



PAC Meeting 3
Zavoral Mine & Reclamation
Project EIS
July 20, 2010

Agenda

- Approval of Minutes
- Traffic Evaluation
- Pump Test Results
- Wetland Mapping Update
- Issues for Final Two Meetings
- Public Questions (5:45 pm)



Approval of Minutes
Approval of April 2010 Meeting
Minutes



Traffic Evaluation

Traffic Evaluation Scope

- Analysis of existing & alternative traffic operation impacts to key roadway network serving Zavoral & Scandia sites
- Assess impacts of mining only – Zavoral site
- Review historic operational data for Scandia Mine site
- Identify potential impacts at Scandia Mine site (traffic, safety, & infrastructure)
- Identify potential impacts & mitigation measures



Existing Conditions Traffic Volumes

Project Area Roadway Network



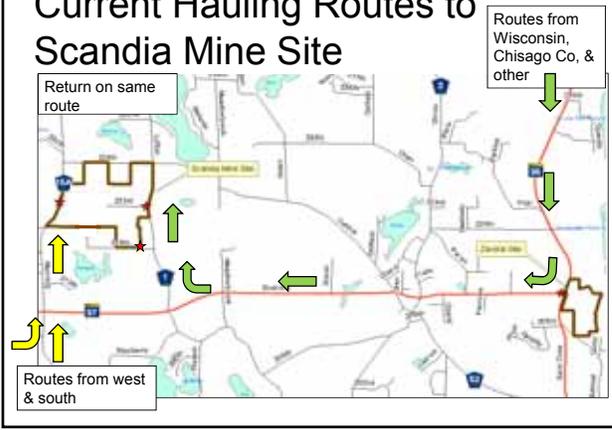
Existing Roadway Network

- Mn /DOT data for Project Area network
 - Reviewed 2000 to 2010 for Trunk Highways (THs) & County Roads (CSAH/CRs)
 - Data based on average annual daily traffic (AADT) volumes adjusted by Mn/DOT to remove variations & seasonal influences

Existing Roadway Network

- Trunk Highways
 - TH 95 & TH 97 are currently used as hauling routes
- County Roads in evaluation
 - Manning Trail (CSAH 15) west haul entrance
 - Lofton Av (CR 91) add-rock haul entrance
 - Olinda Trail (CR 3)

Current Hauling Routes to Scandia Mine Site



Average Daily Traffic Volumes (2008/2009)



Crash Evaluation

Crash Data

- Mn/DOT crash data for 2006, 2007, & 2008 (latest period of Mn/DOT verified data)
- Roadway Links
 - TH 97 from Manning Trail to TH 95
 - Manning Trail from TH 97 to 228th Street
- Intersections
 - TH 97 & Manning Trail
 - TH 97 & Lofton Ave
 - TH 97 & Olinda Trail
 - TH 97 & TH 95

Segment Crash Summary

- TH 97 from Manning to TH 95
 - 20 crashes, none involved trucks
 - Most common were run off-road & hit object
 - Others: Misc., deer crash
- Manning Trail north of TH 97
 - No crashes

Intersection Crash Summary

Intersection	Crashes 2006-2008	Notes
TH 97 & Manning Trail	7	4 rear-end, 1 angle, 2 deer
TH 97 & Lofton	11	3 rear-end, 4 angle, 4 run off road
TH 97 & Meadowbrook	1	angle, single unit truck involved
TH 97 & Oakhill	1	run off road
TH 97 & Olinda Trail	0	
TH 97 & TH 95	2	undetermined type



Traffic Evaluation for Scandia & Zavoral Sites

EIS Alternatives

- Alternative 1 - Up to 10 Year Operation
 - Total mine life - 1.2 million tons
 - 6 week haul plan (higher hauling traffic volume)
 - 10 week haul plan
- Alternative 2-No Build
- Alternative 3 – Up to 5 Year Operation
 - Total mine life - 1.2 million tons
 - 10 week haul plan (higher hauling traffic volume)
 - 12 week haul plan

Add Rock Hauling Activities

- Allowable Hauling Hours for Scandia Mine Site (Lofton Ave.)
 - 7 AM to 7 PM, Monday – Friday (Daylight hours, reduced in winter)
- Haul Events
 - Duration typically 3 to 6 weeks (each haul event)
 - Haul events - 1 or 2 times a year
 - 5 or 10 year (or less) alternatives

Projected Add-Rock Haul Traffic

Mine Life (Years)	Projected Add-Rock Mined (1.2 Mil. Tons)	Projected Loads/Year (Based on 24-Tons/Truck)	Projected Loads/Day (Highest Traffic Generation of Alternatives)	Max. Scandia Mine Capacity Loads/Day (10 hours * 28 trucks/hr)
Alternative 1 ≤ 10 years (6 Week Haul Event)	120,000 t/yr	5,000	167 trucks 334 trips	280 trucks 560 trips
Alternative 3 ≤ 5 years (10 Week Haul Event)	240,000 t/yr	10,000	200 trucks 400 trips	280 trucks 560 trips

Add Rock Hauling Activities

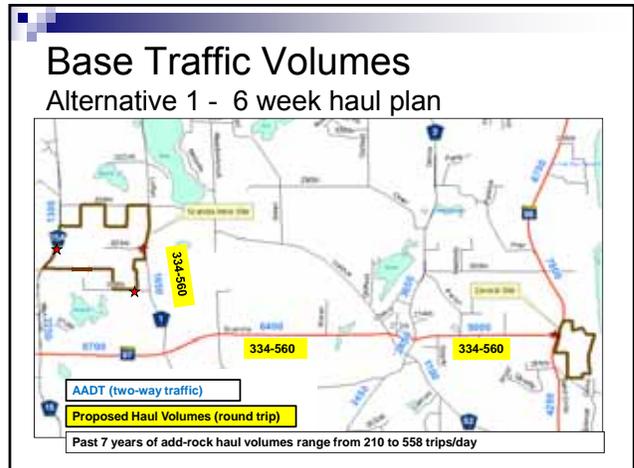
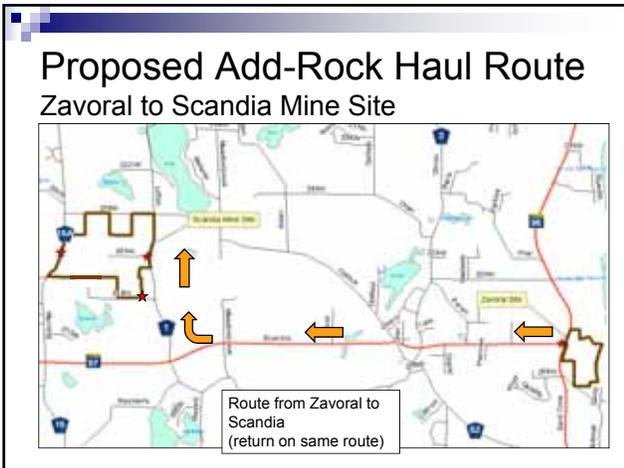
- Support Staff and Vehicles
 - 1 operator, 1 foreman
 - 1 fuel truck (daily)
 - 1 maintenance truck (2 to 4 days)

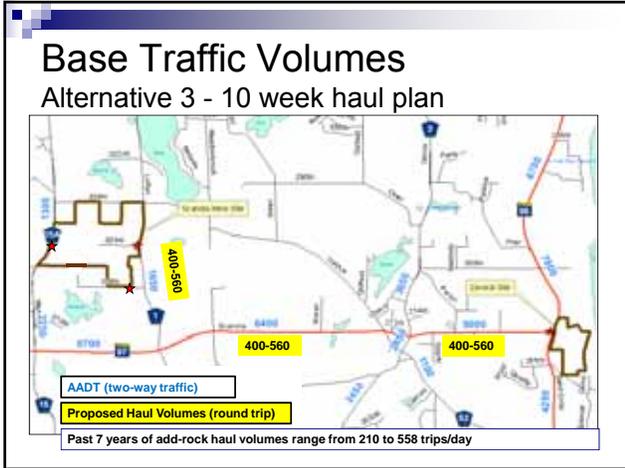
Reclamation Activities

- Allowable Operating Hours
 - 7 AM to 7 PM by ordinance, Monday through Friday
- Haul Events
 - Duration is 1 to 2 weeks
 - Worst case scenario - hauls are 1 or 2 times a year

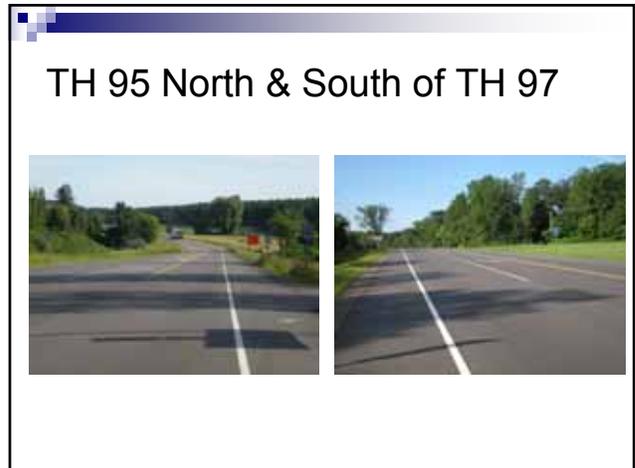
Reclamation Activities

- Support Staff and Vehicles
 - 5-7 operators, one foreman
 - 1 fuel truck (each day)
 - 1 maintenance truck (2 to 4 days)





- ### Potential Mitigation - Roadway
- Review intersection operation at TH 97 & TH 95 for sight distance & safety issues
 - Ongoing Discussions:
 - Tiller working with Mn/DOT on intersection modifications at TH 97 & TH 95.
 - A warning sign with yellow flashers could be installed to alert traffic on TH 95 when trucks are actively hauling at Zavoral Site



Potential Mitigation-Other

- Improve Existing Trail
 - Possible trail rehabilitation as part of new access realignment.



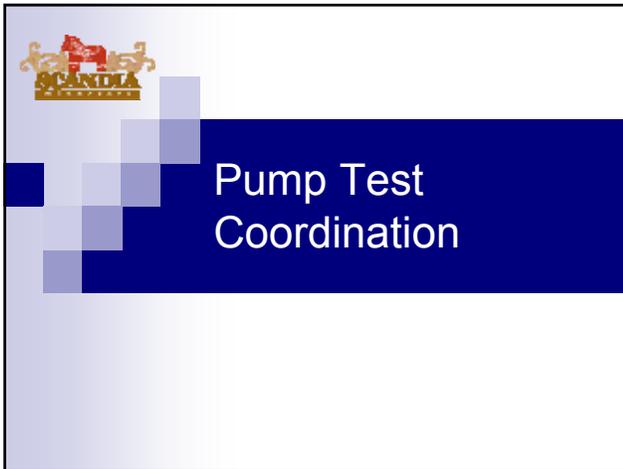
Pump Test

Zavoral Site Water Use

- Dust control only
- <10,000 gpd based on discussions with Tiller – seasonal use, also < mgy permit threshold
- Typical household uses 274 gpd + lawn sprinkling (up to an add't 205 gpd), total about 480 gpd

Original Pump Test Scope

- Proposed 2, 10-min pump tests - second test following first after 2-hour recovery
- Water levels monitored at
 - Zavoral Cabin Well - about 1,300 ft east of Zavoral Site Well
 - Trail's End Bar & Grill 1 - about 1,700 ft west of Zavoral Site Well
 - Zavoral Creek at culvert



Coordination with DNR

- Although no DNR is permit required, continued to coordinate with DNR to facilitate their ongoing involvement with EIS process
- DNR agreed that proposed tests technically represent actual water use scenarios
- DNR suggested longer test to help address public perceptions related to water use
- AECOM looked at extending the test accordingly

Citizens and PAC Input

- Added surface water monitoring sites
 - Crystal Springs-Gregory Page
 - Surface water associated with Spring-box-Lisa Schlingerman & Kristin Tuenge
 - WCD established long-term monitoring point on Zavoral Creek (suggested by Jyneen Thatcher, installed by Erik Anderson & team)
- Pump test discharge basin

Other

- Added Magnuson (formerly Eisenreich) well
- Contacted Nursery to prevent pumping interference
- Added St. Croix River monitoring point
- Added South Creek monitoring point

Crystal Springs



Groundwater Seeps - Zavoral Creek Ravine



Monitoring Point - Zavoral Creek below Crystal Springs



Discharge Depression



Pump Test

- Attempted to run 8 hour test at 1,200 gpm
- Ran test for 4 hours & 20 minutes at 660 gpm (highest rate pump could maintain) when pump failed
- At 660 gpm (future pumping rate) - would take 15 min to pump 10,000 gpd or 7-8 min 2x day
- 172,600 gal was pumped—over 17x maximum amount Tiller would use daily
- Determined pump test was sufficient to assess impacts

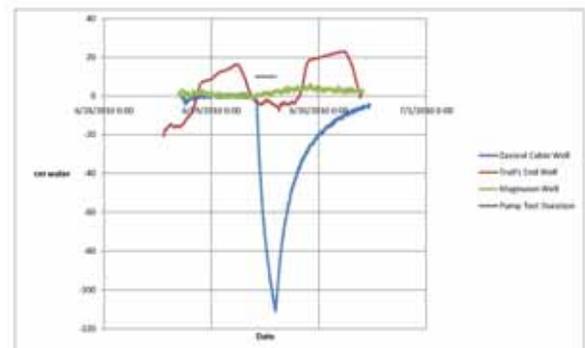


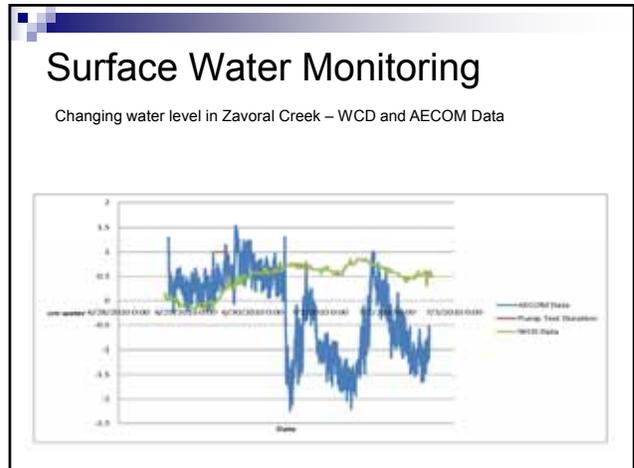
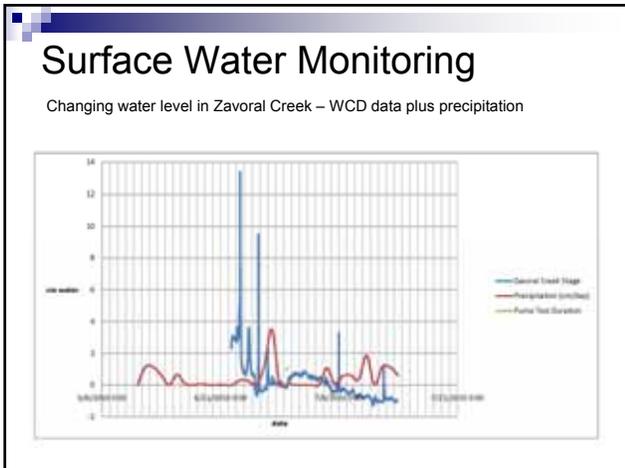
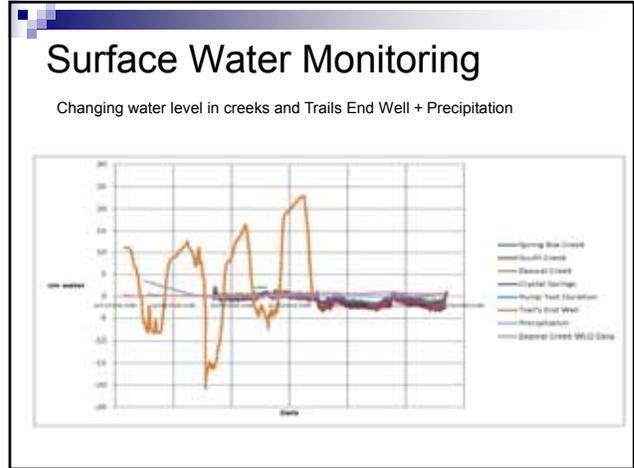
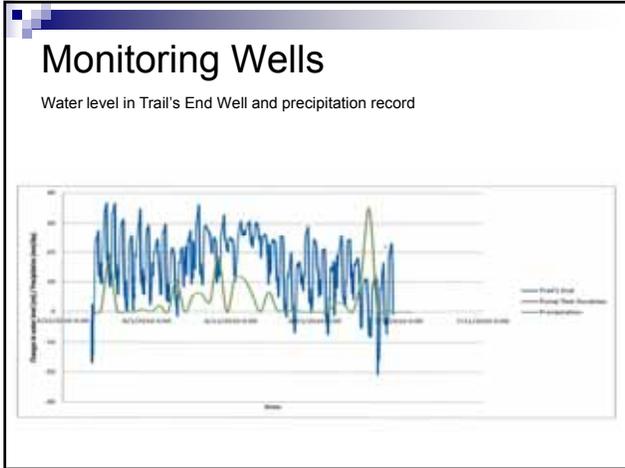
Preliminary Pump Test Results

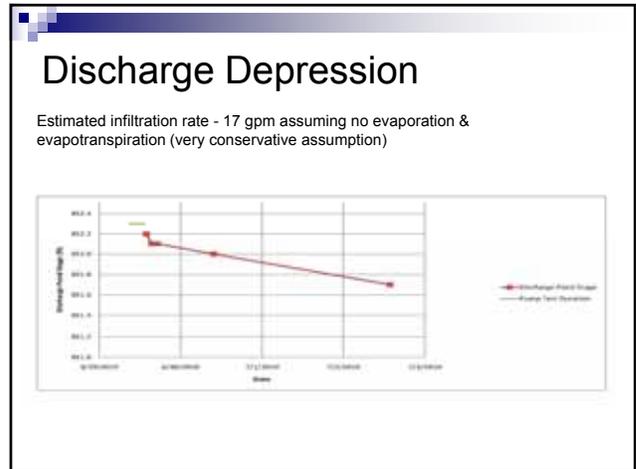
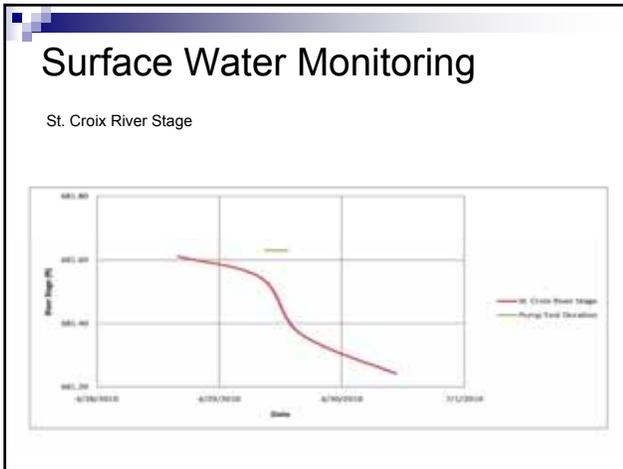
Monitoring Wells

- Zavoral Cabin Well
 - After 15 min. of pumping -drawdown 0.25 ft
 - After 4 hours & 20 min - drawdown 3.7 ft
- Trail's End Well - no discernable effect
- Magnuson Well – no discernable effect

Monitoring Wells







- ### Groundwater Balance Calculations
- Groundwater discharge to St. Croix River simulated by Metropolitan Area Groundwater Model is 8.95 m³/day/m or 5370 m³/day per 600 m width of Zavoral site along St. Croix River
 - Pumping 10,000 gpd from Zavoral Site Well is 0.7% of simulated groundwater discharge or about 2.5% of discharge from Zavoral & South Creeks

- ### Impact of Proposed Water Use on Area Wells
- Monitored wells closest to Zavoral Site Well
 - Minor effect on closest Franconia well (Zavoral Cabin)
 - Drawdown in similar wells further away would be much less to no effect
 - No discernable effect upon closest Prairie du Chien – Jordan well (Magnuson)
 - No effect anticipated in similar wells further away
 - No discernable effect upon drift(?) - Trails End Well
 - No effect anticipated in similar wells further away

Impact of Proposed Water Use on Surface Water Resources

- Monitored representative creeks, springs, & river at locations close to Zavoral Site Well
- No discernable effects
- No effect anticipated at similar or more distant resources



Potential Monitoring

Potential Monitoring

- WCD monitoring of Zavoral Creek during life of mine
- Delineation & future monitoring of seep wetland boundary along Zavoral ravine



Wetlands



Routine On-Site Method

- USACE Wetland Delineation Manual (Environmental Laboratory 1987)
- Subsequent guidance documents (USACE 1991, 1992) & Interim Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region (USACE 2008)

Jurisdictional “Regulated” Wetlands

Areas that under normal circumstances reflect a predominance of hydrophytes (water-loving vegetation), hydric soils, & wetland hydrology (e.g., inundated or saturated soils) are considered wetlands

Potential Wetland Areas Investigated

- NWI maps show 1 palustrine, unconsolidated bottom, intermittently exposed, excavated wetland within proposed mining limits
- This & 2 other potential wetland areas within proposed mining limits were investigated



Findings

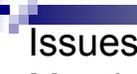
- None of the areas investigated met wetland vegetation, hydric soil, or hydrology criteria
- Agencies requested that seep wetland along Zavoral Creek be delineated on side closest to proposed mine
- Seep wetland could be monitored periodically during life of the mine



Q & A



PAC Meetings



Issues to Discuss at Next PAC Meeting

- Next - Technical Issue Meeting
 - PAC input on issues to discuss
 - Schedule dependent on when City gets additional data from Tiller
- Final Meeting – Draft EIS Review

