REPORT OF THE

MISSOURI LEAD INDUSTRY EMPLOYMENT,

ECONOMIC DEVELOPMENT AND

ENVIRONMENTAL REMEDIATION TASK FORCE

January 28, 2014

Prepared by:

Kayla Crider, Missouri Senate, Division of Research

January 28, 2014

The Honorable Tom Dempsey
The Honorable Tim Jones
State Capitol
Jefferson City, Missouri 65101

Dear Mr. President and Mr. Speaker:

The Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force, acting pursuant to the Senate Substitute for Senate Concurrent Resolution 15, gathered information from a variety of sources during the past few months. The Task Force examined the effects of a prompt environmental settlement giving rise to efficient and cost effective remediation, ways to promote the development of a clean lead industry, clean lead industry legislative proposals including rules and regulations necessary for implementation, and the economic potential of implementing clean lead industry policies. The Task Force heard testimony from The Doe Run Company, the Missouri Department of Natural Resources, and individuals during August and October 2013. Summaries of the testimony and supplemental information are included in this report.

There is widespread interest in the lead industry in this state. The Task Force expresses gratitude to The Doe Run Company, the Missouri Department of Natural Resources, and the individuals who provided vital information to the Task Force during the hearings.

The undersigned members of the Task Force are pleased to submit the attached report.

Senator Gary Romine, District 3
Chair

Representative Paul Wieland, District 112
Vice Chair

Senator Doug Libla, District 25

Representative Kevin Engler, District 116

Representative TJ McKenna, District 114

Report

The Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force

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Introduction

The passage of Senate Substitute for Senate Concurrent Resolution 15 created the Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force. SCR 15 (2013) charged the Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force with examining the effects of a prompt environmental settlement giving rise to efficient and cost effective remediation, ways to promote the development of a clean lead industry, clean lead industry legislative proposals including rules and regulations necessary for implementation, and the economic potential of implementing clean lead industry policies. Further, SCR 15 (2013) requires that the Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force to make recommendations in a report to the General Assembly by February 1, 2014. This report seeks to fulfill this obligation.

Lead and the Lead Industry in Missouri

The history of lead mining and the lead industry in Missouri is extensive. In the early 1700's, the French began exploring lead mining opportunities in Missouri.[1] In 1720, the first lead mine began operation in Madison County. Shortly thereafter, similar surface digging mines opened in Washington County and St. Francois County.[2]

The demand for lead only increased over time, especially with the events of the Civil War.[3] In order to react to increased demand, the size of the lead mines increased drastically. From surface mines to mines that reached several hundred feet below ground, production continued to increase. However, by the early to mid-1940's, lead located in the Old Lead Belt region was being depleted and exploration for new resources had begun. In the 1960's, large deposits of lead ore were discovered in the Viburnum Trend region, or what has come to be known as the New Lead Belt. Currently, the Viburnum Trend's high levels of naturally occurring lead are responsible for a large portion of Missouri's lead production.

However, throughout Missouri's mining districts, high amounts of lead and other minerals are often found both at the surface and below ground, even where mining operations have not taken place. Erosion has also caused lead minerals found in soil to wash sediments into rivers via tributaries. Today, large exposed rock bluffs often found in the Southeast Mining District serve as evidence that significant portions of rock formations have naturally eroded away and deposited lead minerals downstream and within floodplains.

[1] Kleeschulte, 2013
[2] Kleeschulte, 2013
[3] Kleeschulte, 2013

Mining Districts

The state of Missouri has three total mining districts: the Southeast Missouri Lead District, the Tri-State District, and the Central District. Each district is located in a different region of the state and covers vastly different amounts of land. The Department of Natural Resources describes them as follows[4]:

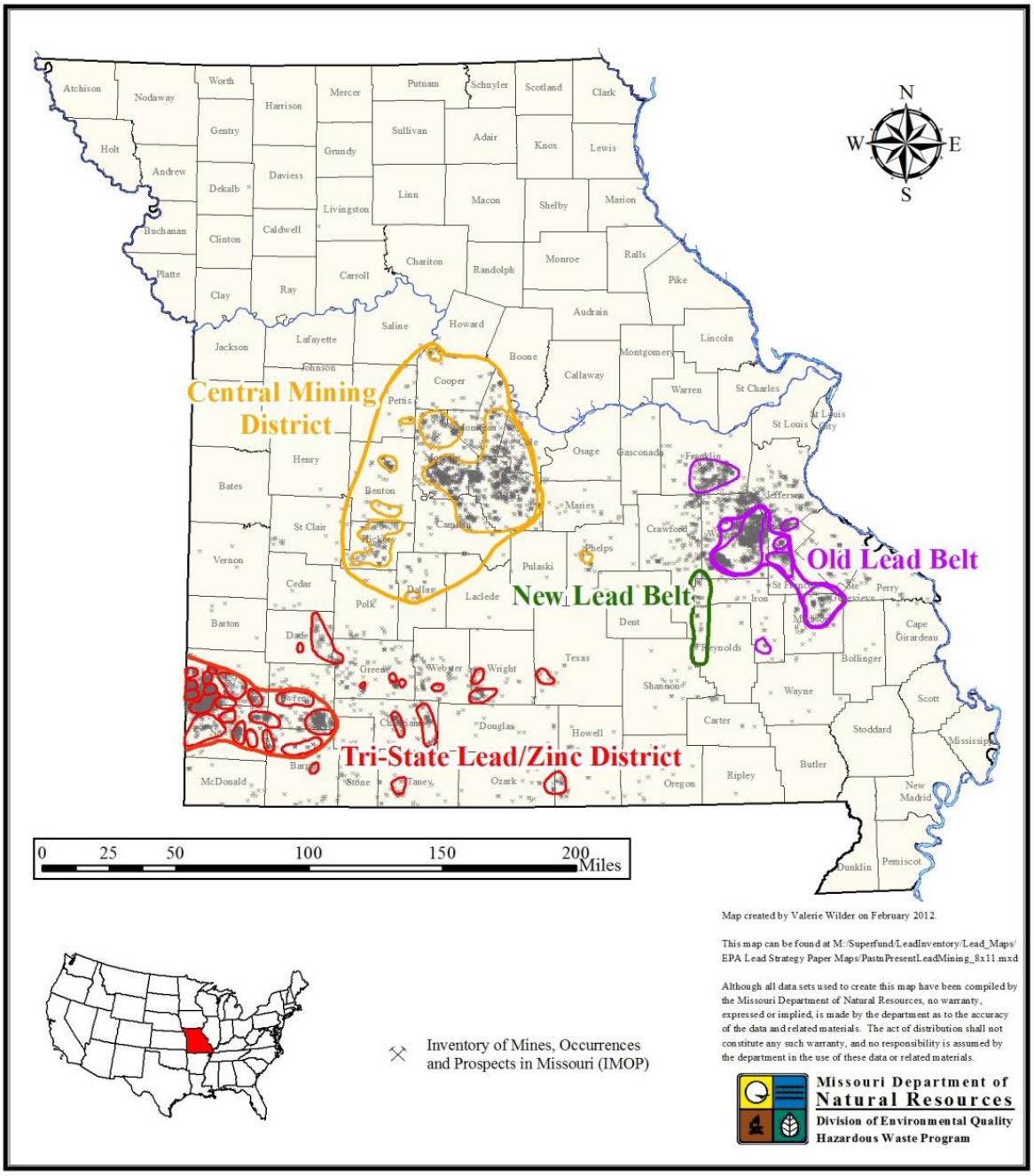
1. Southeast Missouri Lead District – This includes the Old Lead Belt and the currently active Viburnum Trend (New Lead Belt). There are six active lead mines in the Viburnum Trend, all owned and operated by the Doe Run Company. The Washington County Barite Sub-District within the Old Lead Belt covered over 250 square miles, with the remaining Southeast Missouri Lead District encompassing over 400 square miles. The Southeast Missouri Lead District is home to the second largest lead mining district in the world which produces approximately 70% of the U.S. primary lead supply.

2. Tri-State District – This includes approximately 14 counties in southwest Missouri, Cherokee County, Kansas and Ottawa County, Oklahoma. The Tri-State District encompasses over 2,000 square miles of land, with at least 700 of those square miles considered heavily mined areas.

3. Central District – This includes a 600 square mile area centered around the Lake of the Ozarks.

The map on the following page demonstrates the location of each mining district within Missouri.

[4] Missouri Department of Natural Resources, 2014



Production and Economic Impact

For most of the late 19th and early 20th Centuries, Missouri was the global leader in lead production, and even today some of the largest and most important remaining lead deposits in the world are located in southeast Missouri. But well before Missouri was even a state, the region was widely recognized as a center of mining, milling and smelting of lead; the first recorded lead production occurring well before the Louisiana Purchase. Lead production has played an important role in the economic growth and development of Missouri. Missouri had the largest

and only active primary lead smelter in the United States (Herculaneum) until its closure in December 2013.

Total lead production in Missouri is estimated at more than 17 million tons valued at nearly $5 billion.[5] For over 80 years, Missouri has led all other states in lead production and has accounted for as much as 92% of total U.S. production.[6] In year 2000 alone, Missouri produced over 300,000 tons of lead estimated at over $128 million.[7] The legacy of this long and rich lead mining history has economically developed the state of Missouri by bringing settlers into this area, influencing the transportation infrastructure including railroads and highways, and creating an economic base for the state.

The high-grade lead mined in Missouri is also used in the manufacturing of several consumer products, including vehicle batteries and batteries used for electric backup power. Military and communication applications often use such lead. Lead is also used in environmental protection products such as nuclear disposal shields. Missouri's mineral resources and the associated lead industry have been vital to the region for 300 years and now has the ability to once again limit the country's dependence on foreign sources. Lead is arguably Missouri's most economically important mineral. Appropriately, galena, a natural form of lead ore, is Missouri's State Mineral.

The Future of the Lead Industry

Due to the long and rich tradition of lead mining in Missouri, and its added production and economic value, it is considered irreplaceable to the state's economy and culture. In Missouri, the lead industry has opportunity for growth and development due to the emergence of new mining technologies. However, the current cost of new mining and mineral processing technologies in the current economic and environmental climate often puts mining companies at financial risk. To this end, it is important to study the potential policies and regulations that govern the industry. With government regulation at both the state and the federal level, the lead mining industry continues to face challenges with compliance and remediation. This Task Force has examined these issues, including the effects of a prompt and equitable resolution of environmental concerns arising primarily out of historical mining operations giving rise to efficient and cost effective remediation and restoration, ways to promote the development of a clean lead industry, clean lead industry legislative proposals including rules and regulations necessary for implementation, and the economic potential of implementing clean lead policies.

The remainder of this report details the testimony taken by the Task Force relating to the lead industry, and the recommendations by Task Force members on how to improve the lead industry in Missouri.

[5] United States Geological Survey, 2002
[6] United States Geological Survey, 2002
[7] United States Geological Survey, 2002

The Doe Run Company Testimony

Matthew Wohl, Vice President of Law

The History of Lead Mining in Missouri

Lead mining has a long history in the state of Missouri. Lead mining began in 1720 near Mine LaMotte after French explorers discovered galena. Lead mining helped to develop the state of Missouri by bringing settlers to the area, influencing the transportation infrastructure, and creating an economic base for the state. Lead later was discovered northwest of Mine LaMotte in the Bonne Terre, Flat River and Desloge areas prior to 1800. Lead mining took place in this area, which is now dubbed The Old Lead Belt, until 1972. Exploration teams discovered the Viburnum Trend, or The New Lead Belt, in the 1950s. Lead mining began in the Viburnum Trend in the 1960s, and continues today.

The History of The Doe Run Company

The Doe Run Company's history began in 1864 when its predecessor, the St. Joseph Lead Company, purchased a parcel of land in Southeast Missouri near Bonne Terre, where lead had been being mined at the surface for decades, and began operations. In the 1870's, the St. Joseph Lead Company began using diamond drilling exploration, and soon it and other mining companies discovered large underground bodies of ore in an area today known as the Old Lead Belt. Only two decades later, the discovery of such ore reserves and increased production compelled the St. Joseph Lead Company to construct a smelter in Herculaneum, Missouri. The depletion of the ore reserves in the Old Lead Belt drove the St. Joseph Lead Company to search for new reserves in the mid-20th century. Exploration efforts identified ore deposits north of Viburnum, Missouri, in what is now known as the Viburnum Trend. Shortly after, the St. Joseph Lead Company began mining in the Viburnum area. Then, in 1981, the Fluor Corporation acquired the St. Joseph Lead Company. Only five years later the lead operations of the St. Joseph Lead Company joined with those of Homestake Mining in 1986 to form a partnership called The Doe Run Company, a Missouri general partnership. Several years later the partnership dissolved with today's Doe Run Company taking over the existing assets. Since then, the Doe Run Company has continued to purchase mines and mineral processing facilities, leading the states in high quality lead production.

Production and Economic Impact

Many products are produced from Doe Run's lead mining operations. On an annual basis, The Doe Run Company produces approximately 250,000 tons of lead concentrate, 60,000 tons of zinc concentrate, 20,000 tons of copper concentrate, and 160,000 tons of secondary lead metal. Up until the end of 2013, The Doe Run Company produced 130,000 tons of primary lead metal from its operations in Herculaneum, Missouri. Products created by these minerals include nuclear safety storage and shields found in Washington and Arizona, traditional batteries, and advanced lead-acid batteries that are manufactured across the states. Lead is also utilized in construction materials for roofing, earthquake stabilization, backup power for financial institutions, data centers, and military and medical applications.

The Doe Run Company has a nearly $1 billion economic impact on the state of Missouri. Prior to the closure of the facility in Herculaneum, Missouri, The Doe Run Company employed more than 1,500 workers in the state of Missouri, many of which are high wage jobs. The company currently employs approximately 1,300 workers in Missouri. In addition, The Doe Run Company pays more than $30 million in state taxes.

The Doe Run Company argues that the Herculaneum smelter closure will increase dependence upon the Chinese market for lead sources. As a result, consumers in the U.S. will be impacted.

Regulation, Compliance, and Remediation

Currently, The Doe Run Company is regulated at the federal level of government by the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act, and the Comprehensive Environmental Response, Compensation, and Liability Act. The Missouri Department of Natural Resources also plays a role in enforcing the federal statutes, as well as similar state laws.

The Doe Run Company, to settle certain allegations of violations at its facilities, agreed to spend $65 million over time for certain capital improvements and to fund certain trusts dedicated to reclamation of its properties. The settlement also required the company to pay a $7 million civil penalty. Since 1994, The Doe Run Company has spent over $67 million on remediation efforts and an additional tens of millions of dollars on environmental improvements, installing water treatment facilities along the Viburnum trend as well as truck washing systems to keep lead off of the road.

The Missouri Department of Natural Resources Testimony

Tim Rielly, Restoration and Assessment Manager

Southeast Missouri Ozarks Regional Restoration Plan

The Missouri Department of Natural Resources, the U.S. Forest Service, and the U.S. Fish & Wildlife Service are charged, primarily through federal Superfund law, with assessing injuries to and restoring natural resources that have been injured by environmental hazards such as oil discharges and hazardous substances releases. This process is referred to as Natural Resources Damage Assessment and Restoration.

In assessing injuries to and restoring natural resource injured by hazardous substances released from current and historic mining operations, the Missouri Department of Natural Resources, the U.S. Forest Service and U.S. Fish & Wildlife Service have developed a draft Southeast Missouri Ozarks Regional Restoration plan in an attempt to restore southeast Missouri's natural resources.

Summary of Individual Testimony

1. Doyle Childers, Former State Senator and Chair of Economic Development Committee

Mr. Childers' family became involved in mining in the 1860's. He argues that in order to protect jobs in Missouri, we must protect the lead industry. Further, he argues that the security of the U.S. and the nuclear industry depend on the lead industry. He argues that this is a critical issue for thousands of citizens.

2. Andy Childers, The Doe Run Company

Mr. Childers presented "Missouri Surface Geology." This presentation largely focused on the historical overview of geology and mining in Missouri. In Missouri, there are three major mining districts: the southwest lead zinc district, the central lead barite district, and the southeast district. The lead deposit of the southeast district is approximately 1.2 billion years old. Before the Doe Run company began operating, 5 million tons of lead and zinc ore had been mined in the southwest region, and 550 million tons had been mined in the southeast region.

3. Mike Ruby, Consultant to The Doe Run Company

Mr. Ruby presented "Occurrence and Sources of Lead in SE Missouri." This presentation largely focused on the highly variable naturally occurring soil concentrations of lead in Missouri. Mr. Ruby articulated that southeast Missouri has the highest known concentrations of galena in the world. He also argued that because the lead ore occurred over tens of thousands of acres of land, no person could monopolize its mining.

Recommendations

After review and consideration of the testimony presented, the Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force recommends the following:

1. Continuing to study the effects of a prompt and equitable resolution of environmental concerns arising primarily out of historical mining operations giving rise to efficient and cost effective remediation and restoration, ways to promote the development of a clean lead industry, clean lead industry legislative proposals including rules and regulations necessary for implementation, and the economic potential of implementing clean lead industry policies by establishing the Missouri Lead Industry Employment, Economic Development, and Environmental Remediation Task Force for the year 2014.

2. Continuing to educate the public on the importance of lead, that it is a naturally occurring mineral, and the key to economic development in this state.

3. Encouraging the development and promotion of the lead industry, while also serving to protect the public and safeguard the environment for future generations.