19, 200\_) (the date of the document is obscured on our copy).

<sup>126</sup> *Id.* at 6.

<sup>127</sup> It is unclear why the 2001 oil and gas biological opinion anticipates and authorizes more acres of oil and gas activity than the 1997 Caliente RMP biological opinion. While the 2001 biological opinion may cover more activities, including right-of-way authorizations for roads and powerlines associated with oil and gas activities, it does not appear that additional activities or acreage were authorized under the RMP EIS or RMP biological opinion.

<sup>128</sup> *Id.* at 69.

<sup>129</sup> BLM, Bakersfield Proposed Resource Management Plan & Final Environmental Impact Statement (Aug. 2012).

<sup>130</sup> *Id.* at 318.

<sup>131</sup> *See* BLM, Draft Bakersfield RMP and EIS (Sept. 2011) at App. L-29. This statement was apparently removed from the Final EIS.

<sup>132</sup> BLM, Bakersfield PRMP & FEIS at 985-986.

believes that “current activity levels are not expected to be significantly different from what has occurred in the past.”<sup>133</sup> Accordingly, BLM’s EIS does not fully evaluate the impacts of increased drilling on the environment generally, and fails to fully evaluate the specific impacts of fracking on water, air, and wildlife. We believe BLM has not yet initiated formal consultation with FWS or NMFS regarding the Proposed RMP’s impacts to listed wildlife, but will presumably do so in the next few weeks.

### C. The ESA Requires BLM to Reinitiate Consultation

The ESA clearly requires BLM to reinitiate consultation on its ongoing oil and gas leasing and drilling activities in the Hollister and Bakersfield areas. The ESA requires BLM to reinitiate consultation when: (1) new information reveals that the action may have effects not previously considered, or (2) the action is modified in a way not previously considered. 50 C.F.R. § 402.16(b), (c). Here, as described below, reinitiation is required because “new information” demonstrates that newly-combined and more widely employed fracking techniques will impact wildlife in ways that were “not previously considered” in past consultations. *Id.* Further, the oil and gas activities authorized by BLM have been “modified in a way not previously considered” because the recent fracking boom may cause actual drilling to greatly exceed the level anticipated by BLM. *Id.*

First, as detailed above, the newly combined and greatly expanded use of fracking techniques substantially impacts habitat, water, and air, and thus ESA-listed species. Hundreds of different toxic, carcinogenic, and otherwise dangerous chemicals may be used in fracking fluid.<sup>134</sup> When the fluid returns to the surface after injection, it may cause arsenic, lead, radioactivity, and other substances that occur underground to surface with the flowback. These fracking fluid constituents as well as natural gas can contaminate both ground and surface water resources during drilling and re-injection of fracking wastewater into the ground.<sup>135</sup> Fracking wastewater is also often stored above ground before disposal, creating the potential for contact with wildlife and another avenue for surface water contamination. Fracking also requires the use of massive amounts of water, increasing demand for central California’s already scarce water resources.<sup>136</sup>

Horizontal drilling requires larger well pads than traditional vertical well drilling, and the industrial activity taking place on the pads is more intense, impacting wildlife and habitat.<sup>137</sup> And although significant research gaps regarding the impacts of fracking on wildlife remain, as the practice of fracking has expanded, harm to wildlife is being documented.<sup>138</sup> Further, oil and gas drilling operations normally emit substantial amounts of air pollution, including methane and volatile organic compounds, and ancillary activities associated hydraulic fracturing add to this pollution.<sup>139</sup> This “new information” regarding the use and impacts of fracking “reveals effects of the action that may affect listed species . . . in a manner or to an extent not previously

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<sup>133</sup> *Id.* at 986-987.

<sup>134</sup> Colborn 2011; McKenzie 2012.

<sup>135</sup> Mathias at 15; NYS SGEIS at 10.

<sup>136</sup> NYS SGEIS at 5-93.

<sup>137</sup> *Id.* at 6-68.

<sup>138</sup> Kadaba, Dipika and Shaye Wolf, *Impacts of fracking on wildlife- A review* (July 30, 2012).

<sup>139</sup> *Id.* at 6-99.

considered,” and BLM must reinitiate consultation for both the Hollister and Bakersfield areas. 50 C.F.R. § 402.16(b).

Second, as described above, the recent boom in fracking has and will continue to expand development of the Monterey Shale Formation, including on BLM-administered lands. BLM created its Reasonably Foreseeable Development scenarios for both the Hollister and Bakersfield areas based on decades-old development data, from before drilling deep into shale was practically or economically feasible.<sup>140</sup> FWS based its consultations on BLM’s limited development predictions.<sup>141</sup> However, because fracking enables the drilling of more wells, there will be more impacts associated with the additional wells, which neither BLM nor FWS has fully considered. The oil and gas drilling activities that BLM has authorized have been “modified in a manner that causes an effect to the listed species . . . that was not considered in the biological opinion,” and BLM must reinitiate consultation for both the Hollister and Bakersfield areas. 50 C.F.R. § 402.16(c).

In sum, despite the emergence of newly combined, controversial, and environmentally destructive fracking techniques and an anticipated increase in oil and gas drilling because of those techniques, BLM has failed to reinitiate consultation with FWS and NMFS as required by the ESA. 50 C.F.R. § 402.16. By continuing to authorize leasing and drilling impacts that have not been fully analyzed and expressly authorized through a biological opinion, BLM is violating its substantive duty under Section 7 of the ESA to ensure against jeopardy to listed species. Additionally, by authorizing activities that harm or harass listed species without coverage from any valid and legally operative incidental take statement, BLM is also violating Section 9 of the ESA. 16 U.S.C. § 1538(a)(1)(B). Further, once BLM reinitiates consultation on fracking impacts, ESA section 7(d) requires the agency to suspend any leasing or approval of site-specific drilling activities that may “foreclos[e] the formulation or implementation of any reasonable and prudent alternative measures” until consultation is complete. *Id.* § 1536(d).

## Conclusion

As described above, BLM’s failure to reinitiate consultation regarding the impacts of its oil and gas leasing and drilling activities on listed species violates the ESA. If BLM does not correct these violations, the Center for Biological Diversity intends to file suit.<sup>142</sup> We welcome discussion regarding this letter and invite you to correct any misapprehensions we may have regarding BLM’s oil and gas leasing and drilling program or the agency’s environmental compliance. Thank you for your prompt attention to this matter.

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<sup>140</sup> See BLM, RMP/FEIS for the Southern Mountain Diablo Range and Central Coast of California (June 2006), at App. F; BLM, Caliente RMP FEIS (Dec. 1996), at 83-84.

<sup>141</sup> FWS, 2007 Biological Opinion: 1-8-07-F-19; FWS 1997 Biological Opinion: 1-97-F-64.

<sup>142</sup> For legal purposes, the Center’s address is: Center for Biological Diversity, 351 California St., Ste. 600, San Francisco, CA 94104. However, please direct all correspondence to the author of this letter listed above.

Sincerely,



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