KLEPETKO

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Klepetko Spring Tour 2013—Helena

BY BRIAN SHOVERS

The April 20th tour, attended by eighteen members, might be the most eclectic excursion to date with a visit to Boeing Helena, the Helena Wastewater Treatment Plant, and exploring the elusive Last Chance Creek. The morning began in the sprawling aircraft manufacturing facility just east of the Helena Regional Airport, originally constructed by Tom Purcell as Summit Aviation, a subcontractor to Boeing. Two and one-half years ago Boeing Aircraft Seattle purchased Summit Aviation and currently employs 150 people, operating 24/7, machining unique parts for the Boeing 747 and 787. Tom Tillo, the weekend manager of operations at Boeing and a knowledgeable machinist led the group on a truly amazing tour, answering a myriad of questions and offering to provide a more extensive tour sometime in the future.

SIA in action; viewing into Last Chance Creek beneath the streets of Helena.

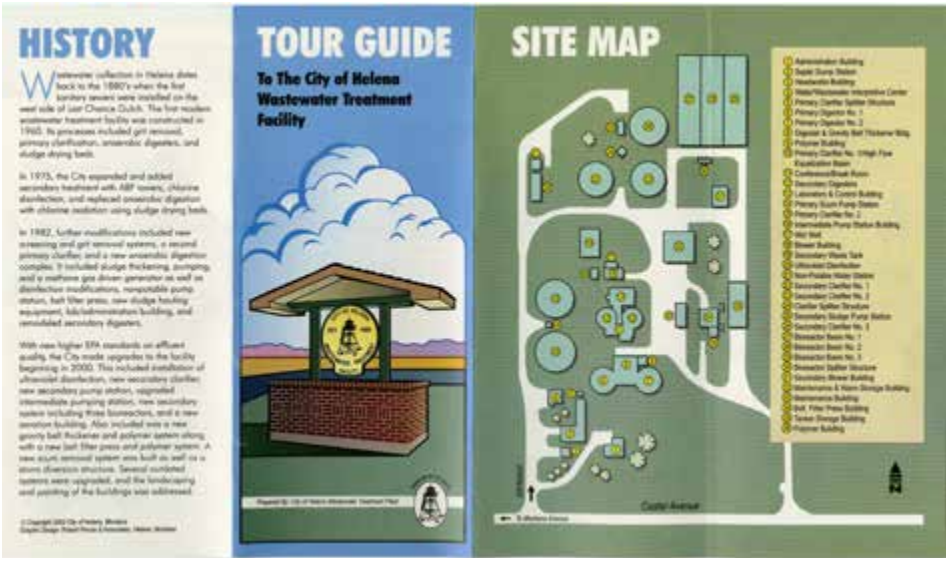
The crew at Boeing operate sixteen different machines, primarily built by Shin Nippon Koki (SNK) in Japan, each valued at about $2.3 million, and designed to machine curves and angles on five different axis. The raw materials arrive in Helena in the form of forged steel, titanium, and aluminum. The machinist, with the assistance of complex software, transforms a large slab of metal weighing 450 lbs into a flap assembly for the Boeing 747 weighing only 50 lbs. In another case Boeing machinists transform 3200 lbs. of metal into a 28 lb. structural element to attach the 787 wing to the fuselage. At the same time the machinist must locate 210 holes in this part, and the tolerances allowed are incredibly exacting, and an error can mean scrapping a part that might take 300 hours to machine at a cost of $200,000.

Boeing Helena is installing a new machine called the MAG 1600, started by Germans but sold to a French manufacturer called Fives. These new machine tools require substantially fewer employees to operate. The Boeing Helena plant is non-union, which has contributed

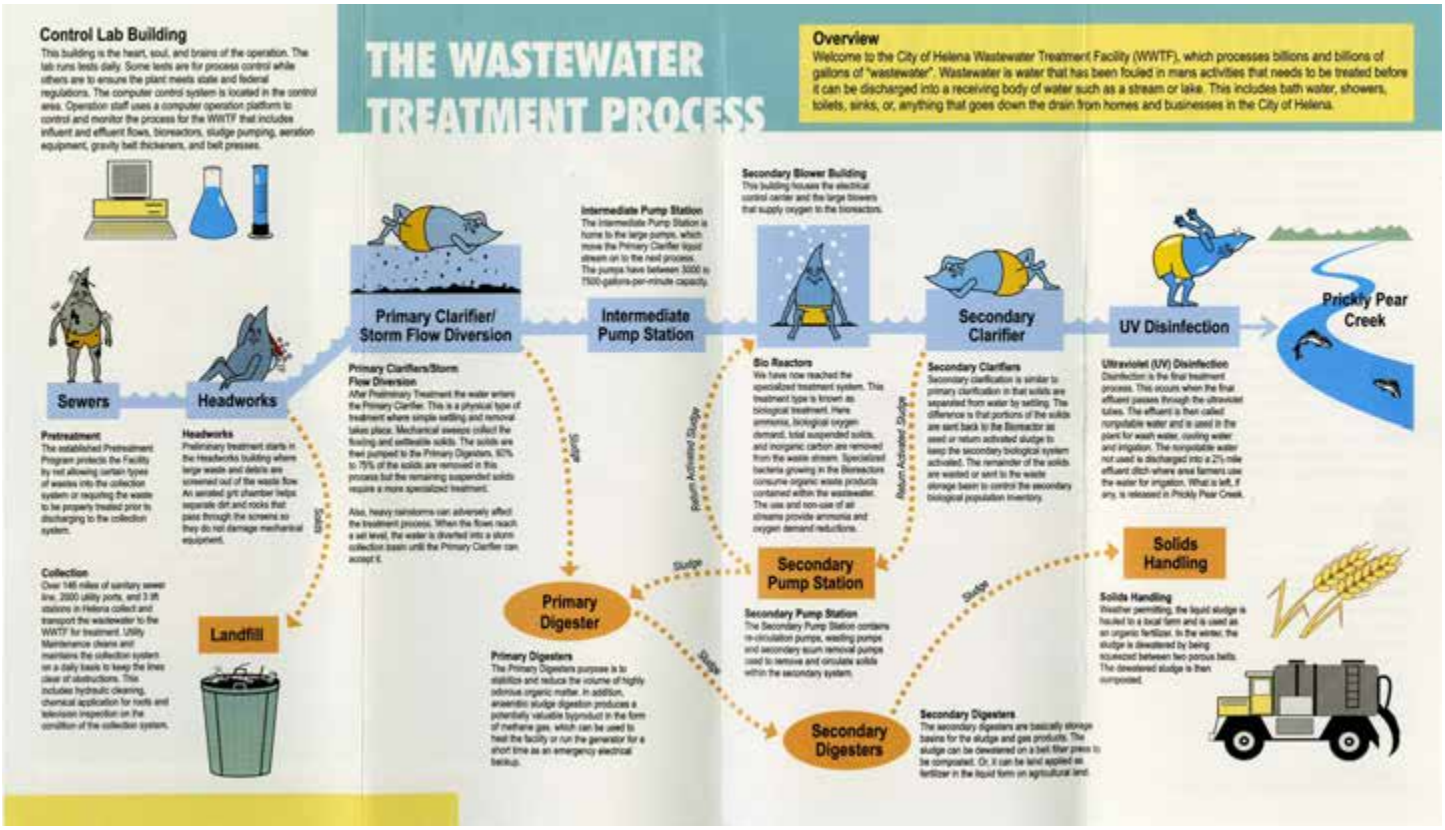
to Boeing's interest in the Helena operation. Tillo mentioned ongoing issues Boeing management has with union operations in Seattle and Portland. Cheaper non-union labor makes Montana an attractive place to operate for manufacturers beyond the aircraft industry.

The initial cutting is done in a shop in Great Falls employing the use of a stream of high pressure water and garnet; the garnet mined at Alder, Montana west of Virginia City. The precision cutting takes place in Helena employing a variety of cutting tools manufactured by Aronson-Campbell at a cost of $5 million a year. Boeing assembled over 1,000 airplanes in 2012, but this year expects to construct forty 737's a month to meet world demand. The non-union machinists are paid $54,000 a year for a 36 hour week.

The next stop on a blustery day came just north of Boeing at the Helena Wastewater Treatment plant, built by the city in the late 1950s. The plant supervisor, Mark Fitzwater, led the group on a very informative tour of the facility, upgraded in the year 2000 at a cost of $15 million to process 3 million gallons of wastewater each day (current capacity of 5 million gallons/day). The process is explained in the following diagram. The plant is operated by nine employees. The treated water is returned to local streams relatively clean at 2.4 parts/million solids, which compares favorably to the Missouri River at 50 parts/million. Over the last 50 years the Helena Wastewater Treat-



Site map and history of Helena Wastewater Treatment Plant.



Overview of process at Helena Wastewater Treatment Plant.

ment plant has undergone at least three major upgrades, beginning in 1960 with primary clarification and anaerobic digesters, and the addition of secondary treatment in 1975 replacing anaerobic digestion with chlorine oxidation, and again in 1982 with the addition of a second primary clarifier and a new anaerobic digestion complex. Upgrades in 2000 to comply with new EPA standards included installation of a ultraviolet disinfection system and three new bioreactors. The tour provided our group a great opportunity to get a look at a system which daily provides Helena residents the convenience of flush toilets for a small fee.

After lunch at Helena's historic confectionary, the Parrot, the group followed Dr. Richard Buswell around the block to Broadway and Fuller Streets for a look into a grate from which to view down into Last Chance Creek flowing beneath downtown Helena for several miles to where it resurfaces at the north edge of Memorial Park below Carroll College. Dr. Buswell, his nephew Scott, and Scott Andrews have traced the creek that attracted thousands of gold miners to Helena in 1864, from its origins at Grizzly Gulch and Orofino Gulch through Nature Park out into the Helena Valley beyond the Cooney Home. The group walked up the Gulch to the Base Camp and on up to a spring on a hillside overlooking the Federal Building where we learned about Lissner's Springs and a water bottling plant located just south of the Lewis & Clark Library. By the 1890s the city fathers entombed the creek in a brick culvert running for several miles until it resurfaces in Nature Park, the site of a major gold dredging operation into the 1930s. Jon Axline, historian for the Montana Dept. of Transportation joined us in Nature Park where he described those earlier dredge mining activities. (See article below. An article by Dr. Buswell will follow in subsequent issue of the newsletter.)

The Annual Meetings of the Society for Industrial Archaeology and the Mining History Association: May 31–June 8, 2013

by Brian Shovers

A St. Paul Adventure

The stars were aligned in the spring of 2013 when SIA scheduled their annual meeting in St. Paul, Minnesota the week before the annual meeting of the Mining History Association in Galena, Illinois, a mere 250 miles south of the Twin Cities. The SIA gathering began on Friday the last day of May at the historic St. Paul Hotel, with five tours to choose from. I chose Tour 4, Railroads, Windows and Milling. The tour began at the Andersen Windows plant in Bayport, Minnesota, along the St. Croix River. Founded by Danish immigrant, Hans Andersen in 1903, the family-owned corporation today employs 3500 workers at the sprawling 2.8 million square foot plant, operating three shifts, seven days a week. Andersen Windows represents the largest window and door manufacturer in North America. The tour began with a short video describing the company's philosophy regarding quality control, energy conservation, and the company's aggressive recycling program. While cameras were not permitted in the plant, our tour guide (a shift supervisor), walked us through every aspect of the operation

Rebuilding steam locomotive at Minnesota Transportation Museum.

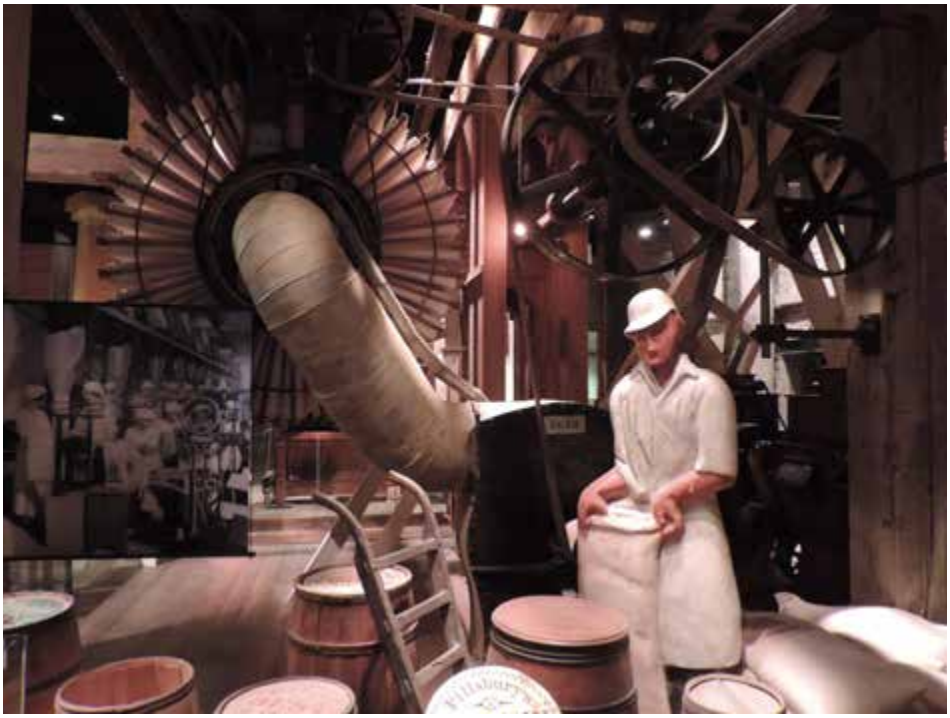
Jack Hoover's "drover coach" at Minnesota Transportation Museum.

from milling the lumber to constructing the window/doorframes, to inserting the glass and packaging for shipment. The company supplies over 2,000 Lowe's stores nationwide.

Next stop, the Jackson Street Roundhouse, the 1907 Great Northern car and locomotive shops, converted into the Minnesota Transportation Museum and Great Northern/Northern Pacific Historical Association archives in the 1980s. The museum includes a wonderful collection of full size cars and locomotives, and we got to see a 1909 Northern Pacific steam locomotive currently being restored by the museum. One of the highlights of our visit was an opportunity to see Jack Hoover's Great Northern X-757, a "Drover's coach," purchased by Jack in 1961, carefully restored, and donated to Minnesota in 2001. Montana cattlemen historically rode such a coach with a load of cattle headed for sale in Chicago.

The final stop came to the Mill City Museum, created by the Minnesota Historical Society in the ruins of the 1880 Washburn A Flour Mill, located at St. Anthony Falls, the site of over 27 sawmills and the birthplace of both Pillsbury and General Mills. The Washburn Mill ranked as the largest in the world when constructed. A fire set by a transient in 1991 destroyed much of the historic mill, but the Minnesota Historical Society designed the ruins into a world class museum to interpret Minneapolis' flour milling history. In addition to an exhibit of historic milling equipment there is a video/audio tour on a freight elevator that transports the visitor through all eight floors of the historic milling process.

On Saturday, June 1st, the SIA faithful gathered for a full day of papers on topics ranging from the 1860s Faribault Woolen Mill, south of the Twin Cities, which continues to process wool today, to brick manufacturing in the remote Cortez Mining District Nevada, to an excavation of one of Philadelphia's earliest glassworks (1771). A highlight for me was a presentation on the archaeology of North Dakota Man Camps in the Bakken, and the story of a recent reconstruction of a 48-foot section of a flume on a cliff face above the Delores River in southern Colorado. The original



Flour milling exhibit at the Mill City Museum, Minneapolis, Minnesota.

flume constructed over a three year period in the late 1880s, extending for over 10 miles, represents an engineering marvel. A team of engineers and historians spent years attempting to unravel the techniques used to construct the flume in the late 19th century and how to reconstruct it using modern tools and techniques in the 21st century. At the end of the day the group reconvened at the Wabasha Street Caves, located in view of the Mississippi River, for the annual banquet. In the 1840s locals created the caves mining silica for use in glassmaking. Since then the caves have been used for mushroom farming, cheese storage, and finally as a speakeasy in the 1930s and a refuge for prohibition era mobsters hiding out in St. Paul. Fred Quivik and I were the only Klepetko members attending, but I hope this narrative inspires other members to join us in the future.

View of St. Anthony Falls, Mississippi River, from atop the Mill City Museum.

Mining History in Galena, Illinois

The Mining History Association, which met in Dillon, Montana last June, chose Galena, Illinois for this year's conference. Most Americans associate Galena with commander of the Union Army and the 18th President of the United States, Ulysses S. Grant; however, it constitutes a significant lead-zinc district, beginning with French trader, Julien Dubuque, negotiating mining rights with the Mesquakie Indians in 1788. On our June 6th tour we visited the Mines of Spain State Recreation Area, site of Dubuque's original lead mining operations. From this modest

Dubuque Star Brewery and 1855 shot tower, Mississippi River.

Illinois Central Railroad Depot, Galena, Illinois.

Platteville Mining Museum, Bevans Lead Mine, Platteville, Wisconsin.

beginning, a major lead rush began in the 1820s to northwest Illinois/southwest Wisconsin, leading to the creation of both Galena and Platteville, Wisconsin in 1821. By 1840 Galena, Mineral Point, Wisconsin, and Dubuque, Iowa produced 80 percent of the nation's lead. Experienced miners from Cornwall, Ireland, and Germany flocked into this extensive lead mining district between 1840–1857, developing shallow shafts and primitive furnaces to process ore for shipment down the Mississippi River.

From the Mines of Spain the group traveled across the Mississippi River to visit a historic 1855 shot tower along the river in nearby Dubuque, which has been carefully documented and restored during the last ten years. After the morning tour attendees had an opportunity to visit a local museum and restored blacksmith shop, and learn about Galena's wonderful mid-nineteenth century architecture and history through a guided trolley tour. The group convened at the meeting headquarters, the Desoto House Hotel, the oldest operating hotel in Illinois, built in 1855. Both Lincoln and Douglas spoke from its balcony and Grant conducted his presidential campaign from the hotel. On the morning of June 7th the group convened for a series of papers on the geology and evolution of mining technologies employed in the district, and the afternoon found the group driving north to visit a historic underground lead mine and museum in Platteville, Wisconsin and the historic British Hollow Smelter in Potosi, Wisconsin. The Platteville Mining Museum is located on the site of the Bevans Mine, developed by Lorenzo Bevans, a lawyer/shopkeeper, in 1843, and operated into

Excavation of British Hollow Lead Smelter, Potosi, Wisconsin.

the 20th century. The museum offers a wonderful underground tour and a series of informative exhibits on area geology and lead-zinc mining. Next the group had an opportunity to visit a recently excavated 1840s lead smelting furnace, one of only two such extant furnaces in the district. Excavation and interpretation of the site continues. While historic photographs document major underground lead-zinc mines and smelters, some operating into the 1970s, almost nothing remains of these large industrial facilities; in fact is some cases the sites are now part of the agricultural landscape.

Miner's cottage, Galena, Illinois, circa 1850s.

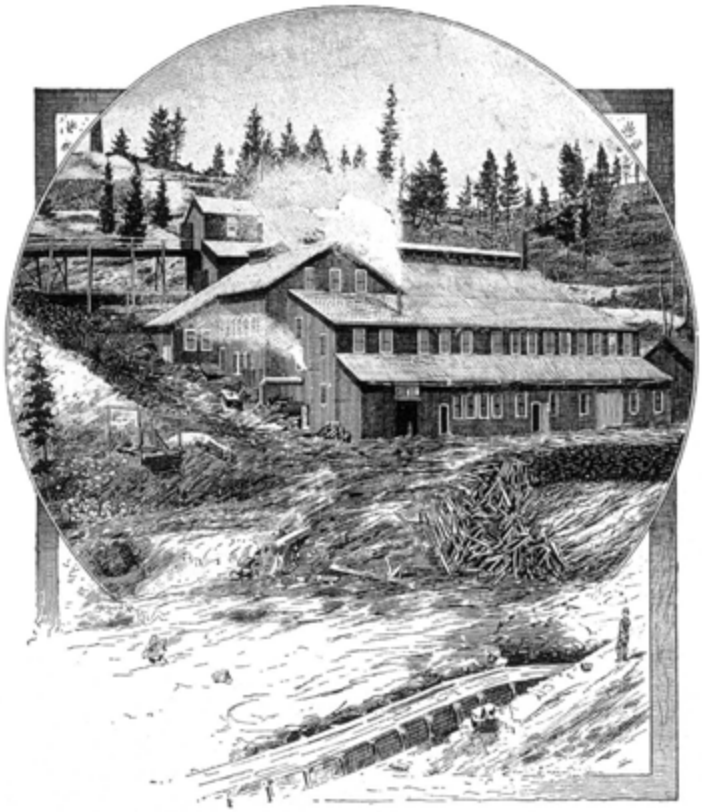
On June 8th the group reconvened for a full day of papers, including one by Brian Leech about the social impact of moving from underground to open-pit mining in Butte, Montana. Brian's recent dissertation focuses on conflicts that arose over the destruction of neighborhoods in Butte with the emergence of open-pit mining in the 1950s. Roger Burt, the incoming president of the Mining History Association and mining historian from Exeter University, gave a wonderful talk outlining the history of core drilling in hardrock mining. He is currently working on an article regarding the relationship between early Montana miners and the Masons. Again I would encourage our membership to take part in these meetings; the group is a wonderful mix of academics, buffs, and retired mine engineers and geologists.

Klepetko Fall Tour: September 14, 2013

Philipsburg

ON SEPTEMBER 14th Ted Antonioli, local Philipsburg mine owner and mine historian, will lead the chapter on an all day tour of historical sites within the Philipsburg mining district, one of America's leading silver producers during the late 19th century. Ted's tour will take us to the James Stuart Mill, the Hope and Poorman Hill, the Trout/Algonquin area, Granite, the Contact Mill and Bi-Metallic millsite, and the Antonioli custom mill (most recently processed ore from the reopened Drumlummon Mine in Marysville). We'll have lunch in historic downtown Philipsburg. Please wear sturdy shoes/boots.

We'll meet at 9:30 A.M. at the Philipsburg Brewing Company at 101 W. Broadway. If interested in attending please contact Brian Shovers at (406) 443-6640 or by email at sholace@bresnan.net by September 9th. This should be a fabulous day.



Algonquin Silver Mill, Philipsburg

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FOR INDUSTRIAL ARCHAEOLOGY
Brian Shovers, President
210 S. California
Helena, MT 59601