



# TRIBAL-LED REMEDIAL ACTION AT THE TAR CREEK SUPERFUND SITE

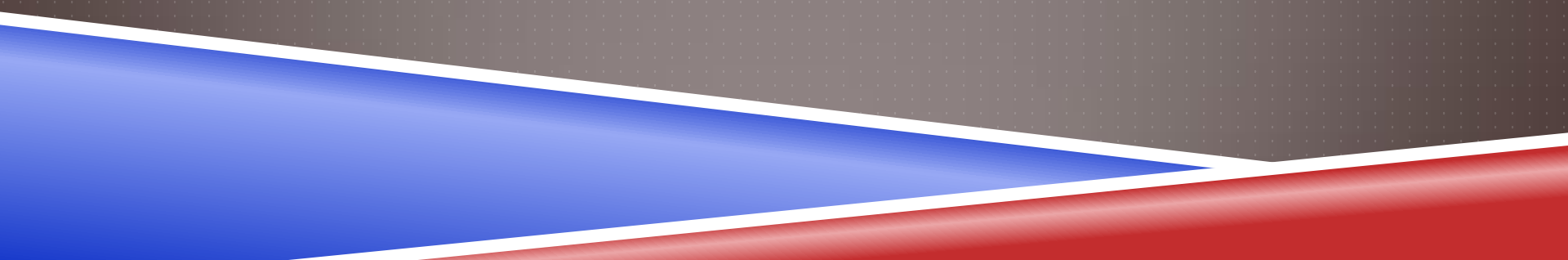
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American Society of Mining and Reclamation  
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# INTRODUCTION

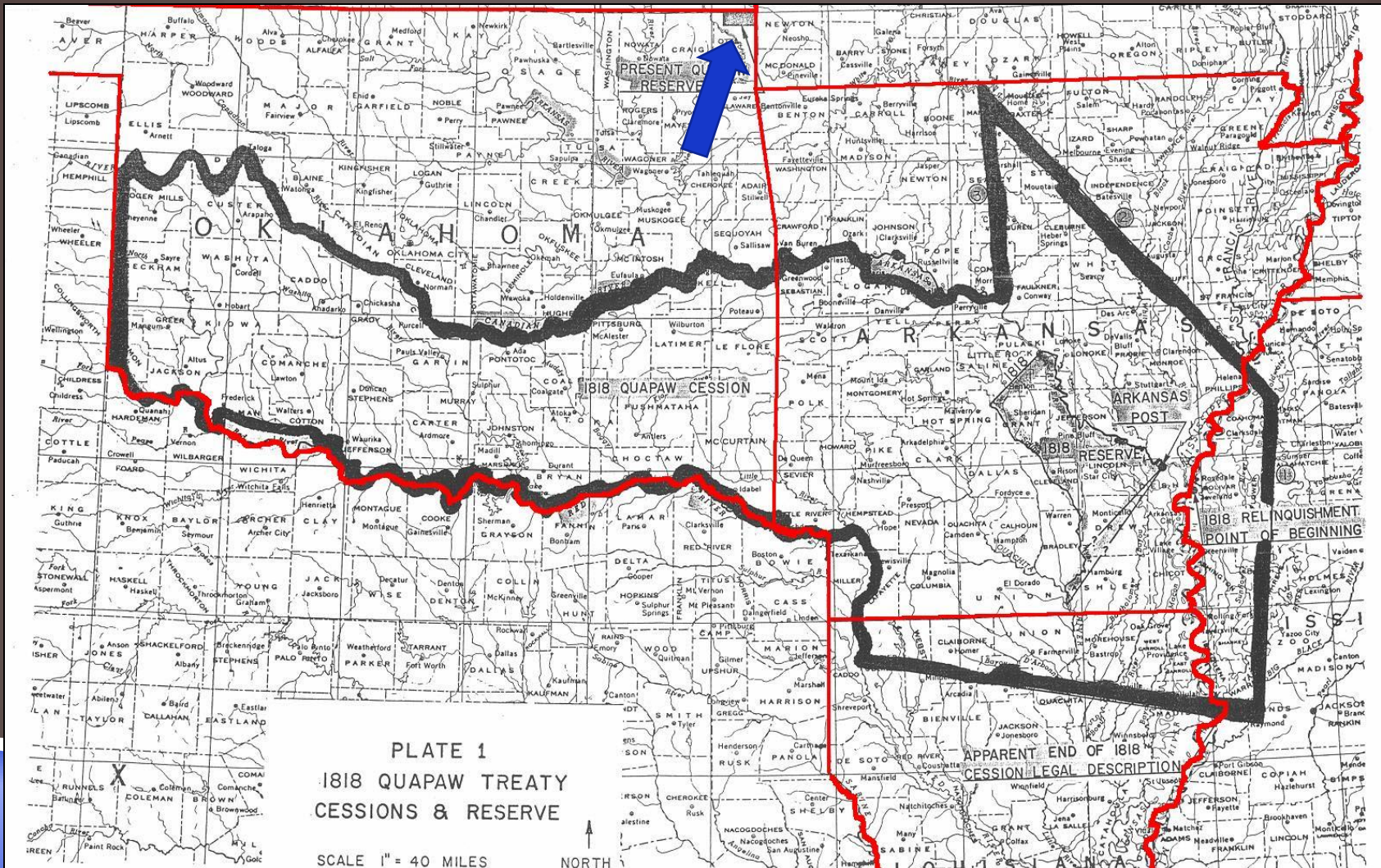
- ▶ Brief History of Quapaw Tribe
  - ▶ Tar Creek Superfund Site
  - ▶ Quapaw Tribe Involvement at Tar Creek
  - ▶ Catholic 40 History
  - ▶ Tribal-Led Remedial Action at Catholic 40
  - ▶ Questions?
- 

# QUAPAW TRIBE HISTORY

- ▶ Several hundred years ago, the Quapaw were a division of a larger group known as the Dhegiha Sioux. They split into the tribes known today as the Quapaw, Osage, Ponca, Kansa, and Omaha when they left the Ohio Valley.
- ▶ The Quapaw moved down the Mississippi River into Arkansas. This is the origin of the word “Ugaxpa” (“Ugakhpa”), as the Quapaw were known to other tribes, which means (roughly) “the downstream people.”
- ▶ They settled in the area where the Arkansas River met the Mississippi, where the meandering of the two massive rivers had deposited nutrient-rich soil conducive to farming.
- ▶ This is where the Quapaw stayed until they were pushed out by Euro-Americans several hundred years later.



# QUAPAW TRIBE HISTORY





# QUAPAW TRIBE HISTORY



# TAR CREEK SUPERFUND SITE

- ▶ Tri-State Mining District
- ▶ Began mining the area during the late 1800's, lasted until approximately 1970
- ▶ Mining and milling of ore (primarily lead and zinc) produced more than 500 million tons of waste in area
- ▶ Two primary types of wastes from mining processes: chat and tailings













# CHAT PILE



# CHAT PILE





# CHAT PILE

FOR EVERY 1 TON OF ORE  
EXTRACTED, APPROXIMATELY 16  
TONS OF CHAT AND TAILINGS WAS  
LEFT BEHIND





# TAR CREEK





# TAR CREEK SUPERFUND SITE

- ▶ Designated as a Superfund Site in 1983, following the establishment of Hazard Rank System and National Priorities List in 1981 and 1982, respectively under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
- ▶ Site Hazard Ranking System Score: 58.15

# QUAPAW TRIBE INVOLVEMENT AT TAR CREEK

- ▶ Through the EPA Region 6 General Assistance Program (GAP), the Quapaw Tribe Environmental Office was established on October 1, 1997.
- ▶ In June of 1998, the Quapaw Tribe Chairman and the EPA Region 6 Administrator signed a Tribal Environmental Agreement, which established a formal agreement between the Tribe and EPA to address the issues raised regarding the environmental protection of lands within the Quapaw Tribe's jurisdictional lands.



# QUAPAW TRIBE INVOLVEMENT AT TAR CREEK

- ▶ Currently, the Quapaw Tribe is administering an EPA Superfund management assistance grant under an existing Superfund support agency cooperative agreement.
- ▶ The tribe entered into this support agency cooperative agreement with EPA in 2001.
- ▶ This management assistance grant has enabled the tribe to have “meaningful and substantial involvement” in the decisions related to the development and implementation of remedial activities.

# QUAPAW TRIBE INVOLVEMENT AT TAR CREEK

- ▶ Working together with EPA and other stakeholders on Tar Creek issues over the past 12 years has enabled the Quapaw Tribe Environmental Office to develop the technical capacity required to administer a remedial response cooperative agreement.
- ▶ Consequently, in 2013, the Tribe negotiated a remedial response cooperative agreement with EPA Region 6 to self-perform the remediation of an historic and culturally significant tribal property known to the Quapaw as the “Catholic 40.”



# CATHOLIC 40 HISTORY

- ▶ The “Catholic 40” is a 40-acre parcel owned by the Quapaw Tribe of Oklahoma and was set aside in 1892 to the Catholic Church for religious and education purposes. In that same year, St. Mary’s of the Quapaw, a Catholic Church, a cemetery, and a boarding school was established.
- ▶ St. Mary’s operated up until 1927, following abandonment, the church leased the property for mining in 1937.
- ▶ In 1975, the Catholic Church deeded the property back to the Quapaw Tribe of Oklahoma.

# CATHOLIC 40 HISTORY

*Heritage Study of Tar Creek/Picher Field, Ottawa County, Oklahoma*



**Figure A-3: St. Mary's of the Quapaw School, undated. Note the same 2-story building as in the previous figure and small building that may have been John Quapaw's school.**

**(Photo from Quapaw Pow-wow Program, 1990)**



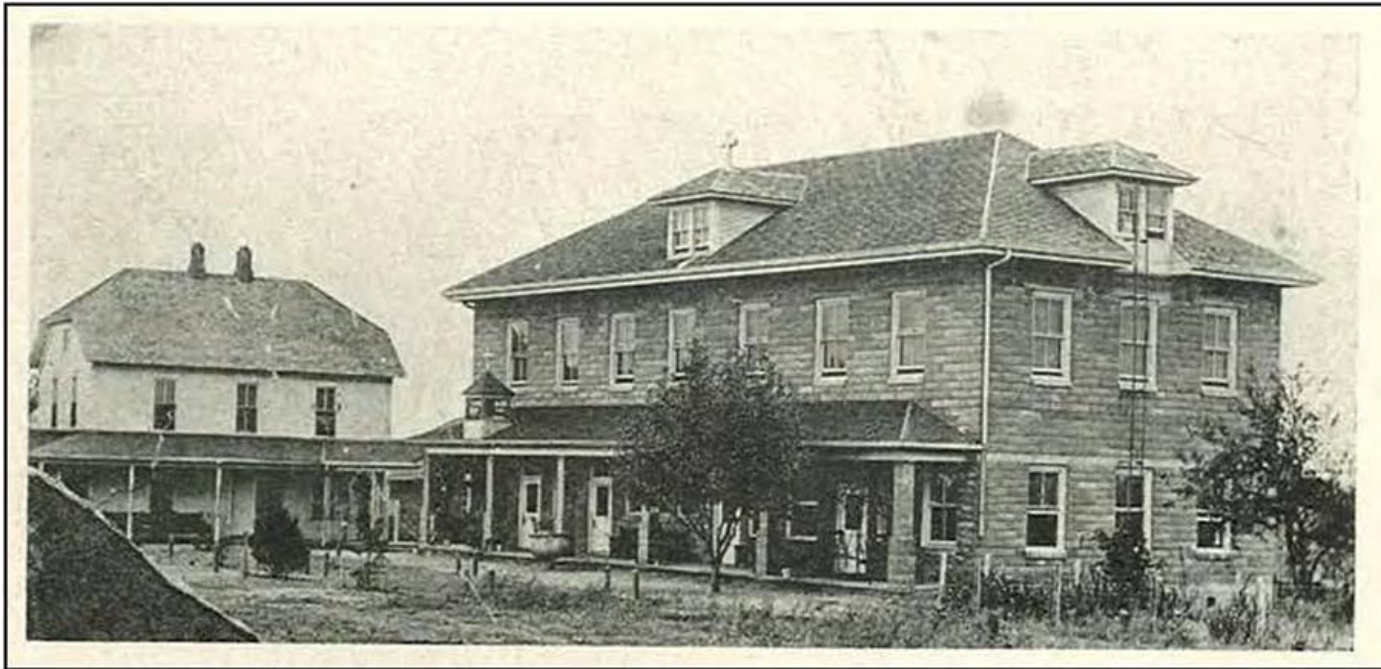
# CATHOLIC 40 HISTORY



**Figure A-4: St. Mary's of the Quapaw School photo showing the reverse side of the same buildings as the previous photo (photo courtesy of the Dodson Museum, Ottawa County Historical Society).**

# CATHOLIC 40 HISTORY

*Heritage Study of Tar Creek/Picher Field, Ottawa County, Oklahoma*



**Figure A-5: St. Mary's of the Quapaw School, post-1915**  
**NOTE THE LARGE CHATCRETE STRUCTURE CONSTRUCTED 1915 (PHOTO FROM NIEBERDING 1953).**



# CATHOLIC 40 HISTORY



**Figure A-6: St. Mary's of the Quapaw School, post-1915. View of the school toward the south showing the 1915 three story building and two-story frame building (photo courtesy of the Dodson Museum, Ottawa County Historical Society).**



**Figure A-32: 1927 aerial photograph with St. Mary's of the Quapaw School campus indicated.**





# TRIBAL-LED REMEDIAL ACTION AT CATHOLIC 40

- ▶ 2013: Catholic 40 Remedial Response Cooperative Agreement
- ▶ Cooperative Agreement for Remedial Action signed between EPA and the Quapaw Tribe of Oklahoma was the first-ever Remedial Action in the nation conducted by a tribe on property that they own.



# TRIBAL-LED REMEDIAL ACTION AT CATHOLIC 40

- ▶ The Quapaw Tribe Environmental Office, retained the services of a consulting engineering firm to assist in generating several plans and specifications, and other pre-construction documents.
- ▶ Remedial Action began in December 2013 and involved: excavation, hauling, and disposal of approximately 107,000 tons of source material (chat).

# TRIBAL-LED REMEDIAL ACTION AT CATHOLIC 40

Site-specific plans included:

- ▶ Quality Assurance Project Plan
- ▶ Field Sampling Plan
- ▶ Health and Safety Plan
- ▶ Storm water Pollution Prevention Plan
- ▶ Site Management Plan
- ▶ Construction Quality Assurance Plan
- ▶ Project Specifications
- ▶ Spill Response Plan
- ▶ Waste Management Plan

# CATHOLIC 40 REMEDIAL ACTIVITIES





# CATHOLIC 40 REMEDIAL ACTIVITIES





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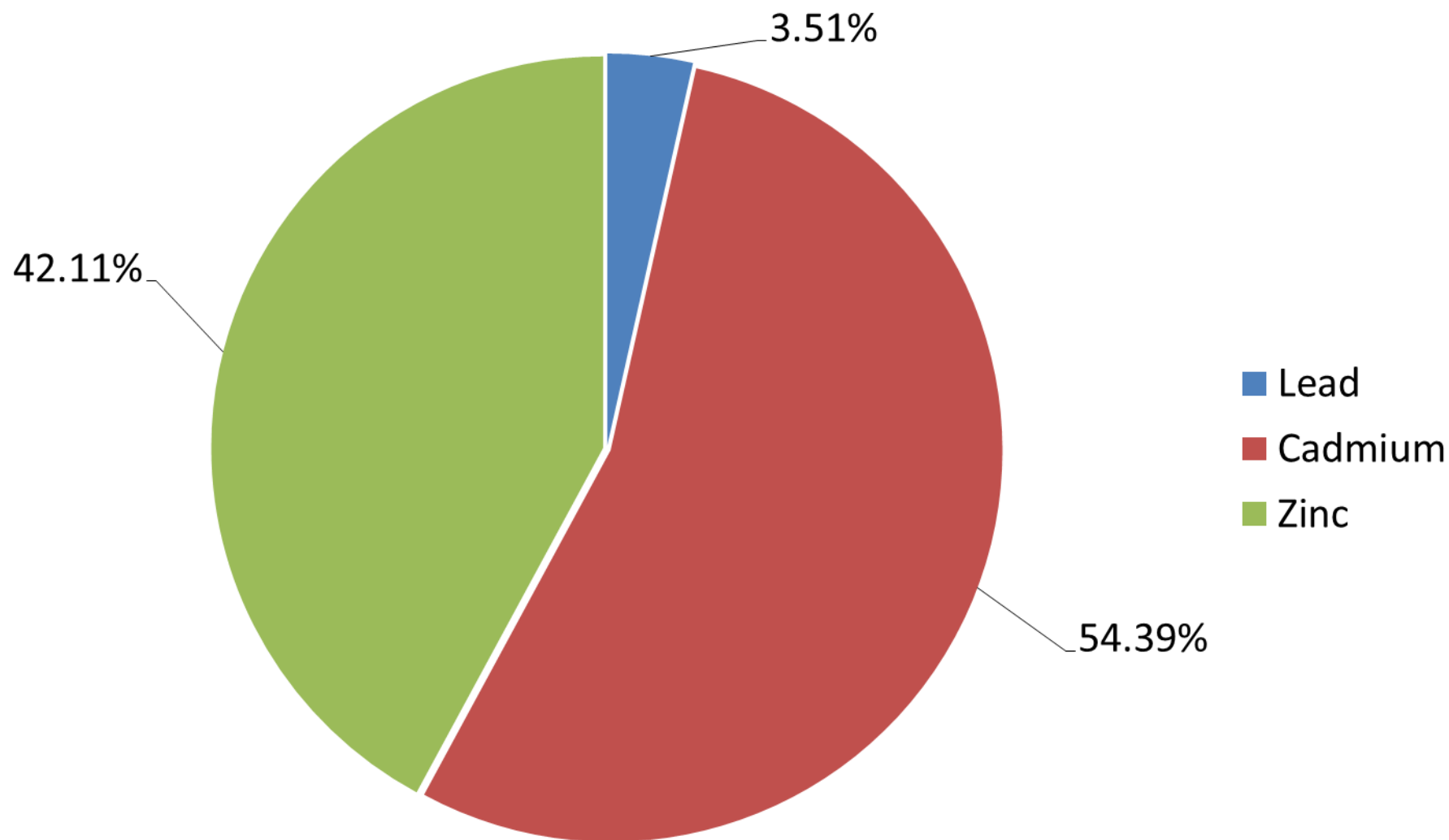


# TRIBAL-LED REMEDIAL ACTION AT CATHOLIC 40

- ▶ Transition Zone (TZ) Sampling and Analysis
- ▶ 23 grids sampled to a depth of 12 inches below ground surface
- ▶ 5 aliquots from each grid homogenized into one sample sent to lab for analyses
- ▶ Inductively-Coupled Plasma – Atomic Emission Analysis included Tar Creek Contaminants of Concern: Cadmium, Lead, and Zinc



# Percentage of COCs above RPGs



# CATHOLIC 40 BEFORE AND AFTER



► BEFORE



# CATHOLIC 40 BEFORE AND AFTER





# CATHOLIC 40 BEFORE AND AFTER



► BEFORE



# CATHOLIC 40 BEFORE AND AFTER



► AFTER

# CATHOLIC 40 BEFORE AND AFTER



► BEFORE



# CATHOLIC 40 BEFORE AND AFTER



► AFTER

# CATHOLIC 40 BEFORE AND AFTER





# CATHOLIC 40 BEFORE AND AFTER





# CATHOLIC 40 BEFORE AND AFTER





# CATHOLIC 40 BEFORE AND AFTER



► AFTER

# CATHOLIC 40 PATH FORWARD

- ▶ Presence of Structures
- ▶ TZ Soil Amendments to Improve Soil Conditions and potentially binding up metals in soil matrix.
- ▶ Benefits:
  - ▶ Enhance Tribe's technical capacity to perform work under the Superfund Program
  - ▶ Have seen expressed interest by other tribes in performing work similar to the Remedial Action at the Catholic 40
- ▶ Additional Work at Tar Cree



# THANK YOU AND ENJOY THE ASMR NATIONAL MEETING

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