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Committee on Transportation and Infrastructure

Subcommittee on Water Resources and Environment

The Honorable Bob Gibbs

Chair

Testimony Regarding

Resource Shale: Ensuring Regulatory Approaches That Will Help Protect Jobs and Domestic Energy Production

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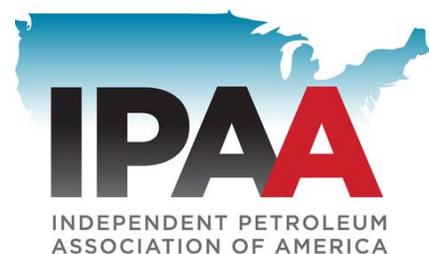
Executive Vice President

Ohio Oil & Gas Association

in cooperation with

Independent Petroleum Association of America

November 16, 2011



Chairman Gibbs, Ranking Member Bishop and Committee Members of the Subcommittee on Water Resources and the Environment, good morning. I am Thomas E. Stewart, Executive Vice President of the Ohio Oil & Gas Association (OOGA), a state-based trade association representing the common interests of over 1,750 members who are engaged in the exploration and production of crude oil and natural gas resources within the State of Ohio. The association has represented the Ohio industry since 1947. The Association also is an active cooperating association in alliance with the Independent Petroleum Association of America (IPAA), based in Washington D.C. IPAA represents thousands of independent petroleum and natural gas producers throughout the nation.

Today's hearing is focused on the development of the resource shale play and the regulatory approaches that will help protect the vast new amounts of reliable and efficient energy as well as the economic engine - the jobs - that are being realized from development of this resource. My comments will focus on how these events are impacting Ohio; the relationship between federal and state-based regulatory policy; and the process that validates the long-standing principle that the states are best suited to regulate the industry in order to protect the public interest and ensure protection of human health, safety and the environment.

For over a century and a half Ohio has been blessed with production of plentiful oil and natural gas resources. At each critical point in our industry's history it has been changes wrought by technology that have provided to producers the ability to explore new horizons, expand the resource base, and establish new reserves. Significant events include the development of the rotary drill bit, seismic technology lending an eye to what's underground, and the development of hydraulic fracturing in 1947 that by 1953 revolutionized the productive capacity of wells in Ohio and across the nation.

Today, the ability to horizontally drill a deep underground reservoir with exacting precision, exponentially exposing the face of the reservoir rock to the wellbore, has created massive efficiencies in our ability to produce oil and gas. Combined with the ability to hydraulically fracture the source rock at intervals along the horizontal lateral wellbore, America's producers are using advanced technologies to reset the clock on available domestic oil and natural gas resources.

Ohio is now beginning a new era of oil and gas exploration made possible by a triumph of technology that is the key unlocking reservoirs that until now were not accessible. Along with horizontal drilling there has been a seismic shift in our thinking about where to find oil and gas. For our entire history we explored for oil and gas in reservoirs where it had been "trapped" after migrating over the eons from "source" rocks where the oil and gas had been formed and cooked in nature's kitchen. Now, we are drilling into the actual source rocks where most geologists believe 95% of the oil and gas still remains in place even after feeding the traps that have produced all of the oil and gas that we have found to date. This is a radical departure in the exploration industry. It is a radical departure in America's understanding of energy dependency and the availability of reliable and efficient energy. For Ohio, the result will be the development of vast new supplies of dependable energy and the creation of a multitude of jobs in the oil and gas sector as well as other business sectors that are counting on this resource to expand authentic economic opportunity.

In Ohio the Upper Ordovician Utica/Point Pleasant Shale (Utica) is the source rock for much of the oil and gas that has been produced in various conventional reservoir traps. The Utica is the newest member of the resource shale play that is revolutionizing oil and gas production in the United States.



Economic Impact: Already production from the resource shales has fundamentally changed domestic energy markets. Generally it takes 6 Mcf (thousand cubic feet) of natural gas to equal the energy found in one barrel of oil. So, over time and absent disruptive events natural gas has traded at about a 6:1 ratio to crude oil. That is until now. Today crude oil is trading at \$98.00 per barrel. The historic trend says that natural gas should be priced at about \$16.00 per Mcf. However natural gas is trading at \$3.65 per Mcf or about 26:1. The new and efficient development of natural gas from the resource shale plays is providing the American consumer an incredible energy bargain providing a fuel priced at 22 percent of its intrinsic energy value, a trend that the marketplace indicates will continue into the future. It is also enticing the chemical industry to reenter the United States and build new chemical manufacturing facilities because they will have access to a super-competitive and plentiful feedstock, jump starting the job growth potential downstream of the wellhead

What does this mean for Ohio? Since 1860, Ohio has produced over 8.5 trillion cubic feet of natural gas and 1.14 billion barrels of crude oil. During recent history, the state's proven reserves have fluctuated annually at 40-50 million barrels of oil and 800 Bcf to 1 trillion cubic feet of natural gas. Each year those reserves have produced approximately 5 million barrels of crude oil and 85 billion cubic feet of natural gas, operated by a small but vibrant production industry that has supported approximately 12,900 direct and allied jobs.

During 2009 through 2010, intense interest in the Utica Shale began to ramp up. This has led to a state-wide lease play and exploratory drilling. The State's Geologist recently provided a volumetric calculation to estimate the recoverable reserve potential of the Utica Shale/Point Pleasant interval.¹ He reported that should producers, using new technologies, extract 5 percent of the oil and gas in place, leaving 95 percent of the resource in the rock, the Utica would generate 15.7 trillion cubic feet of natural gas and 5.5 billion barrels of crude oil. That is an astonishing number and an enormous, perhaps "once in a lifetime", opportunity for Ohio.

On September 20, 2011 the Ohio Oil and Gas Energy Education Program released a study they had commissioned describing the economic impact of the existing Ohio exploration and production industry and the impact the resource shale play will have on Ohio.² The study was based on similar development in the neighboring Marcellus Shale play. In regard to Utica Shale development the study concluded the following:

- Ohio's natural gas and crude oil industry's will reinvest approximately \$246 million on new exploration and development in 2011, and is estimated to ramp up to \$14 billion by 2015. Over the next five years, oil and gas producers are projected to reinvest over \$34 billion in exploration and development, midstream, royalty and lease expenditures.
- Ohio's natural gas and crude oil industry, via its expenditures, could generate approximately \$12.3 billion to the gross state product and have a statewide output or sales of \$23 billion.
- Ohio's natural gas and crude oil operators (producers) could distribute more than \$1.6 billion in royalty payments to local landowners, schools, businesses and communities based on an estimate of 2,837 new Utica wells drilled and completed (in production)

¹ *Shale Formations and Their Potential*; Larry Wickstrom, R. A. Riley, M. T. Baranoski, C.J. Perry, and M.S. Erenpreiss; Ohio Department of Natural Resources, Division of Geological Survey; October 2011, www.OhioGeology.com

² *Ohio's Natural Gas and Crude Oil Exploration and Production Industry and the Emerging Utica Gas Formation, Economic Impact Study*; Kleinhenz & Associates, Ohio Oil and Gas Energy Education Program; September 2011 www.oogeep.org

between 2011 and 2015. This could exceed the total amount of royalties paid for all geological formations between 2000 and 2010.

- Between 2011 and 2015, Ohio's natural gas and crude oil industry will help create and support more than **204,520 jobs** due to the leasing, royalties, exploration, drilling, production and pipeline construction activities for the Utica Shale within Ohio. Industry wages are projected to grow to more than \$12 billion in annual salaries and personal income to Ohioans by 2015.

Coupled with the readily available and affordable energy resource, the expansion of job growth suggests that development of the Utica Shale may be the most significant positive economic event to take place in Ohio for decades.

Regulatory Policy: The principal regulatory authorities managing the environmental risks associated with oil and natural gas production are state agencies acting under state law or as the delegated regulator under federal law. To put the regulatory process in context, it is useful to understand some key elements of developing a well and generating production.

Except on federally owned resources, the regulatory responsibility rests with the state oil and natural gas agencies for permitting well construction and completion. These agencies set the standards that must be met in drilling a well such as location limits, construction standards (including steel casing and cementing requirements) and surface management requirements. Well construction requirements are particularly significant because they are the principal methods of protecting against ground water contamination. By creating a barrier between ground water and the wellbore, oil and other chemicals from the well cannot move into water formations – and water cannot move into the wellbore. This technological approach has been used effectively for 75 years and is continually improved. Well completion regulations determine the management of technologies to stimulate production from oil and natural gas containing formations. Hydraulic fracturing is a well stimulation technology. Consequently, since its invention in the late 1940s, its use has been regulated by state oil and natural gas agencies. Throughout the past six decades this regulatory structure has effectively protected against the environmental risks of fracturing without the involvement or intervention of the federal government. Proposals that the federal government needs to insert itself into well construction and completion regulation fail to show that any justification exists suggesting a failure of the current state based regulatory system or that the federal government has either the expertise or the capacity to regulate the 35,000 or more wells drilled annually in the United States.

In fact, where the federal government does have regulatory authority related to oil and natural gas production, it relies on the state regulators to conduct the daily regulation efforts. Federal environmental laws apply to oil and natural gas production activities when waste is generated. Most specifically with regard to the development of emerging shale gas and shale oil formations, the applicable federal laws address the disposal of produced water (including hydraulic fracturing flowback water) – the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA). The applicability of the law depends on the disposition of the produced water. Produced water injected underground is regulated under the SDWA; produced water discharged to the surface is regulated under the CWA. The SDWA and the CWA operate similarly. The federal government creates a national framework but the laws rely on state regulators to bear the larger permitting burden through the delegation of that role from the Environmental Protection Agency (EPA).

With respect to the SDWA, regulation of underground injection is defined by the Underground Injection Control (UIC). The UIC program creates a series of Classes for different types of injection wells; Class II applies to oil and natural gas production. In 1980, Congress modified the SDWA to allow for primacy under the law to be granted to states for Class II programs based on equivalent effectiveness rather than adoption of the specific EPA regulations. Most oil and natural gas producing states with active underground injection operations have primacy based on equivalency with the federal program. Class II wells can either be used for disposition of water or for reinjection into formations as a type of secondary recovery to increase production. There over 140,000 Class II UIC wells in the United States. Clearly, without the delegation of this program to the state regulatory bodies, the federal law would be virtually incapable of implementation.

The CWA operates somewhat differently. Every point source – discrete discharge outlets for waste water – must have a permit under the CWA. Permit writing is typically delegated to state regulators. Waste water discharge permits are generated based on federal Effluent Limitations Guidelines (ELG). ELGs are developed by EPA for industrial and other categories of sources that discharge waste water. ELGs are based on the Best Available Technology Economically Achievable (BATEA). ELGs are written using extensive analysis of the category and frequently contain subcategories that reflect distinctions within the category such as size or complexity of its components. If a category has an ELG, the state permit writer uses it to determine the amount of a contaminant that the operation can discharge on a daily basis. If there is no ELG, the permit writer uses Best Professional Judgment (BPJ) to determine what requirements would be equivalent to BATEA for that permit. This federal-state balance has been in place since the 1970s and works well. However, as in the case of the SDWA, it relies on the capabilities of the state regulators. Without delegation, EPA would be overwhelmed and incapable of managing the permit writing process.

Recently, EPA announced that it plans to develop new ELGs for produced water from Coal Bed Methane operations and shale gas production operations. To put this effort in perspective, oil and natural gas producers cannot directly discharge produced water under the CWA because the ELG for onshore oil and natural gas production is a zero discharge limitation. Historically, more than 90 percent of oil and natural gas produced water is managed by Class II UIC wells. As a result of the current ELG, producers in areas without UIC capability have to either send water to places where UIC is available or arrange for their water to be managed at a commercial waste treatment facility. Pennsylvania is an example. Its geology prevents widespread use of UIC and therefore producers either export water out of state – to Ohio in large measure – or send water to commercial operations. Recently, Pennsylvania prohibited shale gas produced water from being sent to commercial operations and shale gas producers are now exporting produced water or recycling it. However, because of the attention given to the Pennsylvania issues, EPA has responded by indicating its intent to develop a modification to the oil and natural gas production ELG. EPA also announced its intent to complete action on an ELG for Coal Bed Methane – an effort it has had underway for several years.

Crafting these oil and natural gas production related ELGs presents a significant challenge because of the differences between most industrial categories and oil and natural gas production. For a typical industry, the facility acquires water from a source, uses it in the facility, treats it to remove contaminants and discharges it. Consequently, in designing an ELG, the issues are essentially related to removing what is added by the facility. Oil and natural gas production faces a different challenge – each well can have a different composition of produced water depending on the composition in the producing formation. Consequently, spending significant efforts to develop an ELG – even one with extensive subcategories – based on current production could be meaningless with regard to the next well or the next formation.

For this industry, it would be far more cost effective to extensively use the BPJ process to allow for the permit writer to consider the unique circumstances of different formations or within a formation.

Validation of State-Based Regulation:

The operation of oil and natural gas wells has been regulated since the 1920s with an increasing emphasis on environmental controls since the 1960s. This regulation has been and continues to be done effectively by the states – a reality that has been recognized by the Congress and by the EPA. Because of the diversity of conditions associated with oil and natural gas production, the regulatory process must be flexible and reflect the unique conditions in a state or areas within a state. It requires the technical expertise that has been developed in each state and which does not exist within the EPA. For this reason federal law has generally deferred to the states for the regulation of this industry.

GWPC: The Ground Water Protection Council (GWPC) is an organization of state ground water regulatory agencies which come together to mutually work toward the protection of the nation’s ground water supplies. The purpose of the GWPC is to promote and ensure the use of best management practices and fair but effective laws regarding comprehensive ground water protection.

During August 2011, the GWPC issued a report that investigated the regulatory history of Texas and Ohio as it relates to oil and gas production and protection of groundwater resources.³ The report conclusively demonstrates that the state regulatory agencies within these states, both significant oil and gas producing states, have prioritized regulatory reforms and strategically applied resources to improve standards that reduce risk associated with state-specific compliance issues. Over time, both Ohio and Texas have strategically enhanced regulatory standards for state-specific oil and gas E&P activities that have been found to cause groundwater contamination incidents. In other words, the states have made consistent ongoing improvements to protect the environment and the public interest that is tailored to each individual state’s characteristics and needs.

STRONGER: Through 1980 amendments to the Resource Conservation and Recovery Act (RCRA), Congress temporarily exempted from the hazardous waste regulations under RCRA Subtitle C, drilling fluids, produced water and wastes associated with oil and gas exploration and production pending further study and a regulatory determination. EPA completed its study and published the results in December 1987 in a Report to Congress entitled *Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy*. Among other findings, EPA found that existing state and federal regulations were generally adequate to manage oil and gas wastes, but that certain regulatory gaps did exist, and enforcement of existing regulations in some states was inadequate.

In July 1988, EPA issued its regulatory determination (53 FR 25446) stating that federal regulation of oil and gas wastes as hazardous wastes was not warranted. At that time, EPA said it would implement a three-pronged strategy to address the diverse environmental and programmatic issues posed by these wastes. This strategy involved: (1) improving federal programs under existing authorities in Subtitle D of RCRA, the Clean Water Act, and Safe Drinking Water Act; (2) working with states to encourage changes in their regulations and enforcement to improve

³ “State Oil and Gas Agency Groundwater Investigations and Their Role in Advancing Regulatory Reforms, A Two-State Review: Ohio and Texas”, Scott Kell, Groundwater Protection Council, August 2011, www.gwpc.org

some programs; and (3) working with Congress to develop any additional statutory authorities that may be required. The State Review Process was established to address the second prong of EPA's strategy, to work with the states to improve their regulatory programs.

This state review process has undergone a number of changes since its inception. The guidelines have periodically been updated and expanded in scope. Management of the process has shifted to a non-profit corporation named State Review of Oil and Natural Gas Environmental Regulations (STRONGER). The STRONGER Board of Directors is comprised of stakeholders representing state regulatory agencies, industry and public interest/environmental groups. Board Chairmanship rotates among the stakeholder groups.

Twenty-one state programs, representing over 90% of domestic onshore oil production, have been reviewed and critiqued by stakeholder review teams. Written reports of review team findings and recommendations were developed, published and distributed. Ten reviewed programs have had at least one follow-up review to determine the status of implementation of review team recommendations and to review the programs against updated sections of the guidelines. Follow-up review teams documented that 76% of the recommendations from earlier reviews had been satisfied. This high implementation rate reflects state commitment to the improvement of oil and gas environmental regulatory programs. It further documents the success of the multi-stakeholder process for guidelines development and state reviews. During the summer of 2009, all states that have been reviewed were surveyed to determine the status of implementation of recommendations contained in the report of their most recent review. All states responding indicated that they had taken steps to improve their programs based on review team recommendations. Of the 593 recommendations to the 16 states that responded, 194 (33%) were described as fully implemented, 161 (27%) as partially implemented, 157 (26%) as outstanding and 82 (14%) as unknown. This indicates that at least 60% of the recommendations have resulted in some improvements to state programs. When coupled with findings of follow-up review teams, the number of review team recommendations resulting in state program improvements increases to 74%.

In 2009 STRONGER formed a Hydraulic Fracturing Workgroup charged with examining the issues and developing draft guidelines for state regulatory programs. Final hydraulic fracturing guidelines were completed and made available in early 2010. Focused reviews of state hydraulic fracturing requirements were initiated. Hydraulic fracturing specific reviews have been completed in Pennsylvania, Ohio, Oklahoma, Louisiana, and Colorado. Arkansas has just been reviewed this month.

Ohio State Review: During 2010 the Ohio General Assembly enacted Substitute Senate Bill 165, comprehensive legislation updating Ohio's oil and gas law. The legislation significantly bolstered statute regarding issues with well construction, hydraulic fracturing, disclosure of frac constituents and enforcement authority, while adding significant new funding resources.

Following implementation of the new law, STRONGER conducted a hydraulic fracturing-specific state review of the Ohio oil and gas regulatory program. The review team was chaired by a representative of the environmental community. The review concluded that the Ohio program was overall well managed, professional and meeting its program objectives. The review singled out the program's operations in the areas of comprehensive program assessment, planning, and use of stakeholder input that led to legislation that improved the program; reporting of comprehensive information regarding hydraulic fracturing operations with the well completion report; review of potential pathways of contamination; strong enforcement tools; increased staff levels; and use of the web site to disseminate information.

State Review Conclusion: The important characteristic of the State Review Process is that it brings three primary stakeholder groups together to actually work to improve regulatory policy in order to protect human health, safety and the environment as it takes place at the state level. The Ohio hydraulic fracturing-specific state review validates that the Ohio oil and gas regulatory program and the statutes that authorize it are working well to protect the public interest.

The Secretary of Energy (USDOE), Advisory Board (SEAB), Shale Gas Production Subcommittee is charged with identifying measures that can be taken to reduce the environmental impact and to help assure the safety of shale gas production.⁴ Both interim reports have specifically recognized the value of the State Review process and what that means to state-based regulation. The SEAB report said, "STRONGER is a not-for-profit organization whose purpose is to accomplish genuine peer review of state regulatory activities. The peer reviews (conducted by a panel of state regulators, industry representatives, and environmental organization representatives with respect to the processes and policies of the state under review) are published publicly, and provide a means to share information about environmental protection strategies, techniques, regulations, and measures for program improvement. Too few states participate in STRONGER's voluntary review of state regulatory programs. The reviews allow for learning to be shared by states and the expansion of the STRONGER process should be encouraged." The SEAB Subcommittee went on to recommend enhanced public funding for both GWPC and STRONGER.

Similarly, on September 15, 2011 the National Petroleum Council issued a report on shale development that, in part, also focused on the benefits of STRONGER.⁵ The report said, "STRONGER should be bolstered and increase the scope of its activities. All states with natural gas and oil production should actively participate in STRONGER and use its recommendations to continuously improve regulation. It should be adequately funded, including from the federal government."

The State Review Process demonstrates that the states are the best and most efficient point to regulate the industry's waste streams. The process provides for a system of constant improvement and an opportunity to share and promote new or unique regulatory concepts among the states, while maintaining the flexibility needed to meet individual states' needs.

Respectfully submitted,

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⁴ *Secretary of Energy Advisory Board, Shale Gas Production Subcommittee, 90-Day Report*; SEAB, August 18, 2011, <http://www.shalegas.energy.gov/>

⁵ *Prudent Development: Realizing the Potential of Abundant North American Natural Gas and Oil Resources*, National Petroleum Council, September 15, 2011, <http://www.npc.org/>

Tom Stewart serves as the executive vice president of the Ohio Oil and Gas Association (OOGA), having been elected to that position in September 1991. At OOGA, Stewart is director of staff; editor of the Association's publications; an industry spokesman to media outlets and other forums; and, on behalf of OOGA members' interests, serves as public policy advocate in Columbus and Washington D.C.

Stewart serves as the Ohio associate representative to the Interstate Oil and Natural Gas Compact Commission (IOGCC), having been appointed to that position by Governor George Voinovich in 1997. IOGCC (<http://www.iogcc.state.ok.us/>) is an organization of governors of the oil and natural gas producing states established to promote the conservation and efficient recovery of domestic oil and natural gas resources while protecting health, safety and the environment.

Stewart is an active participant with the Independent Petroleum Association of America (IPAA)(www.ipaa.org) and serves on the IPAA Environment and Safety Committee, the Communications Steering Committee, the Gas Pipeline Safety Sub-Committee and is an original member of the management team organizing the national BRIEF Project. <http://www.energyindepth.org/>

In December 2001, Stewart was elected to the Board of the State Review of Oil and Natural Gas Environmental Regulations, Inc. (STRONGER) as one of three representatives for the U.S. oil and gas exploration and production industry. During 2003, Stewart served as chairman of the STRONGER Board. He currently serves as treasurer of the organization. STRONGER is a non-profit organization created to administer and advance the state review process of the States' oil and gas exploration and production waste management regulatory programs. STRONGER is a stakeholder-driven process with equal representation from government, industry and the environmental community. STRONGER's objective is to foster constant improvements in state oil and gas regulatory programs in order to protect human health, safety and the environment. <http://www.strongerinc.org/>

From August 2002 to November 2005, Stewart served as the secretary treasurer of the Liaison Committee of Cooperating Oil and Gas Associations. The Liaison is a national network organization of state and regional trade associations that represent the independent oil and gas exploration and production industry in the United States. Stewart was responsible for coordinating the organization's efforts.

Prior to joining OOGA, Mr. Stewart has fifteen years of formal experience in the oil and gas industry as an oil and gas producer and provider of contract drilling services. He is the third generation of his family to engage in exploration, development and production of crude oil and natural gas.

The Ohio Oil & Gas Association is a statewide trade association with over 1,750 members who are actively involved in the exploration, development and production of crude oil and natural gas within the State of Ohio. Since 1947, the Association's mission is to protect, promote, foster and advance the common interests of those engaged in all aspects of the Ohio crude oil and natural gas exploration and production industry.



COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
Truth in Testimony Disclosure

Pursuant to clause 2(g)(5) of House Rule XI, in the case of a witness appearing in a nongovernmental capacity, a written statement of proposed testimony shall include: (1) a curriculum vitae; and (2) a disclosure of the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by the witness or by an entity represented by the witness. Such statements, with appropriate redaction to protect the privacy of the witness, shall be made publicly available in electronic form not later than one day after the witness appears.

(1) Name:

Thomas E. Stewart

(2) Other than yourself, name of entity you are representing:

The Ohio Oil & Gas Association

(3) Are you testifying on behalf of an entity other than a Government (federal, state, local) entity?

YES

If yes, please provide the information requested below and attach your curriculum vitae.

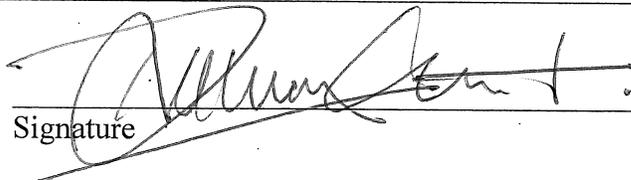
YES

NO

(4) Please list the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by you or by the entity you are representing:

Thomas E. Stewart and The Ohio Oil & Gas Association has not received any Federal grants or contracts during the current fiscal year or either of the two previous fiscal years.

Signature



Date

Nov. 16, 2011