

**Engineered High Energy Crop Programs  
Programmatic Environmental Impact Statement  
Scoping Comments**

<b>Date Rec'd</b>	<b>Format</b>	<b>Name</b>	<b>Organization</b>	<b>Comment</b>
6/21/2013	Email	Jean Public		i do not support this waste of american tax dollars. we have just seen the explosion of the ethanol crap program which took trillions of dollars and which plants are now being demolished. this is another stupid program. the fact is you cant grow enough plants to make the needs filled. this is a wasteful horribly expensive program. this is a pie in the sky ludicrous effort bleeding american taxpayers we need this land for food. this is tinkering with our food crops and will hurt america. i totally oppose this wasteful sending. this comment is for the public record. please acknowledge receipt jean public
6/21/2013	Email	Lucas Clemente		With regards to this: <a href="https://www.federalregister.gov/articles/2013/06/21/2013-14724/notice-of-intent-to-prepare-a-programmatic-environmental-impact-statement-for-engineered-high-energy#addresses">https://www.federalregister.gov/articles/2013/06/21/2013-14724/notice-of-intent-to-prepare-a-programmatic-environmental-impact-statement-for-engineered-high-energy#addresses</a> .... and with all due respect and admiration for your intentions..... this looks like bullcrap. That's. Right. I said BULL CRAP. Bio-fuel is just another stupid way of increasing CO2 emissions. Tell Obama to cut the crap and get with renewable solutions that have no carbon footprint. Like wind, or solar. Or bacon. In fact, forget the other two. Just go with bacon. Really. Now. Go to his office, and tell him. I will wait here.
6/26/2013	Website	Sid Abma	Sidel Systems USA Inc.	I want to be a part of this process. ☐ It also fits in very well with what president Obama stated today in the Climate Change Plan, with power plant energy efficiency and the reduction of Global Warming and CO2 Emissions and even Water Conservation.☐ ☐Please contact me further. This is Great!
6/27/2013	Website	Sid Abma	Sidel Systems USA Inc.	President Obama yesterday presented the Climate Action Plan. A part of that plan is to convert the coal fired power plants to natural gas. Natural gas is our "clean" energy source, and it can be consumed to near 100% Energy Efficiency with the technology of Condensing Flue Gas Heat Recovery. The land around these approx. 50 year old power plants has had coal, and coal ash, and coal dust pounded into it. Probably not suitable for agricultural food. It would be great for Algae Ponds. Growing algae for Bio-Fuels. Algae likes to grow in warm water. The recovered heat from the natural gas power plants exhaust will heat many hundreds of acres of these algae ponds. The amount of acres will depend on winter time climate, and the amount of land available, and the size of the power plant. Algae requires CO2 Enrichment, and the power plants exhaust has lots of CO2 that will be pumped into these ponds. The algae will absorb the CO2 and return into the surrounding atmosphere Oxygen. Natural gas with the heat energy removed will "create" Water, and this water will be used to make up for algae pond evaporation. We have just created a Near Zero Waste Power Plant ~ Climate Change approved. We have created a method of producing Bio Fuels. Many full time Green jobs will be created growing, harvesting and processing this algae into bio fuels and other useful products. I look forward to your reply.  Sid Abma (805) 462-1250 www.SidelSystems.com

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6/27/2013	Email	Joseph J. James	Agritech	<p>Dear ARPA-E:</p> <p>You Notice of Intent (NOI), referenced below, has asked for public comment on the scope and potential environmental concerns associated with implementing EHEC Programs. This message is to provide such comment. Our company has commercialized an innovative torrefaction technology, which cost-effectively converts plant and woody biomass into a clean and renewable coal alternative, as well as into a feedstock from which to make a variety of bio-products. Please note the attached PPT Overview of our process. The process, a form of mild pyrolysis, also renders the treated biomass organically inert. Given the President's recent announcement of a more aggressive Climate Action Plan, under which existing, coal-fired power plants are going to be required to reduce their carbon emissions, a torrefied co-fire fuel could help them accomplish that result, overnight, with no costly upgrades to existing plants. As you will note from the 2nd attachment, the Electric Power Research Institute (EPRI), which is the research arm for North America's utilities, has been actively researching torrefaction and we have had a very close and funded, torrefaction-related relationship with EPRI. Recognizing the chlorine and ash problems associated with herbaceous biomass, like EHEC's, EPRI is working to develop a cost-effective leaching process to remove chlorine and ash and other problematic substances from biomass, prior to the material being torrefied. EPRI is now interested in doing a combined leaching and torrefaction demo project (Note 3rd Attachment). Rather than simply destroying the EHEC crops, once grown and tested, as currently planned, they should be instead rendered organically inert by our torrefaction process, to prevent the uncontrolled propagation of these EHEC crops. They can then be provided to electric utilities for test burns. However, in order to be attractive to and test burned by such electric utilities, this herbaceous biomass may also need to be leached, as described above, to remove chlorine and ash. In summary, I recommend that some of the larger EHEC Demonstration Projects (5-15,000 acres), especially if linked to companies like ours and/or with the EPRI combined leaching and torrefaction demo project(s), be encouraged to make bio-power fuels, as described above. This is a cost-effective way to both render the EHEC crops harmless and to advance the President's more aggressive Climate Action Plan.</p> <p>Let me know if you need any additional information or assistance.</p> <p>Regards, JJJ Joseph J. James</p>
7/8/2013	Email	Travis Hedrick	REPREVE Renewables	<p>Hi Dr. Burbaum</p> <p>My group has been working the last 4 years on a commercial system to deploy energy crops like FREEDOM giant miscanthus. We have put millions into the development of our proprietary equipment and plant material seed stock inventory. During the 2013 planting season we planted 200+ acres of FREEDOM in eastern NC for the Chemtex Internationals cellulosic ethanol project. We are very excited with our proven cropping system and the opportunity to work with others in the industry.</p> <p>The recent announcement about the DOE's intent to prepare a PEIS for one or more research programs to provide financial assistance for development and demonstration of engineered high energy crops (EHECs), would be a perfect fit for our company. I will be attending the scoping meeting on the 11th in Raleigh and would love to introduce myself and our team. I look forward to seeing you there and learning more about the project and how to participate.</p>
7/9/2013	Meeting (Lexington)	Bruce Pratt	Eastern Kentucky University	<p>Sure. I know almost everybody here anyway. How are you doing? Thank you, Jonathan, for your presentation. Bruce Pratt from Eastern Kentucky University, the Director of the Center for Renewable and Alternative Fuel Technologies. I commend you on the process. Concerns that need to be addressed, and I'm not opposed to genetically engineered crops, just that when you talk about non-food crops you still have to look at the land that those crops are being produced on because they will displace other uses, whether it is a row crop, you are going to displace corn ground that would be used for other purposes, such as livestock feed, or even in the perennial type grasses you are talking about displacing pasture and hay ground that could be used to feed livestock and others. So, you know, you just have to – you know, you can't do everything without it. You just have to try to mitigate. I'm more concerned about the row crop ground displacement, particularly with annual crops going in, because that's going to displace a lot more than the crops that are being used for human food production. Thank you.</p>
7/9/2013	Meeting (Lexington)	Greg Copley	University of Kentucky Center for Applied Energy Research (CAER)	<p>Okay. Good evening. My name is Greg Copley. I'm with the University of Kentucky Center for Applied Energy Research as a field representative for the eastern Kentucky part of Kentucky. And I would encourage DOE to look at utilizing reclaimed mine land for growing these energy crops. We have some trials going now that seem to be positive, and so I would encourage you all to consider that as well.</p>

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7/10/2013	Meeting (Jackson)	John Byrd	Mississippi State University	<p>Okay. There are a couple of things. First, I want to say that my name is John Byrd, and I am here as a representative for Mississippi State University as a weed control specialist. I'm also here as a private landowner and livestock producer. So I have a couple of differing thoughts on this process. I don't think that anybody that goes to the gas pump would deny the fact that we do need alternative fuel sources of some kind. But I don't know that I could stand here today and say that the need for alternative fuel today is any greater than the need for providing crops a hundred years ago. And I will use examples like Johnson grass and kudzu that were introduced into this country as potential forage crops because we had the land prior to the mechanization of agriculture. And as the demand for livestock feed has decreased because of mechanization, we don't have the need for those forage crops, and they have now become weed in a number of different environments. I will use kudzu -- or cogongrass, excuse me -- as a third example of one that was introduced as a potential forage crop, and now we're spending hundreds of thousands of dollars in the Southeast -- not just in Mississippi, but in Louisiana, Alabama, Florida, Georgia, and even South Carolina fighting that because it has a steady growth in environments where it's considered weed. And also, when I came to Mississippi State some 26 years ago could not have imagined, Brent, that we would be a state now that plants less than a million acres of cotton. And so what we've seen as farmers do have the flexibility now, if you look at market prices, to make those decisions on which markets they could plant that year. They had traditionally relied on cotton production as an agricultural commodity, but with more markets now dictating prices, we see a lot more flexibility in what growers want to produce, and I think that has to be a consideration as well. What will the growers choose to plant next year and will the crop that you're proposing be profitable for that producer to produce? I also think about markets, will growers be locked into contracts like we've been, and I wonder with these crops seen, for example, in poultry production where a producer makes a significant investment in the houses to produce poultry, 25 years or 20 years in paying off his loan. The company comes back to him and says, "You've got to make these changes which is going to cost another half million or \$600,000 or we're not going to provide birds for you to grow." If he can't afford to do that because he's approaching retirement age, then he's got no alternative except to get out of the poultry production business. And so I wonder is this going to be an issue if you're locked into marketing this product, do you have alternative ways to market the material? One minute? Okay. I also wonder, too, about my children and will they be satisfied with that crop or will they want to get rid of that crop and plant an alternative on that area that may already be dedicated to one of these energy crops? And then the last thing I'll make a comment. As a weed control specialist, I think as these crops are developed, we need to make sure that we have strategies to eradicate them in the event that either they escape into environments where they are not wanted or in the case if somebody wanted to plant an alternative crop, we need to make sure that we have control strategies that are firm, that we know that we can terminate that crop and plant an alternative.</p>
7/10/2013	Meeting (Jackson)	Victor Maddox	Mississippi Cooperative Weed Management Area	<p>My name is Victor Maddox. I am here representing the Mississippi Cooperative Weed Management Area. I also reside at Mississippi State University. I work normally in vegetation management. And so as coordinator, we have just over 40 agencies and nonprofits that reside on our board. So I am here representing quite a number of different groups. So I worked previously in invasive species, and so I understand that there are, you know, potential positives and negatives, both from a biofuel stance as well as fossil fuel. So I'm not here with public comment one way or the other on either of those issues. I am here solely, you know, to focus on the invasive species issue. So we know that weeds actually cost billions of dollars nationally to our economy. In Mississippi, it ranges more in the millions. It's not that, you know, we're having to hold with that price. It would cost us far more if we actually got an eradication of new species. So it's very costly, however, for us and, obviously, we have concerns in that regard. So with that in mind and, you know, the invasive species being an exotic species, so I would encourage that we would focus on native species if at all possible. And if they are genetically modified, some sterility, of course, associated with that. If they are an exotic species, again, sterility would be a major issue. Need for a control plan of action. The previous speaker mentioned that. The Mississippi Department Agriculture and Commerce, Bureau of Plant Industry, actually has a login place for biofuel producers in this state. It would be nice if that was acknowledged and adhered to. And so we already have something in place, which includes a monitoring strategy for the EDRR plan for escapes. Also, some cleanup if the fields are abandoned. So it would be a mitigation or eradication plan of action. There would be herbicides or something other than that. And adhere to state noxious weed laws. We also have a state noxious weed law in Mississippi. And so it may or may not apply to other states, but certainly in Mississippi, we have a noxious weed law and there are species on that list. And also consider making a solid environmental impact statement that considers both short- and long-term effects of engineered crops, biologically and economically, in the state for our citizens. That's it.</p>

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7/10/2013	Meeting (Jackson)	Brent Bailey	25 x 25 Alliance of Mississippi	<p>Brent Bailey, and I'm with a group called 25 by 25 Alliance of Mississippi. Do I need to give name, address, phone number? Okay. I agree with a lot of statements that have been made here, the previous speakers. They have a lot of concerns in the introduction of crops, you know, when we use the term engineering or may be modified. And I guess what I'm going to say is not to be interpreted as a dig at the Federal government, but at the same time, if you work within the Federal government and you work with agencies as we do, we do realize that there are certain silos that entities work within under departments -- USDA, EPA, and others. And so as we go through the development of this PEIS process, to let you know that there are -- I believe there are frameworks that the Department of Energy can fall back on, they can refer to. And you may be well aware of these. But if not, I'd like to bring them out anyway. As you may know, just last week, the EPA authorized arundo donax, giant reed, and napier grass as the eligible feedstock materials for the inclusion under the Renewable Fuels Standard. Of course, arundo donax is considered a non-native or invasive plant species in some parts of the U.S. -- California, Florida, and others. But as part of the approval process, EPA did recognize that with the adoption of certain management practices, reporting, self-monitoring, third-party monitoring, and not just to put it on the landowner but also on the user of the end product, that they believe that there is a responsible way to produce and grow, harvest, store, and utilize these products for potential use and are compatible with the renewable fuel standard obligations. So I'm sure they have gone through an environmental impact statement process. So hopefully, you can rely on and look at those as well and take some ideas from that. Of course, we're all familiar with USDA-APHIS and what they are doing at this point in time in trying to deregulate several genetically modified organisms for dedicated energy crop development and for short rotation woody biomass crop opportunities for energy. I would urge the Department of Energy to look at the frameworks USDA have developed as well. And also, USDA, through their National Institute of Food and Agriculture, has developed a set of grants through the Agriculture and Forestry Research Initiative, their Cooperative Agriculture Program, the seven grants that were awarded around the nation. All of them with the specific focus of developing dedicated energy crops for utilization as a drop-in biofuel compatible with existing infrastructure. All those had to go through a certain process as well, and you will hopefully look at those as well and develop the framework you need to move forward because we definitely will continue to see the development in the next generation of biofuel crops and crops engineered, high energy crops, or however the terminology is we want it to be. But I think we can do it responsibly and sustainably going forward, and we urge you continuing to go forward with the program.</p>
7/10/2013	Meeting (Jackson)	Sumesh Arora	Strategic Biomass Solutions	<p>Good evening. My name is Sumesh Arora. I'm with the organization called Innovate Mississippi, and I manage a program called Strategic Biomass Solutions. And our focus is to try to help commercialize new technologies and looking for renewable energy and energy efficiency and with sustainable energy in general. From that standpoint, our role is more on the economic side as opposed to a purely technical role. So one of the things I would like to redirect the fact that as new crops are introduced, one of the challenges really is in the farmers adopting new technologies. And I was having a discussion with this woman here this morning, actually a lot of the research that was done about new crop adoption, by new technology adoption, I think goes back to the 1950s when the hybrid corn was introduced in the Midwest. So there's a really good understanding of what's called diffusion of innovation and based on existing agricultural systems, and that some of those patterns may again be applicable in this case when you're looking at these new crops and new cropping systems. Along -- when you're talking about new crops, one of the big issues now that we have seen, as one of the speakers mentioned earlier, is the fact that the farmers are able to switch acreage from one crop to the other much more quickly than they have in the past, and they don't have to be loyal to a crop anymore. And so the market conditions dictate as to which crop they are going to grow from one year to the other year, which that in the case of biofuels will lead closer if you have a hundred million dollar processing facility that's dependent on a crop. So along with contracts, the ability to provide some type of insurance for those crops is going to be equally important, in addition to just having the technical crops available. The other thing that I'm not sure has really been mentioned is evaluating the soil types as to where these crops can be grown and what will be the optimum areas and what types of conditions will be needed for growing these crops. So to have an understanding of it, you identified the Southeastern Region. Within the Southeastern Region, where would the optimum soil have to be and what kind of conditioning does the soil need for growing these crops, because this is -- we're talking really a new paradigm because of the EHECs. So that's another thing to keep in mind. And then also the proximity or the logistics of actually transporting, whether it's going to be done from the standpoint of the finished product -- or not finished product -- or the liquid fuel that would be transported from the field to the processing facility or will there still be the biomass that has to be included? One of the big challenges of biomass, as we all know, is the ability to transport that effectively in a cost effective manner. Just another whole issue of insurance. So I think that would have to be looked at in terms of whether we would be doing in the field processing of EHECs or if all of it's going to be done at sometimes a local or central location. Again, I think you'll agree with the fact that the strategies to eradicate or to grow these crops is important, critically important, especially when you're talking about new cropping systems. And states or places like Mississippi Department of Agriculture have proactively put a law in place to monitor that, which actually is based on the law that Florida has on the books. So even though Florida is [inaudible], that's supposedly where that came from, too. But I appreciate the opportunity to give some comments. Thank you.</p>

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7/10/2013	Meeting (Jackson)	Ananda Nanjundaswamy	Alcorn State University	<p>One of the last comments just I wanted to add is ecological effect of any new crop that we introduce, that's really critical because what grows under the soil, we forget what happens beneath the soil. So any energy crop when it is grown on the back of this crop is ecologically sensitive. So everything should be ecologically beneficial to the native soil on the farm. So that's very critical, also. But it's not just to bring up any crop. It's not just the biomass that a few people have stated, but also just in the soil you have the microorganisms that live in there, the society hedge. All of these things needs to be taken into account. So that's what I would say. My name is Ananda, and I'm from Alcorn State University.</p>
7/11/2013	Meeting (Raleigh)	Stephen Kelley	North Carolina State University	<p>Thank you very much, to the audience as well. So my name is Steve Kelley. I'm a faculty member at North Carolina State University. I'm also here representing a U.S. Department of Energy AFRI grant on bioenergy and also as a board member with the Institute for Forest Biotechnology. I would like to say as a faculty member I'm predisposed to talk for 50 minutes, so this five minute thing is going to be a little bit of a stretch, but I think we can deal.</p> <p>I think one of the most important comments was actually already recognized, and that was that there is a cost to not doing anything. So we have demands on our energy systems and all of those ways that we produce energy today have a cost, have risk. Whether it's nuclear power, whether it's BP Oil in the Gulf of Mexico, mountaintop mining in West Virginia, all of those have got a down side.</p> <p>And so as we talk about the risk, and there are certainly good reasons to think in very methodical terms about the risks associated with genetically engineered crops, we need to also recognize that there are risks with the ways that we do things already.</p> <p>I'm going to focus on trees because that's something I know a little bit about. I would comment that genetically engineered trees are already deployed in China. There are more than a million--according to the FAO, there were more than a million Bt trees deployed in China several years ago.</p> <p>And that actually comes to kind of my second point, and that is that the United States with a strong regulatory system that is in place for handling genetically engineered material needs to take leadership in any of these deployments because it's going to happen. And with leadership from the U.S. it can happen in a much more controlled, much more well regulated, well understood way.</p> <p>The third point I wanted to make was that as you talk about high energy density, there are many, many bio-technology tools that could be deployed, everything from tissue culture to genomic tools to solutions for disease and pests as well as the more attractive in a sense direct production of a fuel type product.</p> <p>I guess finally I would comment related to the southeastern United States as an appropriate place to start the conversation because you mentioned the growing season, but I'd also highlight a couple of other attributes about the southeastern United States.</p>
7/11/2013	Meeting (Raleigh)	Robert Brown	North Carolina Wildlife Federation/Longleaf Alliance	<p>Thank you. My name is Bob Brown. I am a board member of the North Carolina Wildlife Federation, and I'm speaking on their behalf tonight. In full disclosure, I recently retired as dean of the College of Natural Resources at N.C. State University. I was Steve's boss, actually. And I'm currently on the board of The Longleaf Alliance.</p> <p>And to brag for just a second, N.C. State really is one of the national leaders, if not international leaders, in wood to energy research, everything from the genetics of lignin production to produce low lignin trees to the chemistry of conversion technology, economists who look at this, foresters and harvesting technology, as well as the policy and human divisions people looking at biomass production, biofuel production, and bioenergy.</p> <p>I'll read to you briefly a brief paragraph that I was sent today from the North Carolina Wildlife Federation. It is important that as we transition to homegrown sources of renewable energy that we appreciate that the Department of Energy is working to identify and promote new sources of renewable energy.</p> <p>However, it is critical that we move forward with these renewable energy sources in a way that does not threaten or harm our natural resources or wildlife. Crops or forests that are engineered to enhance certain characteristics such as tolerance to drought, cold, flooding, or salinity can significantly increase the risk of invasiveness. Genetically modified plants may be able to breed with wild relatives, resulting in potentially invasive hybrids.</p> <p>We are concerned that genetically engineered plants, should they escape into wild areas, could pose a contamination risk to native plants, threatening native ecosystems. As DOE moves forward with considering the impacts of this program, we urge you to fully consider the invasive potential of engineered high energy crops.</p> <p>If DOE moves forward with this program, it must include rigorous screening protocols and the best management practices for monitoring, mitigation, and eradication protocols for all field trials, along with studies to assess the potential for these novel plants to escape.</p> <p>We have seen time and again that non-native plants introduced with the best intentions have had devastating effects, both on agricultural systems and native habitats. We need to learn from our mistakes and move forward using a precautionary approach when it comes to novel, potentially invasive energy crops.</p>
7/11/2013	Meeting (Raleigh)	Ron Sederoff	North Carolina State University-College of Natural Resources, Department of Forestry & Environmental Resources	<p>My name is Ron Sederoff, and I'm a faculty member at North Carolina State University, College of Natural Resources, Department of Forestry and Environmental Resources.</p> <p>And Bob Brown used to be my boss, so I would like to take this opportunity to take issue with him and to try to put into perspective what he has argued for in terms of using a very high level of precaution and concern about the potential for invasiveness, hybridization, and the potential risks of genetically modified trees.</p> <p>And I think that what's missing from these arguments is that we should evaluate the potential risks with respect to what we're doing now that we consider safe. So while there have been ecological problems in invasive species, particularly here in the land of kudzu, still introduction of plants from all over the world occur, have occurred, at a very high level with enormous benefits. We couldn't manage without the introduction of other species. We'd have to give back potatoes and strains of wheat that come from other parts of the world. We benefit greatly from introducing other plants.</p> <p>But what I'm arguing for is that there should be a level playing field, but the mistake that's made is that we evaluate genetically engineered organisms by a completely different standard. We presume that a genetically engineered organism per se is dangerous. That's a terrible mistake.</p> <p>Genetically--the process by which these are made is not a dangerous process. That's been discussed and evaluated, so that the process itself is not an hazard. What we should be doing is we should be evaluating the products and we should evaluate the products again on a level playing field while we compare what the potential risks are for a particular organism with a particular property with respect to its weediness, with respect to its invasiveness, compared to the plants we are working with now that we have introduced that we accept for their weediness and invasiveness.</p>

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7/11/2013	Meeting (Raleigh)	Robert Brown	North Carolina Wildlife Federation/Longleaf Alliance	<p>I'll comment. Dr. Sederoff is being too modest. He's a member of the National Academy of Sciences. I'm not about to disagree with him. And he is correct that although we have concerns about--and part of what I tried to put forward is that sure we've got concerns about invasiveness and hybridization and things of that nature. Most of I think people's concerns are beyond what you're talking about, 15,000 acre trial plots and 5 acre trial plots and things like that. We're more concerned about what happens at the commercialization level, will we be taking out loblolly and longleaf plantations and putting in eucalyptus for instance, and what does that do to soil quality, what does that do wildlife habitat and that sort of thing. I think that's the bigger issue, which is not an issue really that you're dealing with, but that I think is the bigger fear.</p>
7/11/2013	Email	Stelios Arvelakis	Thermorefinery Technologies LLC	<p>Dear ARPA-E:            You Notice of Intent (NOI), referenced above, has asked for public comment on the scope and potential environmental concerns associated with implementing EHEC Programs. This message is to provide such comment.            Our company has commercialized an innovative leaching technology, which cost-effectively converts plant and woody biomass into a clean and renewable biomass that can be used for the production of energy and liquid fuels without ash-related problems as well as emission problems. Please note the attached PPT regarding a brief description of our process. The process, can also be used in combination with torrefaction a form of mild pyrolysis, to render the treated biomass organically inert.            Given the President's recent announcement of a more aggressive Climate Action Plan, under which existing, coal-fired power plants are going to be required to reduce their carbon emissions, a clean biomass co-fire fuel could help them accomplish that result, overnight, with no costly upgrades to existing plants. As you will note from the other two attachments, the Electric Power Research Institute (EPRI), which is the research arm for North America's utilities, has been actively researching leaching and we have had a very close and funded, leaching-related relationship with EPRI.            Rather than simply destroying the EHEC crops, once grown and tested, as currently planned, they should be instead be cleaned using our process and rendered organically inert by a torrefaction process, to prevent the uncontrolled propagation of these EHEC crops. They can then be provided to electric utilities for test burns.            In summary, I recommend that some of the larger EHEC Demonstration Projects (5-15,000 acres), especially if linked to companies like ours and/or with the EPRI combined leaching and torrefaction demo project(s), be encouraged to make bio-power fuels, as described above. This is a cost-effective way to both render the EHEC crops harmless and to advance the President's more aggressive Climate Action Plan.            Let me know if you need any additional information or assistance.            Best regards,            Dr. Stelios Arvelakis, CEO            Thermorefinery Technologies LLC</p>

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7/16/2013	Letter	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>Dr. Burbaum: This letter responds to the above-referenced Federal Register notice (hereinafter cited as "the Notice") regarding the Department of Energy's proposal to implement one or more programs to catalyze the development and demonstration of engineered high-energy crops in the southeastern United States. The Department of Energy (DOE) is preparing a Programmatic Environmental Impact Statement on this topic.</p> <p><b>PROGRAM DESCRIPTION</b> According to the Notice, EHECs are agriculturally viable photosynthetic species containing genetic material that has been introduced through biotechnology, inter-specific hybridization, or other engineering processes (excluding natural processes) to produce more energy per acre by introducing produced fuel molecules that can be introduced easily into existing energy infrastructure (Notice, page 37533, left column).</p> <p>According to the Notice, the Programmatic EIS will consider three alternative "Confined Field Trials" in order to consider the potential for existing compatible relatives in the region, methods of pollination, level of domestication, weediness and competitiveness, toxicity, inputs, and fire hazard potential, among other things:</p> <ul style="list-style-type: none"> <li>• Development-scale (up to 5 acres), to test whether a plant will grow under agricultural conditions;</li> <li>• Pilot-scale (up to 250 acres), to allow experimenting with an engineered plant in a larger area; and</li> <li>• Demonstration-scale (up to 15,000 acres), the acreage considered necessary to test whether crops are commercially viable.</li> </ul> <p><b>ENVIRONMENTAL REVIEW UNDER NATIONAL ENVIRONMENTAL POLICY ACT</b> The roles of the Virginia Department of Environmental Quality (DEQ) in relation to the project are as follows. First, DEQ's Office of Environmental Impact Review (OEIR) will coordinate Virginia's review of the NEPA document (see next paragraph) and comment to the Corps on behalf of the Commonwealth. A similar review process will pertain to the Federal Consistency Determination (FCD) (see "Federal Consistency..." heading, below) if the program is likely to take place in, or affect, Virginia's coastal uses or coastal resources. If the FCD is provided as part of the environmental document, there can be a single review.</p>
	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p><b>FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT</b> Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities affecting Virginia's coastal resources or coastal uses must be consistent with the Virginia Coastal Zone Management Program (VCP) (see section 307(c)(1) of the Act and the Federal Consistency Regulations, 15 CFR Part 930, subpart C, sections 930.30 et seq.). The DOE must provide a consistency determination which includes an analysis of the proposed activities in light of the enforceable policies of the VCP (first enclosure) and a commitment to comply with the enforceable policies. In addition, we invite your attention to the advisory policies of the VCP (second enclosure). As indicated, the FCD may be provided as part of the NEPA document or independently, depending on the DOE's preference. We recommend, in the interests of an effective review, that the FCD be provided with the NEPA document and that at least 60 days be allowed for review, in keeping with the Federal Consistency Regulations (see section 930.41(a)). Section 930.39 of these Regulations, and Virginia's Federal Consistency Information Package (available at <a href="http://www.deq.virginia.gov/Programs/EnvironmentalImpactReview/FederalConsistencyReviews.aspx">http://www.deq.virginia.gov/Programs/EnvironmentalImpactReview/FederalConsistencyReviews.aspx</a>) present requirements for the FCD.</p>

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	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p><b>PROJECT SCOPING AND AGENCY INVOLVEMENT</b></p> <p>While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA document. Accordingly, we are sharing our response to the Notice with selected state and local Virginia agencies which have responsibilities bearing on the development of plants for use as energy resources. These are likely to include the following (note: starred (*) agencies administer one or more of the enforceable policies of the VCP):</p> <p>Department of Environmental Quality:</p> <ul style="list-style-type: none"> <li>o Office of Environmental Impact Review</li> <li>o Tidewater Regional Office*</li> <li>o Northern Regional Office*</li> <li>o Piedmont Regional Office*</li> <li>o Valley Regional Office</li> <li>o Blue Ridge Regional Office</li> <li>o Southwest Regional Office</li> <li>o Division of Air Program Coordination*</li> <li>o Water Division*</li> </ul> <p>Department of Conservation and Recreation:</p> <ul style="list-style-type: none"> <li>o Division of Natural Heritage</li> <li>o Division of State Parks</li> <li>o Division of Planning and Recreation Resources</li> </ul> <p>Department of Forestry</p> <p>Department of Agriculture and Consumer Services</p> <p>Department of Health:</p> <p>Bureau of Shellfish Sanitation* Office of Drinking Water</p> <p>Department of Game and Inland Fisheries* Virginia Marine Resources Commission* Department of Mines, Minerals, and Energy.</p> <p>We have included all of the DEQ regional offices in the above listing because the Notice mentions that the geographic coverage of the proposed program is "Southeastern United States," (page 37533, left column), which we take to cover the entire Commonwealth in the absence of a more limiting description.</p> <p>In order to ensure an effective coordinated review of the Programmatic EIS and FCD, we will require 24 copies of the EA and FCD when they are published. This submission may include 4 printed copies and 20 COs, or 4 printed copies and an electronic copy available for download at a website, file transfer protocol (ftp) site or the VITAShare file transfer system ( <a href="https://vitashare.vita.virginia.gov">https://vitashare.vita.virginia.gov</a> ). The document should include appropriate U.S. Geological Survey topographic maps, or approximate equivalents, as part of its information. We recommend, as well, that project details unfamiliar to people outside the DOE's Advanced Research Projects Agency be adequately described.</p>



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	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>DATABASE ASSISTANCE Below is a list of databases that may assist you in the preparation of a NEPA document:</p> <ul style="list-style-type: none"> <li>• DEQ Online Database: Virginia Environmental Geographic Information Systems - Information on Permitted Solid Waste Management Facilities, Impaired Waters, Petroleum Releases, Registered Petroleum Facilities, Permitted Discharge (Virginia Pollution Discharge Elimination System Permits) Facilities, Resource Conservation and Recovery Act (RCRA) Sites, Water Monitoring Stations, National Wetlands Inventory <ul style="list-style-type: none"> <li>o <a href="http://www.deq.virginia.gov/ConnectWithDEQNEGIS.aspx">www.deq.virginia.gov/ConnectWithDEQNEGIS.aspx</a></li> </ul> </li> <li>• DEQ Virginia Coastal Geospatial and Educational Mapping System (GEMS) - Virginia's coastal resource data and maps; coastal laws and policies; facts on coastal resource values; and direct links to collaborating agencies responsible for current data <ul style="list-style-type: none"> <li>o <a href="http://128.172.160.131/gems2/">http://128.172.160.131/gems2/</a></li> </ul> </li> <li>• DEQ Permit Expert - Helps determine if a DEQ permit is necessary o <a href="http://www.deq.virginia.gov/permitexpert/">www.deq.virginia.gov/permitexpert/</a></li> <li>• DHR Data Sharing System - Survey records in the DHR inventory o <a href="http://www.dhr.virginia.gov/archives/data_sharing_sys.htm">www.dhr.virginia.gov/archives/data_sharing_sys.htm</a></li> <li>• OCR Natural Heritage Search - Produces lists of resources that occur in specific counties, watersheds or physiographic regions <ul style="list-style-type: none"> <li>o <a href="http://www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml">www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml</a></li> </ul> </li> <li>• DGIF Fish and Wildlife Information Service - Information about Virginia's Wildlife resources o <a href="http://vafwis.org/fwis/">http://vafwis.org/fwis/</a></li> <li>• Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCUS) Database: Superfund Information Systems - Information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL <ul style="list-style-type: none"> <li>o <a href="http://www.epa.gov/superfund/sites/cursites/index.htm">www.epa.gov/superfund/sites/cursites/index.htm</a></li> </ul> </li> <li>• EPA RCRAinfo Search - Information on hazardous waste facilities o <a href="http://www.epa.gov/enviro/facts/rcrainfo/search.html">www.epa.gov/enviro/facts/rcrainfo/search.html</a></li> <li>• EPA Envirofacts Database - EPA Environmental Information, including EPA-Regulated Facilities and Toxics Release Inventory Reports <ul style="list-style-type: none"> <li>o <a href="http://www.epa.gov/enviro/index.html">www.epa.gov/enviro/index.html</a></li> </ul> </li> <li>• EPA NEPAassist Database - Facilitates the environmental review process and project planning <a href="http://nepaassistool.epa.gov/nepassisUentry.aspx">http://nepaassistool.epa.gov/nepassisUentry.aspx</a></li> </ul>

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	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>Advisory Policies for Shorefront Access Planning and Protection</p> <p>a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.</p> <p>b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.</p> <p>c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.</p> <p>d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.</p> <p>e. Waterfront Recreational Facilities -This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.</p> <p>f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.</p>
	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>If you have questions about the environmental review process or the federal consistency review process, please feel free to call me at (804) 698-4325 or John Fisher at (804) 698-4339.</p> <p>I hope this information is helpful to you.</p> <p>Sincerely,</p> <p>Ellie L. Irons, Program Manager Environmental Impact Review</p> <p>cc: Cindy Keltner, DEQ-TRO Daniel Burstein, DEQ-NRO Kelley H. West, DEQ-PRO Keith Fowler, DEQ-VRO Michael Cholko, DEQ-BRRO-L Kevin Harlow, DEQ-BRRO-R Kotur S. Narasimhan, DEQ-DAPC Roberta Rhur, OCR Amy M. Ewing, DGIF Barry Mathews, VDH Joan Salvati, DEQ-Water David L. Davis, DEQ-OWSP Tony Watkinson, VMRC Everette Kline, DOF David Spears, DMME Keith R. Tignor, VDACS</p>

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	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>Attachment 1 - Enforceable Regulatory Programs comprising Virginia's Coastal Zone Management Program (VCP)</p> <p>a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC) (Virginia Code §28.2-200 to §28.2-713) and the Department of Game and Inland Fisheries (DGIF) (Virginia Code §29.1-100 to §29.1-570).</p> <p>The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities (Virginia Code §3.2-3904 and 3.2-3935 to §3.2-3937).</p> <p>b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Virginia Marine Resources Commission (VMRC) (Virginia Code §28.2-1200 to §28.2-1213).</p> <p>c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.            (1) The tidal wetlands program is administered by VMRC (Virginia Code §28.2-1301 through §28.2-1320).            (2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands - both tidal and non-tidal - (Virginia Code §62.1-44.15:5) and Water Quality Certification pursuant to Section 401 of the Clean Water Act.</p> <p>d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by VMRC (Virginia Code §28.2-1400 through §28.2-1420).</p> <p>e. Non-point Source Pollution Control - (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by DEQ (Virginia Code §62.1-44.15:51 et seq.).</p>
	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>Attachment 1 - Enforceable Regulatory Programs comprising Virginia's Coastal Zone Management Program (VCP) (cont.)</p> <p>(2) Coastal Lands Management is a state-local cooperative program administered by DEQ's Water Division and 84 localities in Tidewater (see i) Virginia (Virginia Code §62.1-44.15:67- 62.1-44.15:79 and Virginia Administrative Code 4 VAC 50-90-10 et seq.).</p> <p>f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of:            (1) The National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.            (2) The Virginia Water Protection Permit (VWPP) program administered by DEQ (Virginia Code §62.1-44.15:5) and Water Quality Certification pursuant to Section 401 of the Clean Water Act.</p> <p>g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (VDH) (Virginia Code §32.1-164 through §32.1-165).</p> <p>h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (DEQ) (Virginia Code §10-1.1300 through §10.1-1320).</p> <p>i. Coastal Lands Management - A state-local cooperative program administered by DEQ's Water Division and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act (Virginia Code §62.1-44.15:67- 62.1-44.15:79) and Chesapeake Bay Preservation Area Designation and Management Regulations (Virginia Administrative Code 4 VAC 50-90-10 et seq.).</p>

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	Letter (cont.)	Ellie L. Irons	Commonwealth of VA - Department of Environmental Quality	<p>Attachment 2 - Advisory Policies for Geographic Areas of Particular Concern</p> <p>a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:</p> <ul style="list-style-type: none"> <li>a) Wetlands</li> <li>b) Aquatic Spawning, Nursery, and Feeding Grounds</li> <li>c) Coastal Primary Sand Dunes</li> <li>d) Barrier Islands</li> <li>e) Significant Wildlife Habitat Areas</li> <li>f) Public Recreation Areas</li> <li>g) Sand and Gravel Resources</li> <li>h) Underwater Historic Sites.</li> </ul> <p>b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:</p> <ul style="list-style-type: none"> <li>i) Highly Erodible Areas</li> <li>ii) Coastal High Hazard Areas, including flood plains.</li> </ul> <p>c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:</p> <ul style="list-style-type: none"> <li>i) Commercial Ports</li> <li>ii) Commercial Fishing Piers</li> <li>iii) Community Waterfronts</li> </ul> <p>Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCP recognizes two broad classes of priority uses for waterfront development APC:</p> <ul style="list-style-type: none"> <li>i) water access dependent activities;</li> <li>ii) activities significantly enhanced by the waterfront location and Complementary to other existing and/or planned activities in a given waterfront area.</li> </ul>

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7/17/2013	Website	Tim Hughes	Director of Biofuels for the State of Kentucky	<p>Food, Feed, Fiber, and Fuel – American agriculture is setting the world standard in providing these four essential ingredients to an inviting society and vibrant economy. These accomplishments are due in part to a heritage of tenacious farmers along with the development and adoption of technological advancements. Productivity has been enhanced through mechanization, hybridization, and most recently genetic enhancement of agricultural production. The United States has a rich resource base of fertile land, transportation infrastructure, amenable climate, and integrated production systems that can continue to meet the needs of a growing world. Today's discussion is focused on the future access to and adoption of agronomic technologies related to crops targeted for energy production. The discussion should not revert to a food versus fuel debate. If given the freedom to develop and access to emerging technologies, the agriculture sector will continue to increase their productivity on all fronts. Many reports fail to acknowledge the many co-products that are resulting from using traditional crops for energy production. Whether the intent is to develop new traits that improve the yields of existing crops through pest resistance, drought tolerance, fertility optimization, or other factors, it is imperative to continue to embrace these advancements. In 1930, 2.7 million acres were devoted to corn production in Kentucky, but these fields only produced 27 million bushels of grain. Although KY corn acreage had been reduced to 1.3 million acres in 2011, Kentucky farmers harvested 181 million bushels that year. Productivity per acre had increased 14 times while enabling our output to see a seven fold increase on less than half the acreage! Even with a growing ethanol market, Kentucky's largest agricultural enterprise is now poultry with over 320 million chickens being produced in the state. A thriving grain and livestock sector in Kentucky gives evidence that both are mutually achievable when technology is embraced. While there is considerable merit to seeking higher productivity from our best land, there may be even greater value in identifying ways to bring marginal or idle acres into dedicated energy crop production. In 2009 Governor Beshear appointed a task force to study biomass and biofuel opportunities in the Commonwealth. The Task Force concluded that 25 million tons of annual biomass production could be achieved by 2025 through the sustainable utilization of crop residue, woody biomass, and dedicated energy crops. A considerable amount of this new production could come from fallow cropland and former mine lands. Most of this marginal land is not in production because of the economic and agronomic challenges associated with cropping these sites. Identification and development of crops that thrive in these challenging environments will be critical to maximizing a dedicated energy cropping system. These crops must be extremely competitive in relation to other plant types in the region, produce yields significant enough to be harvested economically, and contain traits that provide high value chemical components or intense btus of energy. Hopefully many of these crops can be developed by enhancing native species already growing in the region, but we must remain open to introducing other crops that can be acclimated to our conditions.</p>
7/17/2013	Meeting (Web)	Sid Abma		<p>Ok. Yeah, in relation to these Engineering High Energy Crops, uh, we've been sorta following along with this and the Department of Defense is what you mentioned, looking for alternate fuel sources. And we are hoping to be able to work with the Department of Energy, and Department of Defense, and the Department of Agriculture, and with the old coal-fired power plants that will be converting to natural gas. Uh, working with these groups to grow biofuels, grow algae that can be converted to biofuels. We'd be able to take the heat from these exhausts from these natural gas power plants to heat 500 or 1,500 acres of algae ponds. And then we'd be able to take the cooled CO2 gases and through PVC pipe, inject that into these ponds for CO2 enrichment. What I'm looking for is some direction from you people. How do I go about getting something like this started?</p>
7/17/2013	Meeting (Web)	Aviva Glaser		<p>Great. This is Aviva Glaser from the National Wildlife Federation. National Wildlife Federation has 4 million members and supporters across the country, including many in the southeastern United States. I want to thank you all for the opportunity to comment during the scoping process. I just wanted to start off by saying that the National Wildlife Federation believes that it's very important that we transition to home-grown sources of renewable energy, and to that end, we are very appreciative that the DOE is working to identify and promote new sources of renewable energy. However, we do think that it is critical that as we move forward with these renewable energy sources and particularly novel energy sources, we must do it in a way that does not threaten or harm natural resources and native wildlife, and does not have unintended consequences. When you think about bioenergy crops, a fundamental problem that we are grasping with is that the characteristics that make a crop a great bioenergy crop, and that, you know, if you think about a perfect bioenergy crop, you think about one that grows very fast, a very large, hardy, tolerant, doesn't need a lot input. These are all the same characteristics that describe an invasive species. And moreover, they are the very same characteristics that are likely going to be enhanced during the engineering process. And we have already seen that studies have shown that crops that are engineered to enhance certain characteristics such as tolerance, drought, cold, flooding can have a significantly increased risk of invasion. But if you flip that around on the other side, there's a possibility to engineer crops to become less invasive. We're also concerned that genetically modified plants might be able to breed with wild relatives and result in potentially invasive hybrids and, basically as DOE moves forward with this program, I want to urge you very strongly to fully consider the invasive potential of engineered high energy crops. And, in particular, you recommend that a program that supports engineered high energy crops must include rigorous screening protocols, such as the USDA's, APHIS's weed risk assessment to determine the level of invasive potential for each feedstock and variety that will be considered. Anything that has a high risk of becoming invasive, we think should be excluded from being funded and researched further. And for all field trials and demonstrations sites for other planting of these engineered high energy crops, we think the Department of Energy must require the use of best standard practices to reduce the invasive potential along with monitoring, mitigation and eradication protocols, as well as studies to further invest potential for these plants to escape, in case they, and so we have an idea of when they are brought to a larger scale of what the invasive potential really will be. Uh, that's basically what I have to say. But, I guess just to close it, we have seen time and time again that non-native plants introduced with good intentions can have devastating effects. And, we want to make sure that we are learning from our mistakes, and moving forward using a precautionary approach. Thank you.</p>

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7/17/2013	Meeting (Web)	Paul Ulanich	North Carolina Biotechnology Crop Commercialization Center	<p>Alright, thank you. I had a...just a quick thought after hearing the presentation of the comments. There's been some public concern about food crops being utilized for fuel. And the four examples given in Dr. Burbaum's presentation aren't necessarily for human food consumption. So three suggestions I would have, would be for, determine whether or not these three or four other crops have potential to offset other crops that are used for human feed or human food use. Uh, what are the opportunities for these four crops to be used or be used for perhaps dual purposes or more? An example that came to mind, is one of the crops that's being considered is Camelina, and the oil crushed from the seed is what's being used or considered for the fuel resource. But the waste bi-product from that is the protein meal that's left over and that may have the potential to be utilized as animal feed. And, that could potentially serve as dual usage and be added value. And the third thought I had was, what are the opportunities for these crops to be grown in either off-season or perhaps on marginal land to actually provide more agricultural value, um, than what's currently being produced on those lands? Um, and those are my three comments. Thank you.</p>
7/17/2013	US Mail	Leopoldo Miranda	Fish and Wildlife Service	<p>Dear Dr. Burbaum:</p> <p>The Fish and Wildlife Service (Service) has reviewed the U.S. Department of Energy (DOE), Advanced Research Projects Agency-Energy, Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) for Engineered High Energy Crop Program, Southeastern United States. We offer the enclosed comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (MBTA)(40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).</p> <p>The Service's comments are enclosed and are provided to assist DOE in the development of the PEIS. However, due to the early planning stages of the proposed project, the Service's comments on the potential project related impacts to threatened and/or endangered species/candidate species and/or their habitat should be considered general in nature. The Service reserves the right to comment further on issues associated with the proposed project as details and additional information becomes available. If you need any additional information, please contact Christine Willis, Regional Energy Coordinator, Southeast Region, at (404) 679-7310.</p> <p>Sincerely yours, Leopolda Miranda Assistant Regional Director Ecological Services</p> <p>Enclosure</p>
7/17/2013	US Mail	Leopoldo Miranda	Fish and Wildlife Service	<p>U.S. Fish and Wildlife Service Comments-U.S. Department of Energy Development of the Programmatic Environmental Impact Statement (PEIS):</p> <p>Alternatives Section:</p> <p>In the alternative sections the Service encourages DOE to include a full range of alternatives available with respect to feasible energy crops available and their potential impacts on the human environment. To assist in this initial scoping effort the Service recommends that the alternative consider the following:</p> <ul style="list-style-type: none"> <li>• Use of smaller trial pilots and demonstration plots (i.e. no larger than 150 acres for demonstration-scale);</li> <li>• Use of fallow fields or other disturbed uplands;</li> <li>• Use of existing farms fields with agreements from owners and appropriate compensation;</li> <li>• Use of large scale manufacturing facilities that have been closed;</li> <li>• Locate Engineered High Energy Crops facilities near existing power generation/distribution industries;</li> <li>• Partner with wind farms which use large parcels of land;</li> <li>• Redevelop closed power generation plants such as the coal fired Grainer Plant in Horry County, SC which recently "powered down"; and</li> <li>• Use covered or enclosed trucks and railcars to transport potentially invasive species (prevent seed dispersal).</li> </ul> <p>Preliminary Environmental Issues for Consideration Section:</p> <p>Due to the long history of negative impacts of invasive species on the biodiversity in North America (see excellent review in Dukes and Mooney 2004, pgs. 411-437), the Service has concerns over the proposed introduction of exotic species for genetically engineered biofuels such as miscanthus (the NOI provided examples but not the entire list). There are numerous records of the spread of noxious, invasive plants, especially perennial Eurasian grasses such as giant reed into non-targeted areas. Such impacts are well summarized and there are important citations referenced in Ragh et al. (2006, pg. 1742). The Service has serious concerns with the impact of the use of potentially invasive plants as biofuels on multiple trust resources based on our authorities and responsibilities under the Endangered Species Act (ESA), the Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act. At this time the scoping document outlines potential issues, but the PEIS should address the potential invasive issue in greater detail. This should include an analysis to ensure compliance with section 9011(a)(4)(B)(ii) of Public Law 110-246 and the 1974 Federal Noxious Weed Act.</p> <p>The Service recommends the PEIS include discussions on how monitoring and containment will be implemented to ensure that various trials have the proper safeguards in place. These safeguards should include sufficient funds over several years that will monitor and address escaped plants in adjacent roads, demonstration fields and processing plants. This type of monitoring and response should not be left up to the individual growing the crops because it may require access to areas beyond the immediate trial fields (i.e. roadways, adjacent landowners).</p>

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Date Rec'd	Format	Name	Organization	Comment
7/18/2013	Email	Christine Willis	US Fish and Wildlife Service	<p>The US Fish and Wildlife Service has reviewed the US DOE Advanced Research Project-Energy NOI to prepare a Programmatic EIS for Engineered High Energy Crop program and offers the attached comments.</p> <p>Dear Dr. Burbaum:</p> <p>The Fish and Wildlife Service (Service) has reviewed the U.S. Department of Energy (DOE), Advanced Research Projects Agency-Energy, Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) for Engineered High Energy Crop Program, Southeastern United States. We offer the enclosed comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (MBTA)(40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). The Service's comments are enclosed and are provided to assist DOE in the development of the PEIS. However, due to the early planning stages of the proposed project, the Service's comments on the potential project related impacts to threatened and/or endangered species/candidate species and/or their habitat should be considered general in nature. The Service reserves the right to comment further on issues associated with the proposed project as details and additional information becomes available. If you need any additional information, please contact Christine Willis, Regional Energy Coordinator, Southeast Region, at (404) 679-7310.</p> <p>Enclosure Sincerely yours, Leopolda Miranda Assistant Regional Director, Ecological Services U.S. Fish and Wildlife Service Comments-U.S. Department of Energy Development of the Programmatic Environmental Impact Statement (PEIS): Alternatives Section: In the alternative sections the Service encourages DOE to include a full range of alternatives available with respect to feasible energy crops available and their potential impacts on the human environment. To assist in this initial scoping effort the Service recommends that the alternative consider the following:</p> <ul style="list-style-type: none"> <li>• Use of smaller trial pilots and demonstration plots (i.e. no larger than 150 acres for demonstration scale);</li> <li>• Use of fallow fields or other disturbed uplands;</li> <li><del>• Use of existing farm fields with conversion from sugar and corn/soybean crop rotation;</del></li> </ul>
7/18/2013	Email (cont.)	Christine Willis	US Fish and Wildlife Service	<ul style="list-style-type: none"> <li>• Locate Engineered High Energy Crops facilities near existing power generation/distribution industries;</li> <li>• Partner with wind farms which use large parcels of land;</li> <li>• Redevelop closed power generation plants such as the coal fired Grainer Plant in Horry County, SC which recently "powered down"; and</li> <li>• Use covered or enclosed trucks and railcars to transport potentially invasive species (prevent seed dispersal).</li> </ul> <p>Preliminary Environmental Issues for Consideration Section: Due to the long history of negative impacts of invasive species on the biodiversity in North America (see excellent review in Dukes and Mooney 2004, pgs. 411-437), the Service has concerns over the proposed introduction of exotic species for genetically engineered biofuels such as miscanthus (the NOI provided examples but not the entire list). There are numerous records of the spread of noxious, invasive plants, especially perennial Eurasian grasses such as giant reed into non-targeted areas. Such impacts are well summarized and there are important citations referenced in Ragh et al. (2006, pg. 1742). The Service has serious concerns with the impact of the use of potentially invasive plants as biofuels on multiple trust resources based on our authorities and responsibilities under the Endangered Species Act (ESA), the Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act. At this time the scoping document outlines potential issues, but the PEIS should address the potential invasive issue in greater detail. This should include an analysis to ensure compliance with section 9011(a)(4)(B)(ii) of Public Law 110-246 and the 1974 Federal Noxious Weed Act. The Service recommends the PEIS include discussions on how monitoring and containment will be implemented to ensure that various trials have the proper safeguards in place. These safeguards should include sufficient funds over several years that will monitor and address escaped plants in adjacent roads, demonstration fields and processing plants. This type of monitoring and response should not be left up to the individual growing the crops because it may require access to areas beyond the immediate trial fields (i.e. roadways, adjacent landowners). Because some of the plants considered, include genetically engineered native plants (such as loblolly pine), the Service recommends careful evaluations of these plants and the potential for hybridization into the surrounding plant communities. Studies between native and modified native plants should be done in a closed system prior to field trials and once trial fields are identified, monitoring of native plants near the trial fields should be included in the demonstration studies.</p> <p>Literature Cited Dukes, J.S. and H.A. Mooney. 2004. Disruption of ecosystem processes in western North America by invasive species. Revista Chilena de Historia Natural/11:411-431. Available on line at: <a href="http://www.scielo.cl/scielo.php?pid=S0716-78X2004000300003&amp;script=sci_arttext&amp;tlng=es">http://www.scielo.cl/scielo.php?pid=S0716-78X2004000300003&amp;script=sci_arttext&amp;tlng=es</a> Raghu, S., R.C. Anderson, C.C. Daehler, A.S. Davis, R.N. Wiedenmann, D. Simberloff and R.N. Mack. 2006. Adding biofuels to the invasive species fire? Science 313: 1742. Available on the internet at: <a href="http://energyandenvironmentblog.dallasnews.com/invasive/o2/species%20and%20biofuels.pdf">http://energyandenvironmentblog.dallasnews.com/invasive/o2/species%20and%20biofuels.pdf</a>:\ES\ES 2007 Efiles\PROJ-100 Project Files\ERs\FY13\ER13 0448 Dept of Energyhighenergy biofuel program\20130709 RO comments on NOI for Dept of Energy biofuel programmatic EIS.docx</p>

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Date Rec'd	Format	Name	Organization	Comment
7/19/2013	Email	Paul Angelone and Joel Clement	Department of the Interior	<p>Dr. Jonathan Burbaum, Please find the attached U.S. Department of Interior Office of Policy Analysis comments related to your notice of intent for your Engineered High Energy Crop Program within the southeastern portion of the United States. Sincerely, Paul</p> <p>Dr. Burbaum: The U.S. Department of the Interior Office of Policy Analysis submits the following comments on the Notice of Intent to Prepare a Programmatic Environmental Impact Statement for Engineered High Energy Crop Programs, Department of Energy (DOE), Advanced Research Projects Agency-Energy (ARPA-E), Southeastern United States.</p> <p>There is a potential that cultivation of feedstocks for biofuels may provide an opportunity for some non-native species to become invasive. Although a majority of food, fiber and landscape plants are non-native, and have not proven invasive, there are some that have caused substantial socio-economic risk and environmental impacts. This letter encourages DOE to avoid proven invasive species or plant traits that contribute to invasiveness and conform to Federal laws addressing biofuels that could become noxious or invasive.</p> <p>If identified invasive species or plant traits that contribute to invasiveness are selected for testing, an effort should be made to develop strategies that effectively avoid, reduce or offset adverse impacts to private and public lands within the southeastern United States.</p> <p>In addition, we offer the following specific comments:</p> <ul style="list-style-type: none"> <li>• Require a financial guarantee (e.g. bonding) for all fuel producers that use invasive feedstocks. The guarantee would cover any management efforts if the plant spread outside of the intended growing area. This would encourage feedstock producers and fuel producers to work collaboratively within their local communities to support early detection and rapid response and other operations to prevent and limit invasive populations. The level of the financial guarantee needed could be adjusted for areas of operation where there is little risk of spread and/or where highly effective Risk Management Plans are in effect. Most importantly, the federal government should not be responsible for paying for invasive plant control due to the actions of a private individual or business that cause the spread of these plants. Additional analysis would be required to establish the method to determine the appropriate level of the financial guarantee. In addition, responsibility would need to be assigned to an entity to establish the level of the guarantee as well as administer the guarantee.</li> <li>• Require ALL fuel producers that use invasive feedstocks to have in place a Risk Management Plan that covers the feedstock growers and the feedstock transportation corridors. The mitigation plans could vary in terms of what is required for those cases where the risk of spread is low (such as in areas where the species is native or planted away from wetland areas.) The point is that both of these species are known invasive plants; as such a risk management plan can reduce the potential harm and should be required.</li> <li>• Clearly state that it is the responsibility of the fuel producer to ensure that the feedstocks that they are using to make a fuel product is/are grown under a Risk Management Plan in order for them to receive a Renewable Identification Number from the U.S. Environmental Protection Agency (EPA). A fuel producer can engage the services of an independent private-sector monitoring entity such as a Certified Crop Consultant company to monitor a feedstock grower's implementation of their Risk Management Plan. This would allow a fuel producer to provide independently obtained data for any EPA and/or state and local audits that may be required.</li> </ul> <p>Federal and state agencies, tribes, and private land owners would incur significant additional monitoring and control costs if invasive species spread from the proposed testing sites. We want to ensure that our trust resources are protected and that potentially new invasive species are not introduced into already fragile ecosystems.</p> <p>Thank you for the consideration of these comments. Please feel free to contact Olivia Ferriter at 202-208-4881 with any further questions. Sincerely,</p> <p>Joel Clement Director, Office of Policy Analysis</p>



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Date Rec'd	Format	Name	Organization	Comment
7/20/2013	Website	Sid Abma	Sidel Systems USA Inc.	<p>Good day EHEC PEIS President Obama on June 25th laid out his Climate Action Plan. This plan if followed through will reduce a lot of Global Warming and CO2 Emissions from being put into our atmosphere in the future. One of the big items on his list is the conversions of the coal fired power plants to natural gas. This conversion alone will reduce a lot of CO2 and other pollutants. It will not reduce the global warming portion without further assistance. Sidel Systems USA Inc. and our technology of Condensing Flue Gas Heat Recovery is designed to recover almost all of the heat energy from these waste exhaust gases. The key to making this technology work is the utilization of this recovered heat energy. These 50 year old plus coal fired power plants have over the years deposited a lot of coal ash and dust, and coal pieces on the lands surrounding these power plants. Is this land suitable for growing food crops on? I don't know. It would be ideal land to be converted into algae production. Depending on the location and winter climatic conditions, hundreds of acres of algae ponds can be constructed. These algae ponds would be kept at the growers desired temperature year round, ensuring constant plant growth. Algae also requires CO2. When the heat energy has been recovered from the power plants waste natural gas exhaust gases, what is left is Cool CO2 and distilled Water. This CO2 can then be blown through PVC piping providing CO2 enrichment into all of these algae ponds. This CO2 will be absorbed by the algae. In turn these algae plants will return to the atmosphere Oxygen. Heated algae ponds will have requirements for additional water, and the water created during this Condensing flue gas heat recovery process can be used for this purpose, reducing the requirements of ground water. America is wanting to create Green Jobs. How many jobs will be created constructing these algae growing facilities and putting in place the infrastructure for heating and CO2 and everything it takes to grow and harvest this plant, and also to construct the algae processing plant? How many full time jobs will be created growing and harvesting all this algae? How many full time jobs will be created processing this algae into bio-fuels? How many full time jobs will be created maintaining all these facilities? Putting together these converted natural gas power plants with the technology of condensing flue gas heat recovery will change the way America produces electricity. Near 100% Efficiency, with near No CO2 being put into the atmosphere, and Water conservation. Coupling this with growing algae in area's of America that does not take away from good agricultural land is another bonus. Producing all these full time jobs growing and harvesting and producing all these different Bio-Fuels will meet the goals of this EHEC PEIS solicitation. What can this do for America's Economy? What will this do for America's Environment? How many of these coal power plants will be converted over the next number of years? This window of opportunity is being opened. If this is not acted upon with the planning of these fuel conversions, the costs for alterations and plant shutdown will quite likely become cost prohibitive, and America will have to live with the consequences for the next 50 years, or possibly not see it at all happen. I look forward to your reply.</p>
7/22/2013	Email	Robert Natelson	North Carolina State University	<p>Hello, I tried submitting on the website but got an error message. Not sure if it went through, so sending again.</p> <p>Topic - General Comment - These efforts in field trials of engineered high energy crops should be helpful and important in scaling from government-funded laboratories to commercial markets. One request is to understand the importance that the engineered crops may exhibit differences in composition and properties (e.g., density, solubility, phase change) from their wild types. These differences may require the use of modified, or new, oil extraction and oil-to-fuel conversion technologies. These technologies may require testing, and specific amounts of biomass would be required for the equipment to operate. It is noted that the Project Overview mentions several sizes of field trials. Furthermore, it is recommended that the sizes and quantities of field trials are coordinated with the identification and testing of oil extraction and oil conversion technologies. Thank you.</p> <p align="right">Robert Natelson Postdoc</p>

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Date Rec'd	Format	Name	Organization	Comment
7/22/2013	Email	Aviva Glaser	National Wildlife Federation	<p>July 22, 2013 U.S. Department of Energy 1000 Independence Ave., SW Washington, DC 20585 Re: Notice of Intent to Prepare an Environmental Impact Statement For Engineered High Energy Crop Programs, Southeastern United States</p> <p>To Whom It May Concern:</p> <p>We thank you for the opportunity to provide comments regarding the preparation of an Environmental Impact Statement (EIS) by the Department of Energy (DOE) for its engineered high energy crop programs in the southeastern United States. The undersigned organizations, representing members and supporters throughout the country and in the southeastern U.S., appreciate the steps that DOE has made to identify and promote renewable energy sources and to invest in second and third generation sources of bioenergy. However, we are also concerned about the invasive potential of these crops, and we urge DOE to use caution and take measures to help ensure that the selected engineered high energy crops do not result in the introduction or spread of potentially invasive organisms or have other unintended negative consequences. In addition, the alternatives we promote would be most consistent with Executive Order 13,112 (1999), which provides that DOE may not "authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere."</p> <p>Engineered High Energy Crops are likely to have traits in common with invasive species. Many of the characteristics sought in bioenergy crops also are commonly found in invasive species. As a result, plants with attractive bioenergy traits, including but not limited to rapid above-ground biomass production, high environmental tolerance, and short generation times, are also likely to pose a high risk of invasion. The engineering process may enhance invasion risk to the extent that it selects for or enhances these and other characteristics common in invasive species. While genetic engineering in itself has not been shown to alter invasion risk, the products of engineering processes may have enhanced risk as a result of the characteristics altered by those processes. Studies suggest that genetic modification (GM) and selective breeding to enhance or alter certain characteristics, such as tolerance to cold, flooding, or salinity, for both non-native and native feedstocks, can significantly increase the risk of invasiveness. In the agricultural industry, selective breeding and GM have been used for a number of purposes, including: increasing yield; enhancing nitrogen-use efficiency; and increasing resistance to conditions such as droughts, cold temperatures, pests, and diseases – all characteristics that can give plants a competitive edge over non-altered, native plants. , Other studies indicate that invasion risk is greater where non-native species are modified to improve their adaptability to areas where they might otherwise not be able to survive. , This increased risk is a product of the modified plant's new ability to breed with wild relatives, resulting in potentially-invasive hybrids. Other research has found that hybridization between varieties or disparate source populations may promote evolutionary changes that enhance the invasiveness of exotic species over time. , Hybrids are particularly likely to occur where there have been multiple introductions of a species or variety into a new area and where invasiveness has occurred after a lag period during which hybridization could occur. , Although research on the potential impacts of modified species that become established outside of target areas is in its infancy, widespread cultivation of potentially invasive species, including novel cultivars, may cause significant impacts to native ecosystems and possibly even to commercial agriculture. Should an invasive bioenergy feedstock escape and become established in nearby natural areas, the results could be devastating for agriculture and native ecosystems. Engineered plants may also pose a risk of genetic contamination of native species where they reside, should the modified variants hybridize with natural populations or related species.</p> <p>The risk of escape of engineered crops is real. According to a Government Accountability Office report, as of 2008 there had been half a dozen documented cases in which GM crops were released into food, animal feed, or the environment unintentionally, but the total number of unauthorized releases into the environment was unknown. A more recent study found that almost half of sampled roadside plants in North Dakota were herbicide-resistant GM canola (<i>Brassica napus</i>), indicating that not only had the plants escaped from cultivation, but that they had become quite common. Additionally, the researchers found that the escaped plants could hybridize with each other, creating entirely novel combinations of transgenic traits. Other studies have documented the transmission of the herbicide-tolerance gene from GM canola to wild relatives of the crop, such as wild turnips (<i>Brassica rapa</i> ssp. <i>sylvestris</i>).</p>

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7/22/2013	Email (cont.)	Aviva Glaser	National Wildlife Federation	<p>Careful selection of engineered high energy crop characteristics can help ensure that DOE's engineered high energy crop programs do not result in the introduction or spread of new invasive species. The invasion risks associated with these crops will depend on a number of factors, including but not limited to the plant's specific characteristics, where it is being cultivated, whether it has wild relatives in the region. Selection for traits that reduce invasion risk, such as sterile seed, can reduce the potential that an engineered high energy crop will escape from cultivation into natural areas. For example, <i>Miscanthus x giganteus</i>, a sterile hybrid bioenergy feedstock, presents a substantially lower risk of invasion than either of its parent species. Similarly, a recent evaluation of multiple cultivars of eucalyptus identified several with acceptable invasion risks. Where successful, as in one study of the use of GM poplars (<i>Populus</i> spp.) as biofuel feedstocks, the scope of the expected ecological issues from their use may be no greater than for "conventional plantation culture." Thus, when considering plant modifications, it is important to know how the modifications affect the potential of the plant to become invasive, and to consider and require the use of measures to prevent the escape of the plant from cultivation and associated impacts on native ecosystems and related species.</p> <p>Weed Risk Assessment is an effective tool for evaluating invasion risk of novel species, subspecies hybrids, cultivars, and varieties. In recent years, scientists have developed new tools to predict the invasion risk associated with plant taxa before they are introduced into a new area. These Weed Risk Assessment (WRA) tools use information collected on a plant's characteristics and other predictors of invasion to efficiently produce a numeric score indicating invasion risk.</p> <p>WRA tools are used to make and support regulatory determinations in the US and other countries. Australia and New Zealand use a peer-reviewed WRA tool to make determinations of whether to allow the import of non-native plants. The Australian tool creates a numeric score for each plant that results in acceptance, rejection, or further evaluation of the plant. The score is based on the answers to 49 questions about species-specific, climate matching, and other traits. Multiple studies have shown that the Australian WRA is an effective screening tool across geographies, and it has been applied, with modifications, in New Zealand, Japan, the Pacific Islands, and the United States. Retrospective studies comparing WRA results with data on known existing weeds found that the Australian WRA has rejected 84% of existing weeds and only 7% of non-weeds. The WRA as adapted for and utilized in New Zealand successfully identified 93% of known weeds, and in Hawaii, 91%.</p> <p>The U.S. Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) has recently developed a WRA tool based on a methodology similar to the Australian WRA, but which incorporates additional analysis of uncertainty and estimates of the extent of potential range in the United States. The USDA tool has a similar level of rejection of major invaders and improved acceptance of non-invaders as compared to the Australian tool, and is intended as a rapid screening tool to provide "the first in a series of defenses against invasive species."</p> <p>Cost-benefit analysis of plant risk analysis points strongly in favor of using existing and similar methodologies to support regulatory and programmatic initiatives, such as the engineered high energy crop program. The Australian and New Zealand import systems, based on WRA, have been shown to produce substantial net economic benefits – an unsurprising finding given the low rate of false positives and high cost of eradicating and managing invasive species and the economic and environmental damage that these species cause.</p> <p>Weed Risk Assessment indicates that bioenergy feedstock species, as a group, are particularly likely to be invasive. Recent studies evaluating the invasive potential of bioenergy species have uniformly indicated that these species score significantly higher and are therefore more likely to be invasive than other randomly-selected species. In light of the statistically higher risk of invasion from biofuel species, additional caution must be used in determining which species are environmentally and economically beneficial, and which will impose hidden—but easily detectable—future costs.</p> <p>The effectiveness of WRA as a tool for prospectively evaluating invasion risk demands that DOE both consider its use when drafting its EIS and incorporate WRA into its engineered high energy crop programs as a means of selecting for or engineering traits that reduce invasion risk while maintaining desired bioenergy production characteristics.</p> <p>While interagency coordination would support DOE's program in this respect, DOE should note that reliance in its EIS on other agency programs focused on avoiding invasion would be insufficient. Noxious weed lists maintained by USDA and state agencies are not adequate indicators of invasion risk because these lists are not intended to be either predictive or comprehensive; moreover, in practice these lists do not include many bioenergy crops that are known invasive species. In addition, consideration of published literature during environmental impact assessment is likely to be inadequate to assess potential invasion risk – particularly for engineered and other novel crops whose characteristics have been altered. Even if a parent species has been studied for invasion risk, the engineered plant may not behave the same and independent assessment is required for accurate understanding of its particular risks.</p> <p>Risk management measures can reduce the risk of invasion by novel bioenergy feedstocks.</p> <p>While Weed Risk Assessment is a powerful tool for evaluating invasion risk and enabling avoidance of high-risk species, additional steps can further reduce the risk of invasion as a result of field trials of engineered high energy crops. Best management practices and risk management plans are available and their mandatory application in conjunction with WRA tools would reduce the risk of invasion associated with DOE's programs.</p>

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Date Rec'd	Format	Name	Organization	Comment
7/22/2013	Email (cont.)	Aviva Glaser	National Wildlife Federation	<p>Multiple sources have created best practices for cultivation of bioenergy crops in order to reduce the likelihood of escape and spread. The International Union for Conservation of Nature (IUCN) best practices for prevention of escape (which are in addition to practices focused on, inter alia, feedstock selection) focus on production and dispersal of seeds and propagules. The National Invasive Species Council's Invasive Species Advisory Committee has published a white paper including risk mitigation measures as well. Other commentators recommend practices including quarantined field trials, even if not required by law, , , and using trials to develop management guidance for each species. , , Other specific management measures include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• slowly scaling up cultivation area;</li> <li>• preventing reproduction by harvesting prior to seed set for non-oilseed crops, and particularly for wind-dispersed crops;</li> <li>• buffer zones around plantings to inhibit seed dispersal and facilitate detection of escaped crop offspring or associated pests;</li> <li>• mandated monitoring in and beyond buffer zones;</li> <li>• monitoring transport routes in addition to the site of cultivation;</li> <li>• low/no-till cultivation;</li> <li>• ensuring that wild type relatives are not in the vicinity of planting; and</li> <li>• use of insurance bonds or other financial assurance measures to ensure that adequate funds are available to eradicate the plant upon cessation of cultivation.</li> </ul> <p>Critically, DOE should note that invasion potential is largely independent of the size of the cultivated area; therefore, these management measures should apply to cultivation of engineered high energy crops at any scale. In addition, effective best management plans consider each step in the supply chain—from planting to harvest to transportation and storage, as well as monitoring and mitigation and plans for eradication should the project be abandoned.</p> <p>Certain federal agencies already incorporate some mandatory measures to reduce invasion risk of cultivated plants. USDA-APHIS Biotechnology Regulatory Service (BRS) regulations include requirements for movement or release of plants altered or produced via genetic engineering that may be plant pests. Its regulations require performance standards and permit conditions that provide protection against escape and dissemination of such plants. Producers must also notify the agency upon accidental or unauthorized release. In addition, the Environmental Protection Agency (EPA) recently issued a rule requiring producers of two potentially-invasive feedstock species, if they wish to obtain benefits under the Renewable Fuel Standard (RFS) program, to submit and receive approval of a Risk Management Plan demonstrating measures that they will take to prevent the escape of these species.</p>
7/22/2013	Email (cont.)	Aviva Glaser	National Wildlife Federation	<p>While multiple agencies require the development and use of measures to reduce the risk that potentially-invasive bioenergy feedstocks may escape from cultivation, neither these existing programs nor other regulatory programs are sufficient to address invasion risk. Most notably, engineered high energy crops that may be plant pests produced by genetic engineering will require compliance with BRS regulations, but other crops produced through DOE programs may not if they are not produced by genetic engineering, are not potential plant pests, or for other reasons. In its scoping for field releases of engineered high energy crops, DOE should recognize the limitations of the BRS program and other regulatory and permitting programs and incorporate alternatives in the EIS and strongly consider requirements that all field tests meet standards at least equivalent to those that would be required by BRS.</p> <p>Conclusions</p> <p>As DOE moves forward with field trials for the engineered high energy crop program, the undersigned groups recommend that the agency integrates rigorous, peer-reviewed screening protocols into its EIS and subsequent decision-making processes. We encourage inclusion of the following alternatives:</p> <ul style="list-style-type: none"> <li>• Require that every engineered high energy crop cultivar, variety, or hybrid is assessed using the USDA-APHIS WRA system, or another peer-reviewed WRA system, before it can be considered for cultivation or field trials at any scale or in any location.</li> <li>• Approve field trials only for crops for which WRA indicates a low risk of invasion. For those species or cultivars for which there is not enough information for WRA or for which the score is "evaluate further," DOE could use carefully controlled test sites to better understand and evaluate the risk of spread.</li> <li>• Require the mandatory use of a complete array of management measures to reduce the risk that crops approved for field release – at any scale – may escape from cultivation, become established in the wild, or interbreed with wild relatives.</li> </ul> <p>Adoption of these recommended practices would likely greatly increase the economic and environmental benefits of any high energy biofuel crop program, and would ensure that DOE acts in accordance with Executive Order 13,112 regarding mitigating the spread of invasive species domestically.</p> <p>Thank you for the consideration of these comments. We look forward to working with the Department of Energy to help reduce the potential for engineered high energy crops to become invasive.</p>

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7/22/2013	Email (cont.)	Aviva Glaser	National Wildlife Federation	<p>Sincerely, Aviva Glaser Legislative Representative, Agriculture Policy National Wildlife Federation (202) 797-6616</p> <p>Read D. Porter Director, Invasive Species Program Environmental Law Institute (202) 939-3810</p> <p>Lee Van Wychen, Ph.D. Science Policy Director Weed Science Society of America (202) 746-4686</p> <p>Doug Johnson+F40 Vice-Chair National Association of Exotic Pest Plant Councils (510) 842-3902</p> <p>John Bonitz Renewable Energy Manager - Biomass Specialist Southern Alliance for Clean Energy (919) 360-2492</p> <p>Bridget Collins Agriculture Policy Coordinator Association of Fish and Wildlife Agencies (202) 624-3688</p>

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Date Rec'd	Format	Name	Organization	Comment
7/22/2013	Email	Lauren Quinn	Energy Biosciences Institute University of Illinois	<p>Public comment for U.S. Department of Energy's EHEC PEIS  Names: A. Bryan Endres<sup>1,4,5</sup>, Jody M. Endres<sup>2,4,5</sup>, Lauren D. Quinn<sup>4,6</sup>, Elise C. Scott<sup>4,5</sup>, James S.N. McCubbins<sup>4,5</sup>, Thomas Voigt<sup>3,4,6</sup>  Organizations: University of Illinois (UI) Department of Agricultural and Consumer Economics<sup>1</sup>, UI Department of Natural Resources and Environmental Sciences<sup>2</sup>, UI Department of Crop Sciences<sup>3</sup>, UI Energy Biosciences Institute<sup>4</sup>  Areas of Expertise: Bioenergy Law and Policy<sup>5</sup>, Invasive Plant Ecology<sup>6</sup>  Mailing Address: 322 Mumford Hall, 1301 W. Gregory Drive, Urbana, IL 61801  Phone: 217-333-1828 Email Address: bendres@illinois.edu  The above respectfully submit the following responses to the Department's request for public comment surrounding field trials of engineered high energy crops.</p> <p>The DOE's proposal to fund confined EHEC field trials of multiple scales in the southeast region requires careful consideration of the potential invasiveness of the feedstocks at issue. Our earlier response to the RFI on this topic suggested a rubric for non-invasive feedstock selection, protocols for containment of transgenes, and an emphasis on ecoregions, rather than state boundaries, for siting field trials. With this public comment, we reiterate our strong caution against the use of potentially invasive feedstocks as EHECs in the southeast.</p> <p>This is a key concern, particularly if engineered traits increase tolerance to environmental stress or confer herbicide resistance. Several researchers have categorized as invasive (or "high-risk") several species or close relatives currently being evaluated under ARPA-E's PETRO program. These include <i>Arundo donax</i> (Barney and DiTomaso 2008, GISP 2007, Glaser and Glick 2012, Gordon et al. 2011, PIER 2013), fertile <i>Miscanthus</i> species (Barney and DiTomaso 2008, Glaser and Glick 2012, Gordon et al. 2011, PIER 2013), some <i>Eucalyptus</i> species (Gordon et al. 2012, PIER 2013), some <i>Saccharum</i> species (Gordon et al. 2011, PIER 2013), and some <i>Camelina</i>, <i>Sorghum</i>, and <i>Nicotiana</i> species (PIER 2013). The <i>Pinus</i> genus has also been implicated for its invasive traits (PIER 2013) and is known as an aggressive invader in many parts of the world (Rejmanek and Richardson 1996). Relatives of the PETRO species are recognized invaders in the states where field trials will take place. Care should be taken to avoid using the genotypes of invasive relatives in engineering novel taxa.</p> <p>The invasive threat of a species can be mitigated in a number of ways, including selective breeding to incorporate non-invasive traits (e.g. sterility, retention of fruits on parent plants, etc) (Anderson et al. 2006), proper containment of pollen and propagules, and comprehensive stewardship planning, including research on eradication requirements (ISAC 2009, IUCN 2009). These mitigation steps should be required for permit approval by APHIS. Evidence of low invasion risk using weed risk assessment (WRAs) protocols (Koop et al. 2011, Pheloung et al. 1999, IFAS Invasive Plant Working Group 2011) should be included, as well. Rather than a state- or region-wide assessment, WRAs for proposed field trials should be performed in the context of more context specific ecoregions. This will allow a more tailored approach to feedstock approval or denial on the basis of invasion risk in its target area. However, it is important to bear in mind that feedstocks will be transported across ecoregions, as well as state boundaries, to bio-refineries. Invasion risk along transport routes may differ from the production region – indeed, roadsides are recognized as major sites of invasive plant establishment and spread (von der Lippe and Kowarik 2007) – and specific plans for transport containment, along with field containment, should be included in permit applications.</p> <p>Assessment of various engineering scenarios on potential invasiveness of known energy crops will be necessary to avoid losses to the developer in terms of liability (if releasing an invasive product) (McCubbins et al. 2013, Quinn et al. 2013), losses to the economy in terms of invasive species management (Pimentel et al. 2005), and losses to the environment in terms of irrevocable change to ecosystems after establishment of invaders (Mack et al. 2000).</p>

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7/22/2013	Email (cont.)	Lauren Quinn	Energy Biosciences Institute University of Illinois	<p>Literature cited:</p> <p>Anderson NO, Gomez N, Galatowitsch SM. 2006. A non-invasive crop ideotype to reduce invasive potential. <i>Euphytica</i> 148: 185-202.</p> <p>Barney JN, DiTomaso JM. 2008. Nonnative species and bioenergy: Are we cultivating the next invader? <i>Bioscience</i> 58: 64-70.</p> <p>GISP. 2007. Assessing the risk of invasive alien species promoted for biofuels. Pages Available at <a href="http://www.gisp.org/whatsnew/docs/biofuels.pdf">http://www.gisp.org/whatsnew/docs/biofuels.pdf</a>. Accessed on 6/20/12. Global Invasive Species Programme white paper.</p> <p>Glaser A, Glick P. 2012. Growing risk: Addressing the invasive potential of bioenergy feedstocks. Washington, D.C.: National Wildlife Federation.</p> <p>Gordon DR, Tancig KJ, Onderdonk DA, Gantz CA. 2011. Assessing the invasive potential of biofuel species proposed for Florida and the United States using the Australian Weed Risk Assessment. <i>Biomass &amp; Bioenergy</i> 35: 74-79.</p> <p>Gordon DR, Flory SL, Cooper AL, Morris SK. 2012. Assessing the Invasion Risk of Eucalyptus in the United States Using the Australian Weed Risk Assessment. <i>International Journal of Forestry Research</i> 2012: 1-7.</p> <p>IFAS Invasive Plant Working Group. 2011. IFAS Assessment of Non-Native Plants in Florida's Natural Areas. Available at <a href="http://plants.ifas.ufl.edu/assessment/">http://plants.ifas.ufl.edu/assessment/</a>, Accessed on 10/24/11.</p> <p>ISAC. 2009. Biofuels: cultivating energy, not invasive species.</p> <p>IUCN. 2009. Guidelines on Biofuels and Invasive Species. Gland, Switzerland: IUCN (International Union for Conservation of Nature).</p> <p>Koop AL, Fowler L, Newton LP, Caton BP. 2011. Development and validation of a weed screening tool for the United States. <i>Biological Invasions</i> DOI 10.1007/s10530-011-0061-4.</p> <p>Mack RN, Simberloff D, Lonsdale WM, Evans H, Clout M, Bazzaz FA. 2000. Biotic invasions: Causes, epidemiology, global consequences, and control. <i>Ecological Applications</i> 10: 689-710.</p> <p>McCubbins JSN, Endres AB, Quinn L, Barney JN. 2013. Frayed seams in the "patchwork quilt" of American federalism: an empirical analysis of invasive plant species regulation. <i>Environmental Law</i> 43: 35-81.</p> <p>Pheloung PC, Williams PA, Halloy SR. 1999. A weed risk assessment model for use as a biosecurity tool evaluating plant introductions. <i>Journal of Environmental Management</i> 57: 239-251.</p> <p>PIER. 2013. US Forest Service, Pacific Island Ecosystems at Risk (PIER). Online resource at <a href="http://www.hear.org/pier/">http://www.hear.org/pier/</a>. Accessed 4/16/2013.</p> <p>Pimentel D, Zuniga R, Morrison D. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. <i>Ecological Economics</i> 52: 273-288.</p> <p>Quinn LD, Barney JN, McCubbins JSN, Endres AB. 2013. Navigating the "noxious" and "invasive" regulatory landscape: suggestion for improved regulation. <i>Bioscience</i> 63: 124-131.</p> <p>Rejmanek M, Richardson DM. 1996. What attributes make some plant species more invasive? <i>Ecology</i> 77: 1655-1661.</p> <p>von der Lippe M, Kowarik I. 2007. Long-distance dispersal of plants by vehicles as a driver of plant invasions. <i>Conservation Biology</i> 21:986-996</p>
7/24/2013	Website	Carl Bausch		<p>Why would DOE embark upon a PEIS that will assess the potential environmental impacts of confined field trials in the southeastern United States, an assessment that is (or should be) reserved for APHIS, the "expert" in the field? Furthermore, how can a "field release"—in some cases more than 15,000 acres—be "confined?" The undertaking, it seems to me, is a huge waste of taxpayer monies.</p>
7/25/2013	Email	Richard Kelly	APHIS	<p>Dear Dr. Burbaum,</p> <p>Can you tell me where the comments received on the April RFI are available? Thank you,</p> <p>Richard Kelly Policy and Program Development Regulatory Analysis and Development Phone: (941) 751-6715 Fax: (206) 337-7294</p>
7/26/2013	Email	Richard Kelly	APHIS	<p>Hello,</p> <p>Can you please tell me how to view the comments on the June 21 EHECS PEIS Notice of Intent? And comments on the previous (April 12) RFI it cites? I was surprised that this material is not available in Regulations.gov --</p> <p>Thank you, Richard Kelly Sarasota, FL</p>

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7/28/2013	Email	Carl Bausch		<p>Re: Notice of Intent To Prepare a Programmatic Environmental Impact Statement for Engineered High Energy Crop Programs, Southeastern United States</p> <p>Why would DOE embark upon a programmatic impact statement that will assess the potential environmental impacts of so-called "confined field trials" in the southeastern United States, an assessment that is (or should be) reserved for APHIS, the "expert" in the field. Indeed, the Federal Register notice (78 Fed. Reg. 37533-37536 (2013)) recognizes that funding recipients would need to acquire a permit from the USDA APHIS before initiating each confined field trial. To acquire an APHIS permit, a funding recipient would need to prepare a permit application that provides detailed information about the nature of the crops to be introduced and the conditions that would be used to prevent the spread and establishment of the crop in the environment. Following a careful review of the permit application and a project-specific review of the proposed permitting action under NEPA, APHIS may determine to issue a permit for the proposed confined field trial. The funding recipients could then carry out the confined field trial in accordance with the terms and conditions of the APHIS permit and applicable federal, state, and local laws and regulations.</p> <p>Id. at 37534</p> <p>In the circumstances, what would a "programmatic" impact statement achieve? Preparation of such a statement is not necessary. See e.g., Churchill County v.</p>
8/6/2013	Email	Heinz J. Mueller	EPA	<p>Dear Dr. Burbaum:</p> <p>The U.S. Environmental Protection Agency (EPA), Regions 3 and 4 have reviewed the information provided in the Notice of Intent to Prepare a Programmatic Environmental Impact Statement (PEIS) for Engineered High Energy Crop (EHEC) Programs in the Southeastern United States. We appreciate your prior coordination with EPA Headquarters regarding these proposed programs. Our detailed comments are enclosed. As outlined in the NOI, the DOE intends to conduct public scoping meetings and is planning to prepare a Programmatic Environmental Impact Statement (PEIS). The DOE proposes to provide financial assistance for confined field trials to evaluate the performance of EHECs. These field trials could include development-scale (up to 5 acres), pilot-scale (up to 250 acres) or demonstration-scale (up to 15,000 acres) of EHECs being developed under the ARPA-E Plants Engineered to Replace Oil (PETRO) program. The NOI provides notice that the project planning includes southeastern states, and that the DOE is proposing to use EPA's Level II ecoregions to assess common and different potential environmental impacts of the proposed action. To assist the project team in the preparation of the NEPA document, we have identified several issues for your consideration. Potential impacts to water quality, wetlands, aquatic and biological resources, invasive species management, and habitat protection are topics that should be evaluated during the scoping period and documented in the PEIS. In addition, special concerns and unique features exist in some regions, and the project should avoid impacts to the maximum extent feasible. These concerns may include agricultural districts, karst topography and associated habitats, wildlife preserves, threatened and endangered species habitats, and areas or regions that have been identified as environmentally sensitive. The PEIS should include an assessment of EHEC effects on ecology and ecosystem services. Since the majority of the project is within EPA Region 4, we will serve as the point of contact in coordinating EPA's review of the upcoming NEPA documents. We appreciate your early coordination, and are available to discuss EPA's comments. If you have any questions, please contact Ramona McConney of my staff at ( 404) 562-9615 or McConney.Ramona@epa.gov.</p> <p>Sincerely, Heinz J. Mueller, Chief NEP A Program Office Office of Environmental Accountability</p>
8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p>Enclosure: EPA's Detailed Scoping Comments Cc: Kevin Magerr, EPA Region 3 Marthea Rountree, EPA HQ</p> <p><b>Statement of Purpose and Need</b> The NEPA document should clearly identify the underlying purpose and need to which the project team is responding in proposing the alternatives (40 CFR 1502.13). The purpose of the proposed action is typically the specific objectives of the activity, while the need for the proposed action may be to eliminate a broader underlying problem or to take advantage of an opportunity. Recommendation: The purpose and need should be a clear, objective statement of the rationale for the proposed project. The NEPA document should discuss the proposed project in the context of the existing technologies for fuels that are cost-competitive with petroleum-based fuels, and summarize the data regarding the current and future need for EHECs.</p> <p><b>Alternatives Analysis</b> NEPA requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The NEPA document should provide a clear discussion of the reasons for the elimination of alternatives. The alternatives analysis should describe the approach used to identify the alternative and the criteria used to further</p>



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8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p>Recommendations: The NEPA document should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The alternatives analysis should include a discussion of environmentally preferable alternatives for the proposed project. The NEPA document should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. The NEPA document should describe the methodology and criteria used for determining the preferred alternative. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).</p> <p><b>Water Resources</b>  <b>Source Water Protection</b>            Public drinking water supplies and/or their source areas often exist in many watersheds. Source water is water from streams, rivers, lakes, springs, and aquifers that are used as a supply of drinking water. Source water areas are delineated and mapped by States for each federally- regulated public water system. The 1996 amendments to the Safe Drinking Water Act require federal agencies to protect sources of drinking water for communities.            Recommendations: The NEPA document should address the potential effects of project discharges on surface water quality. Specific discharges should be identified, and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. The NEPA document should describe measures to protect sources of drinking water, and measures to avoid impacts to other water resources as well.</p> <p><b>Stormwater Considerations</b>            The NEPA document should describe the original (natural) drainage patterns in the project locale, as well as the expected drainage patterns of the area during the proposed project's operations. Also, the NEPA document should identify whether any components of the proposed project are within a 50 or 100 year floodplain. The NEPA document should note that, under the federal Clean Water Act, any construction project disturbing a land area of one or more acres requires a construction stormwater discharge permit.            Recommendations: The NEPA document should document the project's consistency with applicable stormwater permitting requirements. Requirements of a stormwater pollution prevention plan should be reflected as appropriate in the document. The NEPA document should discuss specific mitigation measures that may be necessary or beneficial in reducing adverse impacts to water quality and aquatic resources.</p>

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8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Geographic Extent of Waters of the United States</b></p> <p>The project team should coordinate with the U.S. Army Corps of Engineers (USACE) regarding Section 404 permitting under the Clean Water Act (CWA). Section 404 regulates the discharge of dredged or fill material into waters of the United States (WUS), including wetlands and other special aquatic sites. The CWA §404(a) authorizes the USACE to issue permits subject to CWA §404(b) guidelines (Guidelines) developed by the EPA. The EPA is interested in close coordination and collaboration with the project team and the USACE to obtain CWA §404 information early in this process, to allow the project to meet its CWA 404 responsibilities without delaying the proposed action.</p> <p>The NEPA document should describe all WUS that could be affected by the project alternatives, and include maps that clearly identify all such waters within the project area. The discussion should include acreages and channel lengths, habitat types, values and functions of these waters. The EPA recommends that the project team include a jurisdictional delineation for all WUS, including ephemeral drainages, in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the December 2006 Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. A jurisdictional delineation will confirm the presence or absence of WUS in the project area and help determine whether or not the proposed project would require a Section 404 permit.</p> <p>If a permit is required, the EPA will review the project for compliance with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA. Pursuant to 40 CFR 230, any permitted discharge into WUS must be the least environmentally damaging practicable alternative available to achieve the project purpose. The NEPA document should include an evaluation of the project alternatives in this context in order to demonstrate the project's compliance with the 404(b)(1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into WUS, the NEPA document should discuss alternatives to avoid those discharges.</p> <p>Recommendation: The project team should consult with the USACE to determine if there are jurisdictional waters of the U.S. present in the proposed project areas. If jurisdictional WUS are determined to be present, the NEPA document should include a determination of the extent of WUS at the project site and address any other relevant requirements, pursuant to the CWA Section 404 (b)(1).</p> <p><b>Clean Water Act Section 303(d)</b></p> <p>The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.</p> <p>Recommendation: The NEPA document should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The NEPA document should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.</p>
8/6/201	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Biological Resources, Habitat and Wildlife</b></p> <p>The PEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative, and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the federal or state Endangered Species Act.</p> <p>Habitat displacement and loss is a concern. Therefore, planning should include measures for avoiding habitat impacts to the extent feasible. Construction may result in habitat fragmentation and increased habitat edge effects, affecting individual species in various ways. Also, water quality and endangered species habitat are specific concerns associated with karst features. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species.</p> <p>Recommendations: The EPA recommends that the project team consult with the U.S. Fish and Wildlife Service (USFWS), and document the results of this process in the NEPA document. Analysis of impacts and mitigation on covered species should include:</p> <ul style="list-style-type: none"> <li>• Baseline conditions of habitats and populations of the covered species.</li> <li>• A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area.</li> <li>• Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.</li> </ul> <p>Incorporate, into the NEPA document, mitigation, monitoring, and reporting measures that result from consultation with the USFWS to avoid and minimize adverse effects to sensitive biological resources.</p> <p>The PEIS should describe the potential impacts of project activities on habitat, and describe the measures that will be taken to protect important wildlife habitat areas and to preserve linkages between them. The PEIS should describe the potential for habitat fragmentation and obstructions of wildlife movement from the implementation of this project and other projects in the area.</p> <p>Discuss the need for monitoring, mitigation, and if applicable, translocation management plans for the sensitive biological resources, approved by the USFWS</p>

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8/6/201	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Invasive Species (cont)</b></p> <p>In addition, we encourage alternative management practices that limit herbicide use, focusing instead on other methods to limit invasive species vegetation and decrease fire risk. Possible alternatives include mowing and weed control fabric, which may need a layer of soil to prevent degradation due to ultraviolet light. In agricultural areas and in areas where the use of herbicides and pesticides to control invasive and exotic species is needed, the context of the weeds' ability to develop herbicide/pesticide-resistant strains that could threaten the effectiveness of agricultural uses of these products should be considered.</p> <p>Recommendations: The NEPA document should describe the invasive plant management plan used to monitor and control noxious weeds. If herbicides or pesticides will be used to manage vegetation, the PEIS should disclose the projected quantities and types of chemicals. A monitoring program should be developed and implemented in order to prevent adjacent fields from migration of invasive species and contamination from chemicals used for the project. The PEIS should include information regarding compliance of the project with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The PEIS should also document coordination with the USDA Animal and Plant Health Inspection Service (APHIS) regarding the permitting process for the confined field trials. The invasive plant management plan should identify methods that can be used to limit the introduction and spread of invasive species during and post-construction. These measures can include marking and avoidance of invasive species, timing construction activities during periods that would minimize their spread, proper cleaning of equipment, and proper disposal of woody material removed during site preparation.</p> <p>Because construction measures may not be completely effective in controlling the introduction and spread of invasive plants, the NEPA document should describe post- construction activities that will be required, such as surveying for invasive species following restoration of the construction site and measures that will be taken if infestations are found.</p> <p><b>Air Quality</b></p>

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8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p>Recommendations:</p> <ul style="list-style-type: none"> <li>• Existing Conditions - The NEPA document should provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards, and criteria pollutant nonattainment areas in the vicinity of the project.</li> <li>• Quantify Emissions - The NEPA document should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The NEPA document should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.</li> <li>• Specify Emission Sources – The NEPA document should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.</li> <li>• Construction Emissions Mitigation Plan – The NEPA document should include a draft Construction Emissions Mitigation Plan and ultimately adopt this plan in the Record of Decision. In addition to all applicable local, state, or federal requirements, we recommend the following control measures (Fugitive Dust, Mobile and Stationary Source and Administrative) be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from construction-related activities: <ul style="list-style-type: none"> <li>o Fugitive Dust Source Controls: The NEPA document should identify the need for a Fugitive Dust Control Plan to reduce Particulate Matter 10 and Fine Particulate Matter 2.5 emissions during construction and operations. We recommend that the plan include these general commitments: <ul style="list-style-type: none"> <li>• Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.</li> <li>• During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes.</li> <li>• Vehicle Speed</li> <li>• Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.</li> <li>• Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on un-stabilized (and unpaved) roads.</li> <li>• Post visible speed limit signs at construction site entrances.</li> <li>• Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.</li> <li>• Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.</li> <li>• Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project.</li> </ul> </li> </ul> </li> </ul>
8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<ul style="list-style-type: none"> <li>• Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles (used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard.</li> <li>• Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation. <ul style="list-style-type: none"> <li>o Mobile and Stationary Source Controls: <ul style="list-style-type: none"> <li>• If practicable, lease new, clean equipment meeting the most stringent of applicable Federal 1 or State Standards<sup>2</sup> • In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible<sup>3</sup>.</li> <li>• Where Tier 4 engines are not available, use construction diesel engines with a rating of 50 hp or higher that meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, unless such engines are not available.</li> <li>• Where Tier 3 engine is not available for off-road equipment larger than 100 hp, use a Tier 2 engine, or an engine equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 2 levels.</li> <li>• Consider using electric vehicles, natural gas, biodiesel, or other alternative fuels during construction and operation phases to reduce the project's criteria and greenhouse gas emissions.</li> <li>• Plan construction scheduling to minimize vehicle trips.</li> <li>• Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections.</li> <li>• Maintain and tune engines per manufacturer's specifications to perform at CARB and/or EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed.</li> <li>o Administrative controls: <ul style="list-style-type: none"> <li>• Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.</li> <li>• Identify any sensitive receptors in the project area, such as children, elderly, and the infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).</li> <li>• Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust plumes.</li> </ul> </li> </ul> </li> </ul> </li> </ul>

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Programmatic Environmental Impact Statement  
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8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Climate Change</b>            Scientific evidence supports the concern that continued increases in greenhouse gas (GHG) emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. On December 7, 2009, EPA determined that emissions of GHGs contribute to air pollution that "endangers public health and welfare" within the meaning of the Clean Air Act. Higher temperatures and increased winter rainfall may be accompanied by a reduction in snow pack, earlier snowmelts, and increased runoff. Potential changes in annual rainfall may result in some areas of the nation becoming drier, while others become wetter. Some of the impacts, such as reduced groundwater discharge, and more frequent and severe drought conditions, may impact the proposed project. Increased wildfires are also a concern associated with climate change and drought.            Recommendation: The NEPA document should consider how climate change could potentially influence the proposed project, especially within sensitive areas. The project team should also evaluate the effect that EHEC will have on water resources, and whether the project can be designed to be draught-tolerant. Also, the PEIS should assess how the projected impacts could be exacerbated by climate change, and strategies for climate change adaptation planning. For example, measures for climate change adaptation should consider potentially increased drainage needs.            If coastal and low lying areas are included in the field trials, the PEIS should evaluate whether sea level rise could be an issue that would impact the proposed action. The PEIS should also evaluate how the proposed EHECs would be affected by drought conditions, including susceptibility to wildfires. In addition, the PEIS should estimate the expected GHG impacts from the project, and thoroughly analyze options for minimizing and managing GHG impacts.</p>
8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Cumulative and Indirect Impacts</b>            The cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be, affected by past, present, or future activities in the project area. These resources should be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish baseline for the affected resources, to evaluate the significance of historical degradation, and to predict the environmental effects of the project components.            For the cumulative impacts assessment, we recommend focusing on resources of concern or resources that are "at risk" and/or are significantly impacted by the proposed project, before mitigation. The project team should conduct a thorough assessment of the cumulative impacts to aquatic and biological resources, especially in the context of the other developments occurring and proposed.            The EPA supports a regional assessment of the potential cumulative effects of other projects in the area to a range of resources, including aquatic, biological, and cultural resources. These findings should help inform current and future development proposed in the region.            Recommendations: The NEPA document should consider the cumulative impacts associated with other development projects proposed in the region, and the potential impacts on various resources including water supply, endangered species, and habitat.            The NEPA document should quantify cumulative impacts across resources areas, as well as describe and evaluate feasible mitigation measures to avoid and minimize the identified cumulative impacts. Although these mitigation measures may be outside the jurisdiction of the lead agencies or project proponents, describing them in the NEPA document would serve to alert other agencies or officials who can implement these extra measures (CEQ 40 Questions No. 19(b)).</p> <p><b>National Historic Preservation Act and Executive Order 13007</b>            Consultation for historic and cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the</p>

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8/6/2013	Email (cont.)	Heinz J. Mueller	EPA	<p><b>Environmental Justice (EJ) and Impacted Communities</b>            Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994) and the Interagency Memorandum of Understanding on Environmental Justice (August 4, 2011) direct federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance<sup>4</sup> by CEQ clarifies the terms low-income and minority population and describes the factors to consider when evaluating disproportionately high and adverse human health effects.            Recommendations: The NEPA document should include a systematic approach to the evaluation of EJ populations within the geographic scope of the project. Where such populations exist, the NEPA document should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.            In addition, the NEPA document should describe planned outreach activities for all other communities that could be affected by the project. For example, an EHEC project in proximity to farmland and landowners in an agricultural district should be researched, documented, and considered during the NEPA process. Outreach to these landowners should be documented and discussed in the NEPA document.</p> <p><b>Coordination with Land Use Planning Activities</b>            The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed if they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).            Recommendations: The PEIS should discuss how the proposed action would support or conflict with the objectives of federal, state or local land use plans, policies and controls, and document the project team's coordination with the appropriate regulatory agencies.</p>