Comments received for the October 16 Board meeting

Comment #1

Subject: Health Impact Assessment (HIA) in Mandatory Category Reporting 2024

The following comments were emailed to all Board members on Monday, October 7 from Kris Wegerson. Attachments are not included but can be requested from EQB staff.

Dear Minnesota Environmental Quality Board Members (MEQB),

We appreciate this opportunity to express our concerns about the Mandatory Environmental Review Categories Document (Draft) presented at the September 18, 2024, Environmental Review Implementation Subcommittee (ERIS) meeting. We are family practice physicians, members of the Minnesota Academy of Family Physicians (MAFP), who have worked for over 10 years to have Health Impact Assessment (HIA) incorporated into environmental review (ER) in Minnesota. We are disappointed that HIA is only briefly mentioned in Appendix A on p.75 of the Draft: "The board considered integrating health impacts more officially into environmental review in 2016, but action has been deferred as the board voted to first integrate climate change into the EAW."

This statement inaccurately represents where we are today. HIA stands alone in its importance to meet the MEQB's goals of continuous improvement designed to fulfill the mandate of Minnesota Statute 116D: *to protect the environment and provide usable information to the public and decisionmakers.* HIA fulfills this mandate: "HIA is a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects". Improving Health in the United States: The Role of Health Impact Assessment (The National Academies Press, Washington, D.C. 2001 p.5)

As physicians we are the front line in protecting the health and well-being of our patients and our communities. In 2014 after studying the potential health impacts of the PolyMet NorthMet Project (Project) we realized that there were significant health impacts that hadn't been studied or studied adequately. The World Health Organization (WHO) has listed the top ten chemicals of major public health concern, and six of these would be released during sulfide mining, processing and long-term storage: air pollution, arsenic, asbestos, cadmium, mercury, and lead (1). We knew that a 2011 Minnesota Department of Health Study found that 10% of the infants born in the Minnesota portion of the Lake Superior basin had elevated blood mercury levels above the EPA toxic level (2). Mercury is a known neurotoxin. The Journal of Pediatrics reported in 2016 that in a nationwide study of children under age 6 years, Minnesota led the nation with 10.3% of children tested with high blood lead levels (3). There is no safe blood lead level. So, in 2014 groups and individuals representing over 30,000 medical providers came together and asked for an HIA for the Project. These groups included the MAFP – the largest group of medical specialists in Minnesota, the Minnesota Medical Association (MMA), the Minnesota Nurses Association (MNA), and the Minnesota Public Health Association (MPHA). On September 25, 2015, we met with the then Minnesota Commissioners of Health, Natural Resources, MPCA, Assistant Natural Resources Commissioner and a Governor's representative and presented our request that an HIA be included for the Project (4). Even though two years elapsed between our original request for an HIA and the issuance of the Final EIS for the Project (a full HIA could have been completed in under one year), an HIA was not included. We had asked during our September 2015 meeting: what

could we do to get an HIA included in an EIS? We were told by MPCA Commissioner Linc Stein and DNR Assistant Commissioner Barb Naramore to "change 4410".

On May 25, 2016, the MAFP filed a petition with the MEQB to amend Minnesota Rules (MR) Chapter 4410.4400 to include HIA in EIS for projects involving sulfide mining and amend MR 4410.4300 to include HIA in EAW for projects involving sulfide mining (5). We presented our petition before the MEQB at its October 16, 2016, meeting, with several physicians presenting their expert opinions (6). During the discussion after our presentations, a member of the public asked why we weren't requesting HIA for all projects that required an EIS. We had focused our request narrowly because many industries have separate regulations under MR 4410.

Our petition to amend Minnesota Rules Chapter 4410 has never been voted on by the MEQB. In December of 2016, then MEQB Chairman Frederickson told us that the MEQB was convening an Environmental Review Advisory Panel (ERAP) and would include HIA in its ER. Several physicians again presented their expert opinions on the importance of HIA in ER in Minnesota at the ERAP's meeting in Duluth, MN on August 10, 2017. The ERAP final report, presented to the MEQB at its October 4, 2018, meeting, stated on p. 10: "The panel agreed that the EQB should provide more guidance on how to incorporate human health impacts into environmental review. Moreover, this guidance should provide a variety of options, including but not limited to how to complete the EAW form with greater human health impacts considered in each question; using EAW as a screening tool for an HIA; including HIAs in EISs-particularly in scoping the EIS and any other method that could better integrate a human health perspective into ER." (7). However, the changes we requested in our petition were not included in either the 2018 or the 2021 Mandatory Environmental Review Category Reports. On August 19, 2019, with a new Governor and Administration on board, we met with the MEQB staff and several Commissioners to update our request for an HIA in ER for all projects requiring an EIS (8)(9). More recently, we once again provided our expert opinion that HIA should be required in ER at both the April 19, 2024, EQB Online Roundtable and the September 18, 2014, ERIS meeting.

We feel the time has come for HIA to be formally included in ER in Minnesota. We've come a long way in the past 10 years. The world was turned upside down with COVID. We have all come to realize that human health is the most precious resource on the planet.

Thank you,

Kris Wegerson, MD
Jen Pearson, MD
Emily Onello, MD

Attachments

1. 10 chemicals of public health concern.pdf
2. Attachment 4 MDH Mercury in Newborn letter 12:29:11.pdf
3. Journal of Peds Lead Levels US children.pdf
4. HIA meeting with Commissioners 9:25:15.pdf
5. Dania Kamp, MD letter to MnEQB.pdf
6. EQB Board Packet 10-19-16_1.pdf
7. ERAP Report FINAL 10.3.2018_0.pdf

8. 2019 Letter to Walz and Commissioners 2.docx
9. Comments before EQB and Commissioners 8.docx

Comment #2

From: Kris Wegerson
Sent: Tuesday, October 15, 2024 10:49 AM
To: Neuschler, Catherine (She/Her/Hers) (EQB); Walsh, Kayla (EQB)
Cc: Emily Onello; Jennifer Pearson; Kris Wegerson
Subject: Health Impact Assessment (HIA) in Mandatory Category Reporting 2024. Fwd: MDH Data Practices Request ID#24-016 RESPONSE

Hello Catherine and Kayla,

I have been reviewing my HIA information for the meeting tomorrow. Enclosed below is an email I hadn't reviewed until today. I had submitted a data request several months before I received this. This email had slipped under the radar. Most important is the last document: "Review of PolyMet EIS PJA". Dr. Paul Anderson, originally working for the Alaska HIA project, was on sabbatical doing a fellowship through the Mayo Clinic and on an internship with the MDH. I spoke with him by phone in the fall of 2014. He looked at the health impacts of the PolyMet NorthMet Project by studying the SDEIS. He was scheduled to present this document at an MDH afternoon meeting in September of 2014, but the meeting was suddenly cancelled. I don't believe this document has ever been circulated. The take-away message is in his summary below on p.6:

2.4 Summary

In general, the NorthMet SDEIS does make many references to human health standards and addresses a few human health issues such as asbestos exposure for the workforce, air quality standards, and water quality standards. However, the document contains no dedicated treatment of human health concerns and most importantly, there is very little if any human health data presented. A large body of human health data is readily available on the internet and accessible to individuals with basic training in epidemiology.

Please share this email with the MEQB members for their meeting tomorrow. Sorry for the short notice on this.

Thank you,
Kris Wegerson

Begin forwarded message:

From: MN_MDH_DataPracticesRequest <Health.DataPracticesRequest@state.mn.us>
Subject: MDH Data Practices Request ID#24-016 RESPONSE
Date: April 23, 2024 at 9:03:24 AM CDT
To: Kris Wegerson

Good morning,

This is in response to your data practices request, assigned request ID#24-016. Your request was forwarded to the relevant program area of the agency to pull the data you asked for. The data has been attached to this email.

Thank you for your request,
MDH Data Practices Team

Attachments

1. Copy of Pro con for PolyMet NorthMet HAI
2. Emails
3. Institutionalization of HIA
4. Options for incorporating HIA in environmental review
5. Review of PolyMet EIS PJA

Pros	Cons	Neither Pro nor Con
Could allay public concerns	Staff and support cost to conduct an HIA [$500k+/yr?]	
Could enhance the comprehensiveness of the EIS	MDH does not currently have the staff resources to conduct an extensive HIA [1 project manager, 2-3 community organizers/planners, 1 data cruncher?]	Before starting any HIA, best practices state that the proposed project should: 1) be feasible (this will be if the Governor says it is so…); 2) timely (this is coming really late in the process, but is still before the end); and 3) add value to the decision-making process (given the enormous amount of work already done, we will have to be very clear what value we intend to add that is not already there).
MDH has the technical know how to do an HIA	Scope of HIA is not determined [fully scoped HIA time frame = 2-3 years?]	
HIA can identify risk factors to mitigate If included in scope, HIA would ensure community engagement/empowerment, which is one of the triple aims of health equity	HIA does not determine a decision about a project. Community expectations for an HIA are likely to be quite large; it will be very difficult to manage those expectations to ensure they stay within the scope of the HIA (which will not be comprehensive unless we get a significant infusion of resources).	
The International Council on Metals and Mining (ICMM) prepared the Good Practice Guidance on Health Impact Assessment to ensure their member's operations contribute positively to community health and wellbeing. ICMM notes that mining projects can impact infectious and chronic disease rates and mental health and wellbeing. ICMM recommends conducting HIAs to proactively maximize community health and wellbeing and reduce potential health impacts.	Biggest environmental (and associated health) concerns from the site are future problems from failure of environmental controls; to address those will require hypothetical analyses of future scenarios, which are much less quantitative and more uncertain	
HIAs have been used to inform decision makers about health effects in projects such as oil and gas leasing, coal mine proposals, and copper, zinc and gold mining. These HIAs may review health issues that are typically included in an EIS, such as water and air quality, but they also review additional health effects that are related to the specific site and community.	Creating a truly representative Advisory Committee will be difficult given scope of proposed project; finding objective Advisory Committee members will be difficult given the passion and history surrounding the proposed project.	
HIA would require consideration of broader issues than are addressed in the current EIS	Schedule/timing may be issue if stakeholders, proposers, and decision-makers want answers sooner than Fall 2016	
HIA will give equal consideration to benefits and risks		
Increased understanding of HIA as a health assessment and equity tool		

HIA is scalable, so can be scoped to fit determined needs
Because final go/no-go decision is likely to be based on values and priorities (if an analytical solution was available, it would have been found long ago) the HIA will provide an avenue to ensure/confirm that community values/priorities are characterized

From: Raab, Kristin (MDH)
Sent: Thursday, September 11, 2014 3:24 PM
To: Ross, Michele (MDH)
Cc: Kelly, James (MDH)
Subject: FW:
Attachments: Review of PolyMet EIS PJA.docx; Options for incorporating HIA in environmental review.docx

Hi Michele, Here is the review Paul did. Thanks for offering to edit it for the meeting on Tuesday. Also attached is the chart of options for incorporating HIA into the environmental review process. I will email Paul shortly regarding a good HIA example to bring to the meeting.

Best regards,

Kristin

From: Anderson, Paul J (MDH)
Sent: Thursday, September 11, 2014 1:04 PM
To: Raab, Kristin (MDH)
Subject:

From: Kelly, James (MDH)
Sent: Monday, October 6, 2014 4:56 PM
To: Symonik, Daniel (MDH); Raab, Kristin (MDH); Ross, Michele (MDH); Schultz, Doug (MDH); Yingling, Virginia (MDH)
Subject: FW: Health Impact Assessment - PolyMet NorthMet Project

Please review the Data Practices request below. I have asked Lynn Belgea to respond to Ms. Maccabee, and advise us. In the meantime, Michele, please start pulling together any information, paper or electronic, we have with regards to our March comment letter on the NorthMet project SDEIS. Kristin, please assemble any paper or electronic files on Dr. Anderson's work while he was here with regards to that project. It would make sense for everyone to start sifting e-mails for anything responsive to this request and placing them in a separate folder.

Thanks, and let me know if you have any questions.

Jim

From: Paula Maccabee [mailto:pmaccabee@justchangelaw.com]
Sent: Monday, October 06, 2014 11:59 AM
To: Kelly, James (MDH)
Subject: Health Impact Assessment - PolyMet NorthMet Project

Dear Mr. Kelly:

I was sorry to miss Dr. Paul Anderson's discussion of Health Impact Assessment at the Minnesota Department of Health (MDH) brownbag event last month. WaterLegacy has been working closely with Maureen Johnson on many issues related to PolyMet water quality and public health. Maureen shared with us the highlights of this valuable discussion.

WaterLegacy has greatly appreciated the MDH comments on the PolyMet NorthMet project and your openness in meeting with concerned doctors earlier this year to explain how the health risk assessment and health impact assessment processes work.

WaterLegacy continues to follow up on our meeting with the MDH earlier this spring. Thousands of citizens, dozens of individual health practitioners, and several key health organizations are joining with Duluth doctors and nurses to request a health risk assessment as well as a health impact assessment of the PolyMet project.

With this email, under the Data Practices Act, WaterLegacy is requesting the documents listed below pertaining to the PolyMet NorthMet proposed sulfide mine project. These documents are requested in the public interest to protect Minnesota water quality and public health. We would request that these documents be provided in electronic form, either by email, at a web address, or on CD to minimize costs to all parties. We request the following:

- Any reports, draft reports, email, memos or other documents pertaining to Dr. Paul Anderson's preparation of a health impact assessment for the PolyMet NorthMet sulfide mine project.
- Any reports, draft reports, email, memos or other documents pertaining to any other health impact assessment prepared, planned, undertaken or rejected for the PolyMet NorthMet sulfide mine.
- Any reports, draft reports, email, memos or other documents prepared or received since January 1, 2014 pertaining to health risk assessment for the PolyMet NorthMet sulfide mine.
- Any reports, draft reports, email, memos or other documents pertaining to any restriction on MDH public communication regarding health impact assessment or health risk assessment for the PolyMet NorthMet sulfide mine.

Please do not hesitate to call me at 651-646-8890 if you have any questions about our request for information.

Thank you very much for your assistance with our request.

Sincerely yours,
Paula

Paula Maccabee, Esq.
JUST CHANGE LAW OFFICES
1961 Selby Ave.
St. Paul MN 55104
phone: 651-646-8890
fax: 651-646-5754
Cell: 651-775-7128
e-mail: pmaccabee@justchangelaw.com
http://www.justchangelaw.com

Advocacy Director/Counsel for WaterLegacy

From: Kelly, James (MDH)
Sent: Tuesday, September 9, 2014 2:58 PM
To: Schultz, Doug (MDH)
Cc: Symonik, Daniel (MDH); Raab, Kristin (MDH); Hogan, Tom (MDH); Leitheiser, Aggie (MDH)
Subject: RE: Minnesota question - Star Tribune

Thanks for speaking to him, Doug. I understand he may run a story on the change in topics from PolyMet to the Alaska example, and that the decision to change the topic was mine.

Please let me know if you hear back from him with any further questions.

Jim

From: Kelly, James (MDH)
Sent: Tuesday, September 09, 2014 9:37 AM
To: Schultz, Doug (MDH)
Cc: 'Symonik, Daniel (MDH) (daniel.symonik@state.mn.us)'; Raab, Kristin (MDH); Hogan, Tom (MDH); Leitheiser, Aggie (MDH)
Subject: FW: Minnesota question

Hi Doug – I will give you a call to discuss this. We replied to a similar question (we think) sent by e-mail which I will forward to you as well. Thanks,

Jim

From: Raab, Kristin (MDH)
Sent: Tuesday, September 09, 2014 9:34 AM
To: Symonik, Daniel (MDH); Kelly, James (MDH)
Cc: Anderson, Paul J (MDH)
Subject: FW: Minnesota question

Hi Paul, I'm forwarding to Paul and Jim. Thanks for the heads up. I'm assuming that you will not respond.

Best regards,

Kristin

From: Anderson, Paul J (HSS) [mailto:paul.anderson2@alaska.gov]
Sent: Tuesday, September 09, 2014 9:26 AM
To: Raab, Kristin (MDH)
Subject: Fwd: Minnesota question

Kristin, please forward on to Dan,Jim and the PIO folks so they can respond. Thanks!

Sent from my iPhone

Begin forwarded message:

From: "Kennedy, Tony" <Tony.Kennedy@startribune.com>
Date: September 8, 2014 at 4:57:28 PM CDT
To: "paul.anderson2@alaska.gov" <paul.anderson2@alaska.gov>
Subject: Minnesota question

Hello Dr. Anderson: If you still get messages sent to this email, please call me at 612-673-4213. I'm a reporter at the Star Tribune in Minneapolis and I'm curious about your scheduled talk (Sept. 22) for the Minnesota Dept. of Health.

Thanks,

Tony Kennedy
Star Tribune
612-673-4213
tonyk@startribune.com

From: Raab, Kristin (MDH)
Sent: Tuesday, September 9, 2014 11:18 AM
To: Kelly, James (MDH); Symonik, Daniel (MDH); Anderson, Paul J (MDH)
Subject: RE: Minnesota question

Sorry. The meeting is Thursday at 1 PM, but if you could send it tomorrow that would be great!

Thanks, K

From: Raab, Kristin (MDH)
Sent: Tuesday, September 09, 2014 9:55 AM
To: Kelly, James (MDH); Symonik, Daniel (MDH); Anderson, Paul J (MDH)
Subject: RE: Minnesota question

Hi Paul, If you could please send me your PolyMet document before the meeting, I can make copies. The meeting is tomorrow at 1 PM. Thank you!

Best, Kristin

From: Kelly, James (MDH)
Sent: Tuesday, September 09, 2014 9:53 AM
To: Raab, Kristin (MDH); Symonik, Daniel (MDH)
Cc: Anderson, Paul J (MDH)
Subject: RE: Minnesota question

Kristin,
This reminded me that we need to have copies of Paul's write up on PolyMet for our pre-meeting here Thursday at 1 pm, and for the meeting with DNR next week. Can you please either send it to me electronically (preferred) or bring copies on Thursday? Thanks,

Jim

From: Raab, Kristin (MDH)
Sent: Tuesday, September 09, 2014 9:34 AM
To: Symonik, Daniel (MDH); Kelly, James (MDH)
Cc: Anderson, Paul J (MDH)
Subject: FW: Minnesota question

Hi Paul, I'm forwarding to Paul and Jim. Thanks for the heads up. I'm assuming that you will not respond.

Best regards,

Kristin

From: Anderson, Paul J (HSS) [mailto:paul.anderson2@alaska.gov]
Sent: Tuesday, September 09, 2014 9:26 AM
To: Raab, Kristin (MDH)
Subject: Fwd: Minnesota question

Kristin, please forward on to Dan,Jim and the PIO folks so they can respond. Thanks!

Sent from my iPhone

Begin forwarded message:

> **From:** "Kennedy, Tony" <Tony.Kennedy@startribune.com>
> **Date:** September 8, 2014 at 4:57:28 PM CDT
> **To:** "paul.anderson2@alaska.gov" <paul.anderson2@alaska.gov>
> **Subject: Minnesota question**
>
> Hello Dr. Anderson: If you still get messages sent to this email, please call me at 612-673-4213. I'm a reporter at the Star Tribune in Minneapolis and I'm curious about your scheduled talk (Sept. 22) for the Minnesota Dept. of Health.
>
> Thanks,
>
> Tony Kennedy
> Star Tribune
> 612-673-4213
> tonyk@startribune.com

From: Anderson, Paul J (MDH)
Sent: Thursday, September 11, 2014 1:04 PM
To: Raab, Kristin (MDH)
Attachments: Review of PolyMet EIS PJA.docx

From: Peterson, Ilse (MDH)
Sent: Friday, August 15, 2014 11:35 AM
To: Raab, Kristin (MDH)
Subject: Wrapping-Up

Hi Kristin,

As promised, here is my email to wrap-up the work I've done:

The CSEO transit policy commentary is in this folder: O:\Eia\Climate Change\CSEO. It is titled "MDH Commentary on Policies – Consolidated". As discussed during the meeting on Tuesday, I have added brief subtitles detailing specific health benefits under the energy-related emissions boxes.

For my work with Paul, I helped to create a health baseline for use in discussions about the PolyMet HIA. I looked specifically at the incidence of several infectious diseases, including vector borne and sexually transmitted diseases in Northeastern Minnesota, and calculated incidence using information from IDPEC reports.

A high-level description of the work I've done is below.

For GWU, the last thing you will need to do is complete my final evaluation. You should receive an email about this once I have submitted all of my hours and the evaluation.

As to my culminating experience, I have received preliminary approval from GWU to work on violence and heat, and will be working on developing a proposal for this project. I will be in touch with you as I move forward with this.

It has been a pleasure working with this team! I really enjoyed working on the CSEO policies, and getting to know everyone in the group. I look forward to staying in touch.

Thank you for the opportunity!
Ilse

Description of Work Completed at MDH

- Reviewed CSEO Land Use and Transit, Waste, Energy Supply and Energy Efficiency Policies. Researched potential health impacts of policies. Developed framework for MDH commentary, and drafted commentary for all listed policies.
- Contributed to health impact analysis for PolyMet Mine by obtaining information about infectious diseases for use in establishing health baseline.
- Researched potential topics for culminating experience to be completed in collaboration with MDH. Potential topics considered included health impacts of flooding, transportation, heat, and infectious disease in Minnesota, as well as creation of health baselines for use in health impact analyses.

From: Anderson, Paul J (MDH)
Sent: Monday, September 15, 2014 12:15 PM
To: Ross, Michele (MDH); Kelly, James (MDH); Symonik, Daniel (MDH)
Cc: Raab, Kristin (MDH)
Subject: DRAFT Heath Data Review
Attachments: Review of PolyMet EIS PJA.docx

All, here is the draft we've been working with. I'd strongly prefer that it remain a deliberative draft since finalization of the document would require a detailed team review of data for correctness and completeness.

In AK, to finalize a document, we usually have all of our programs review the data relevant to them (injury, ID, chronic dz, environmental, etc.) We also have other agencies review the document (Department of Environmental Conservation and the DNR review and give comments as we go). This is just a sketch so folks can see how we'd think about health data and resource projects.

Thanks.

Paul.

Alaska's Early Experience With Institutionalization Of Health Impact Assessment

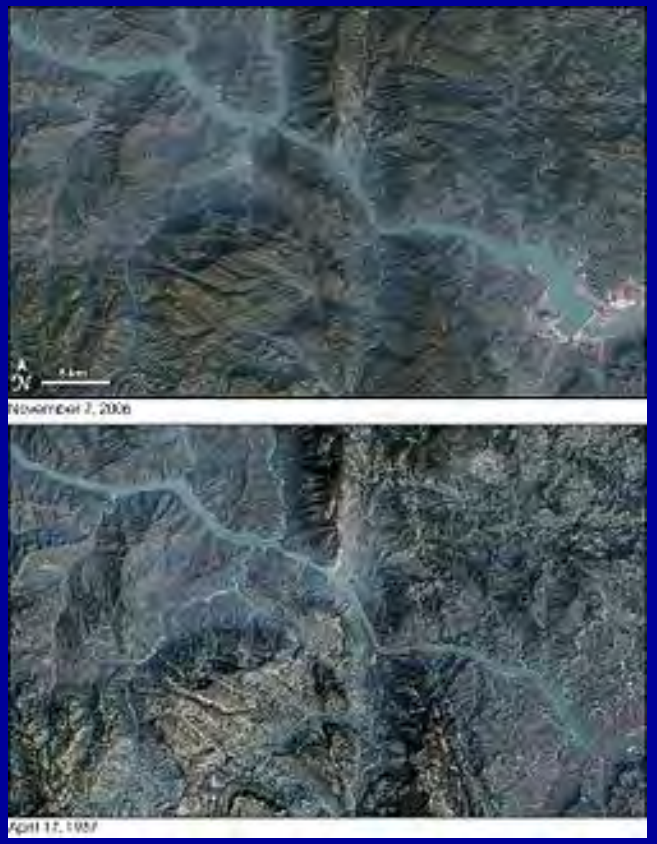
Paul J. Anderson, MD, MPH
HIA Program Manager
Section of Epidemiology
Division of Public Health
Department of Health and Social Services

Learning Objectives

- Explain HIA and its history
- Describe the process of HIA
- Explain institutionalization of HIA
- Describe HIA as preventive health tool

HIA Background

Three Gorges Dam



Three Gorges Dam and Health

Benefits

- Cleaner energy supply
- Employment for some
- Economic stimulus
- Investment ($1.2 billion)

Costs

- Forced resettlement
  - 1.3 million people
  - New Deforestation
  - Landslides
  - Displacement
- Family erosion
- Cultural erosion
- Impoverishment
- Potential catastrophe

Health Effects Categories

- Social Determinants of Health
- Accidents and Injuries
- Hazardous Substances
- Food, Nutrition, Subsistence
- Infectious Diseases
- Chronic Diseases
- Water and Sanitation
- Health Care Delivery

HIA Definition

"HIA is a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population"

World Health Organization (WHO), 1999

What is HIA?

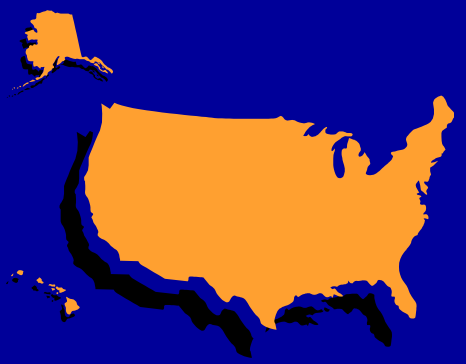
- Preventive health tool (model)
- Anticipates human health effects
  - New projects/land leases
  - New policies or programs
  - Current projects, policies, or programs
- Minimize adverse health effects
- Maximize health benefits

HIA Background—Global

- World Health Organization (WHO)
- Gothenburg Consensus (1999)
- International construction projects
- Routine economic and social analyses
- Overlooked human health effects
- Growing practice and literature base

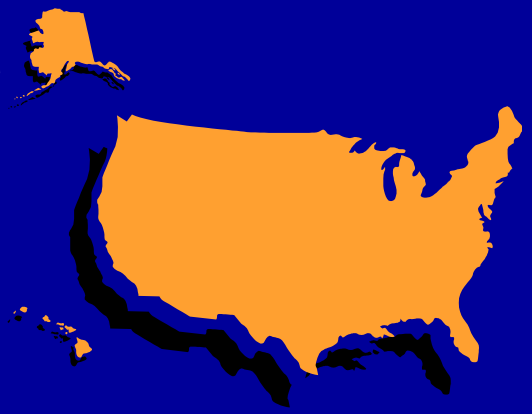
HIA Background—USA

- National Environmental Policy Act 1969 (NEPA)
- Federal agency requirement
- Assess environmental impacts
- Proposed development projects
- Environmental Impact Statements (EIS)



HIA Background—USA

- Economic Impact Assessment (EIA)
- Social Impact Assessment (SIA)
- Aspects of human health unaddressed
  - Health infrastructure (clinics, water)
  - Access to healthcare
  - Injury patterns
  - Dietary change, Subsistence
- Urban development focus

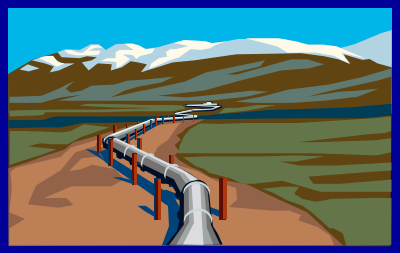


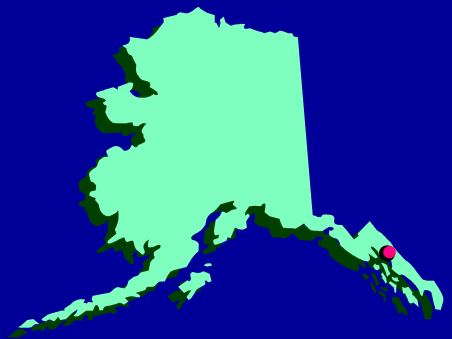
Urban Planning for Health

TransCanada Pipeline

HIA Background—Alaska

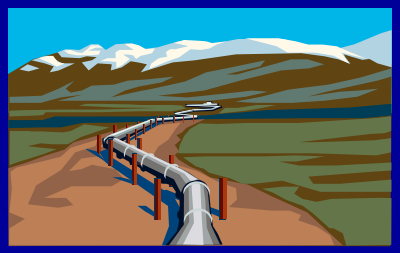
- 2004 HIAs (Grant funded)
  - National Petroleum Reserve-AK
  - Red Dog Lead mine
- Interest and concern
- Inevitability of future HIA requests
- State guidance document needed

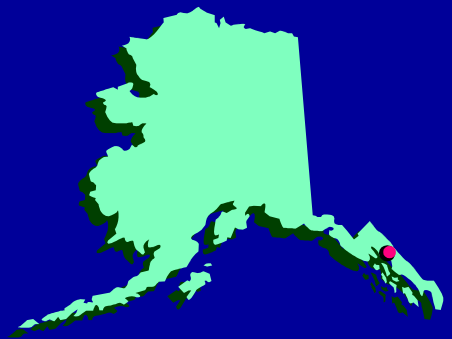




HIA Background—Alaska

- 2008—1st HIA workshop
- Created interagency working group
- Produced HIA toolkit
- Felt need for coordinated leadership
- HIA program founded in DHSS
- Began HIA work in July, 2010





Mission of HIA Program

- Protect health and safety of all Alaskans affected by
  - Proposed development projects
  - Existing development projects
  - Major public policy changes
  - New public programs

Vision of HIA Program

- A robust program that will serve
  - To meet felt need for HIA in Alaska (Praxis)
  - To ensure excellence in Alaskan HIA practice (Oversight)
  - To provide HIA resources locally and nationally (Resource)

Core Values of HIA Program

- **Service:** Coordinate HIA growth
- **Leadership:** Technical expertise
  Program management
- **Collaboration:** Involve key partners
- **Excellence:** Rigorous science
  Best practices

ADHSS HIA Program Strengths

- Neutrality & Objectivity
- Existing partnerships
- Access to health data
- Systematic approach
- Diverse project involvement
- Sustainable funding
- Longevity

HIA Practice

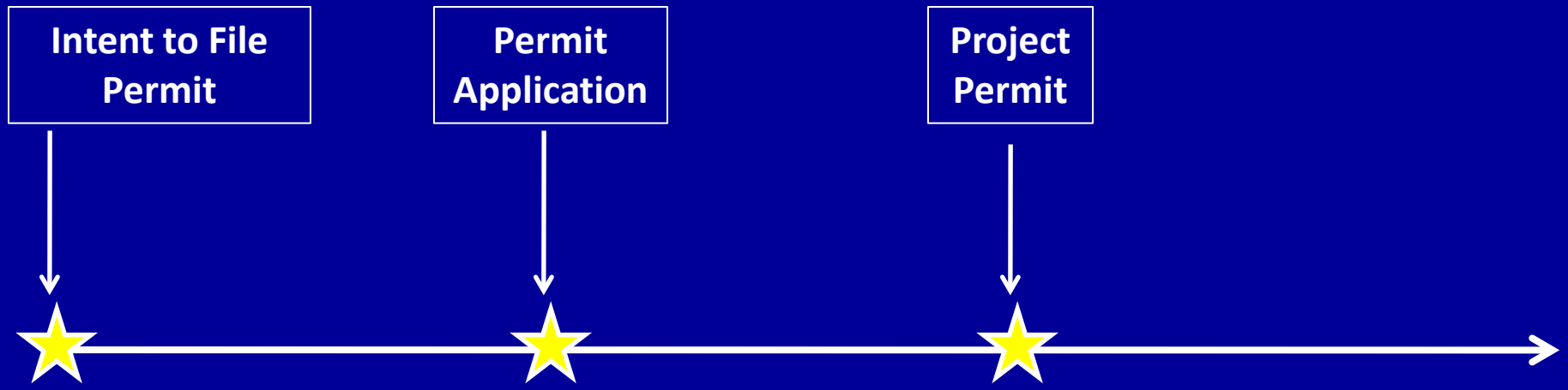
HIA Elements

Element	Key Actions
Screening	HIA needed?
Scoping	Agency and public meetings Identify concerns Preliminary gap analysis
Baseline Data	Existing data sources Field studies
Risk Assessment	Risk identification (Health Areas) Risk ranking
Action Plan	Mitigation recommendations
Monitoring & Evaluation	Key Performance Indicators (KPI)

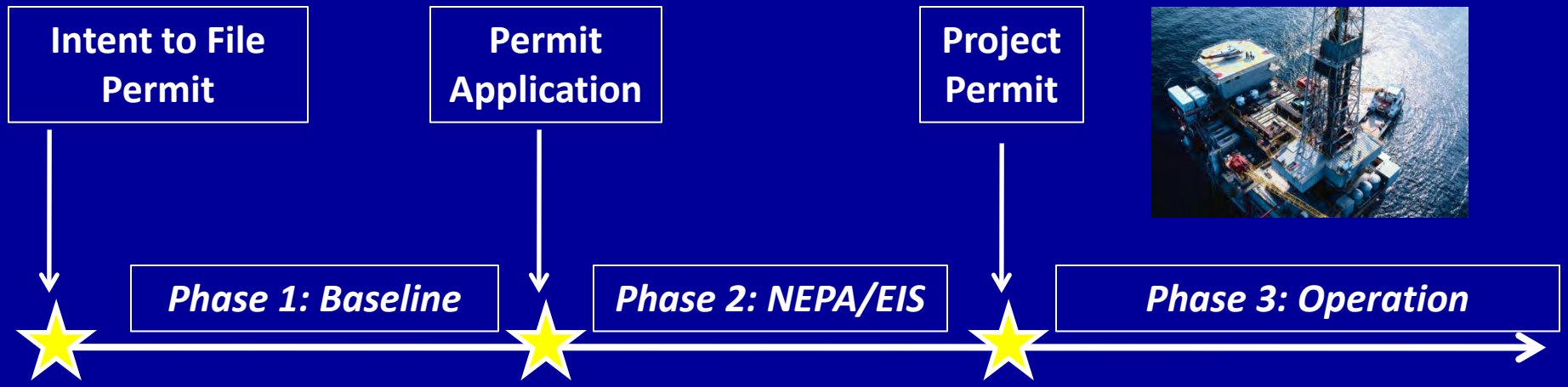
Types of HIA

Type	Size	Timeframe	Features
Desktop HIA	5-10 pages	1-2 weeks	•Data overview •Project overview
Rapid Appraisal	30-50 pages	1-6 months	•Stakeholder input •Existing health data •Gaps analysis
Comprehensive	100+ pages	1 Year +	•Custom data analysis •Fieldwork

Project Timeline and HIA



Project Timeline and HIA



Project Timeline and HIA

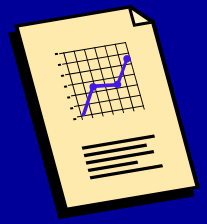
Intent to File Permit

Permit Application

Project Permit

Phase 1: Baseline

- Screening
- Scoping meetings
- Site visits
- Existing data gathered
- New data collected
- Literature review
- **Summary Report**



Phase 2: NEPA/EIS

- Data synthesis
- Data Analysis
- Updated site visits
- Risk Assessment
- Health Action Plan
- **Standalone HIA**

Phase 3: Operation

- Ongoing monitoring
- Evaluate Action Plan

Who does the HIA?

Comments Page 46

Federal Cooperating Agencies
- EPA
- MMS
- BLM
- USACE
- FERC
- Other

State Cooperating Agencies
- DNR (LEAD)
- DHSS*
- DEC
- ADF&G
- DOT
- Others

Local Cooperating Entities
- Municipalities
- Tribal Governments
- Boroughs
- Cities
- Counties
- Others

Proponents
- Corporations
- State Government
- Cities
- Boroughs
- Others

Contractors
- Environmental
- Socioeconomic
- Human health
- NEPA specific
- Others

Large Mine Permitting Team

- Department of Natural Resources (Lead)
- Department of Environmental Conservation
- Department of Fish and Game
- Department of Transportation
- Department of Commerce
- Department of Law
- Department of Health and Social Services

Collaborators in HIA

Health Professionals

Community Leaders

Tribal Health

Industry

State Agencies

HIA Program

Legislature

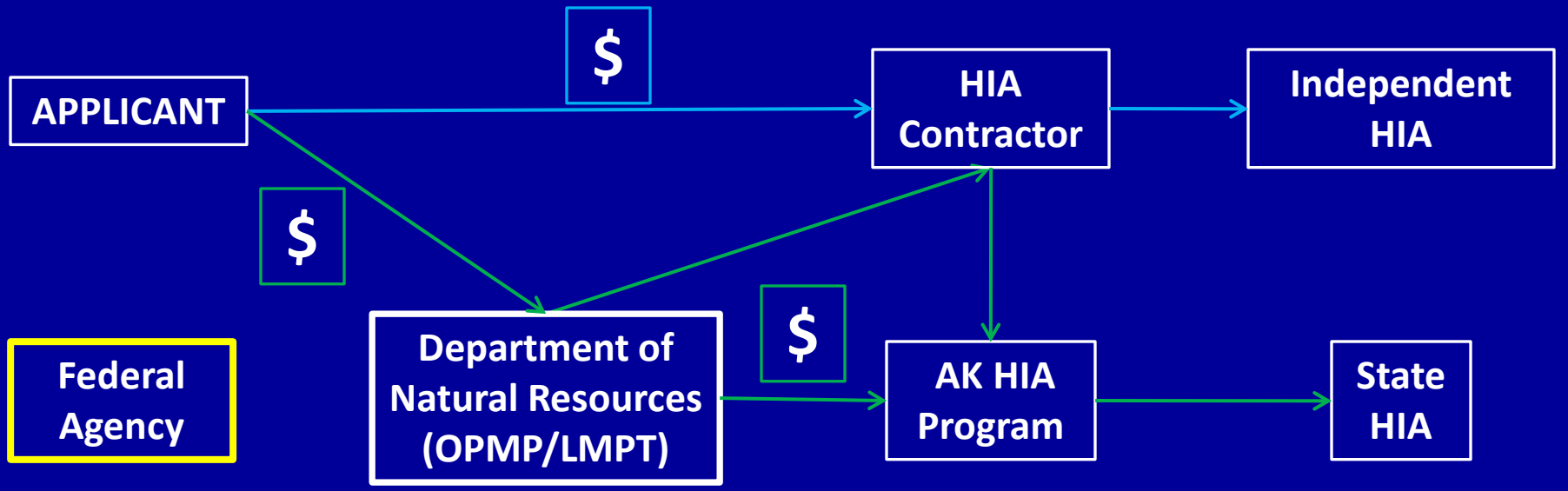
Native Corporations

Environmental Groups

HIA Contractors

Federal Agencies

HIA Funding under NEPA



Health Effects Categories

- Social Determinants of Health
- Accidents and Injuries
- Hazardous Substances
- Food, Nutrition, Subsistence
- Infectious Diseases
- Chronic Diseases
- Water and Sanitation
- Health Care Delivery

Social Determinants of Health

OUTCOMES

Life expectancy
Initiation of prenatal care
Infant mortality rates
% Low birth weight
Substance use in pregnancy
Confirmed child abuse
Confirmed domestic violence
Oral health
Teen birth rates
Suicide
Substance Abuse

DETERMINANTS

Economic Indicators
- Mean household income
- Employment
- % below poverty line

Educational Status
- Highest level of Attainment

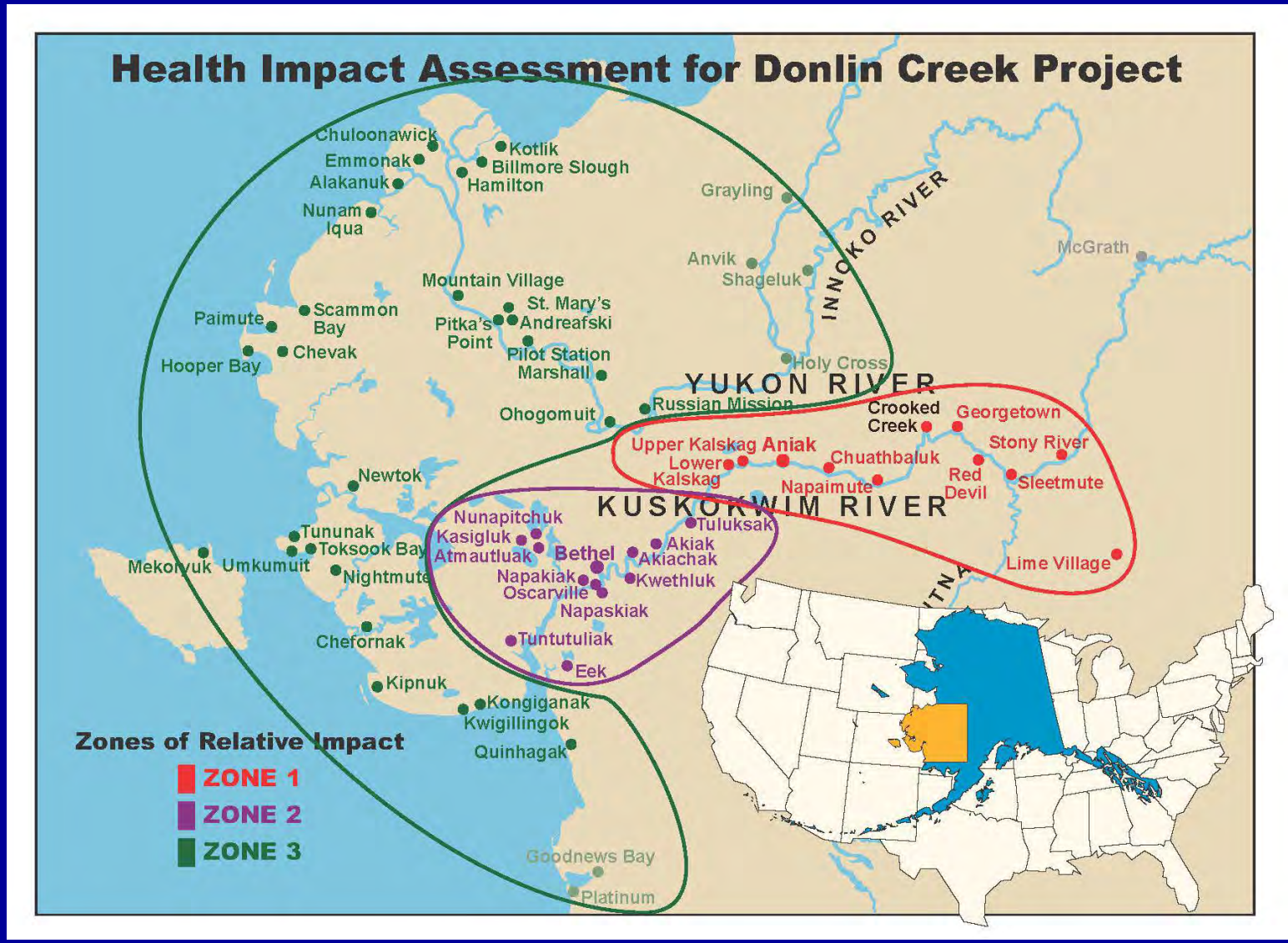
Family Structure
- Divorce Rate
- Single parent households

Baseline Data in AK

- Alaska Native Regional Health Status Reports
- State of Alaska Department of Labor (AK DOL)
- U.S. Census 2000 and 2010
- American Community Surveys 2005-2009
- Alaska Bureau of Vital Statistics (ABVS)
- Alaska Behavioral Risk Factor Surveillance Survey (BRFSS/YBRS)
- Alaska Trauma Registry (ATR)
- ADHSS, Cancer Registry
- County Health Rankings

Donlin Creek Gold Mine

Donlin Creek Gold Mine



Donlin Creek Gold Mine

- 30 million ounces
- Open-pit, truck and shovel mine
- 50-60 metric tons/day
- 3,000 jobs/30 year life of mine
- New port
- Gas pipeline for energy supply

Donlin: Screening

- Massive project
- Impoverished area
- Major impacts to region
- Applicant initiative
- State initiative
- Federal agreement


ARCTIC
CHUKCHI SEA
BEAUFORT SEA
GULF OF ANADYR
CHUKOTK
RUSSIA
UNITED STATES
FAR NORTH
Barrow
Wainwright
Point Hope
Prudhoe Bay
Deadhorse
Colville River
Umiat
Noatak
Noatak River
Kotzebue
Noorvik
Selawik
Shishmaref
Wales
Little Diomede
Uelen
Lavrentiya
Provideniya
Teller
Taylor
Pilgrim Springs
Council
White Mountain
Nome
Gambell
Savoonga
ST. LAWRENCE ISLAND
GATES OF THE ARCTIC NAT'L PARK & PRESERVE
ARCTIC NATIONAL WILDLIFE REFUGE
Anaktuvuk Pass
BROOKS RANGE
Arctic Village
ARCTIC CIRCLE
Bettles
Coldfoot
Huslia
USA ALASKA
CANADA YUKON
Fort Yukon
Stevens Village
Nulato
Galena
Unalakleet
St. Michael
Emmonak
ST. MATTHEW ISLAND
INTERIOR
Yukon R.
Tanana
Rampart
Manley Hot Springs
Central
Circle
Chena Hot Springs
Fairbanks
North Pole
Nenana
YUKON-CHARLEY RIVERS NAT'L PRESERVE
DENALI NAT'L PARK & PRESERVE
Kantishna
Healy
MT. McKINLEY
Cantwell
Delta Jct.
Chicken
Eagle
Boundary
Dawson City
Scammon Bay
Hooper Bay
Saint Marys
Holy Cross
KUSKOKWIM MTNS.
McGrath
Mekoryuk
NUNIVAK ISLAND
Bethel
Aniak
Kuskokwim River
BERING SEA
PRIBILOF ISLANDS
ST. PAUL ISLAND
ST. GEORGE ISLAND
SOUTHWEST
Quinhagak
Wood-Tikchik System
Goodnews Bay
TOGIAK NAT'L WILDLIFE REFUGE
Dillingham
Nushagak River
LK. CLARK NAT'L PARK & PRESERVE
Lake Clark
Iliamna
Iliamna Lake
ALASKA RANGE
Talkeetna
Willow
Houston
Big Lake
Wasilla
Palmer
Anchorage
Lake Louise
Paxson
Tok
Northway
Gakona Jct.
Glennallen
Nabesna
Beaver Creek
Copper Center
CHUGACH MTNS.
Chitina
Kennicott
McCarthy
Carmacks
Kenai
Soldotna
Whittier
Valdez
PRINCE WILLIAM SOUND
Cordova
Ninilchik
Anchor Pt.
Homer
Seward
Seldovia
COOK INLET
KENAI FJORDS NAT'L PARK
Naknek
King Salmon
KATMAI NAT'L PARK & PRESERVE
WRANGELL-ST. ELIAS NAT'L PARK & PRESERVE
Kluane Lake
Destruction Bay
Haines Junction
KLUANE NAT'L PARK
Whitehorse
Lake Laberge
Carcross
White Pass Summit
ALEUTIAN ISLANDS
ANIAKCHAK NAT'L MONUMENT & PRESERVE
Chignik
Port Lions
Kodiak
KODIAK ISLAND
Old Harbor
KODIAK NATIONAL WILDLIFE REFUGE
SOUTHCENTRAL
Yakutat
Dutch Harbor
Akutan
False Pass
Cold Bay
King Cove
Unalaska
Sand Point
GULF OF ALASKA
PACIFIC OCEAN
Haines
Skagway
GLACIER BAY NAT'L PARK & PRESERVE
Juneau
Gustavus
Elfin Cove
Pelican
Hoonah
Tenakee
Angoon
Sitka
Kake
Petersburg
INSIDE PASSAGE

Donlin Scoping

- Kuskokwim river trip (2010)
- Community visits (2011)
- Scoping reports (2011)
- Project description
- Potentially affected communities (PAC)
- Zones of impact
- Pre-EIS

Donlin Baseline Report

Potential Benefits

- Economic stimulus
- Employment
- Opportunity
- Infrastructure

Potential Risks

- Worker influx
- Family instability
- Substance abuse
- Suicide/depression
- Boom/bust cycle
- Methyl Mercury
- Catastrophic event

Donlin Field Study

- Near Red Devil mercury mine
- Little health data
- Heavy fish consumption
  - Burbot
  - Pike
- Hair mercury/fish consumption study
- IRB/community approval

Health Impacts and Control

Higher Control

- Footprint
  - Layout/Roads/Buildings
- Operations
  - Transport/Storage
  - Disaster planning
- Emissions
  - Air/Water/Waste
- Workers
  - Health/Safety/Behavior
- Project life cycle
  - Startup and Closure

Lower Control

- Health choices
- Cultural choices
- Economic choices
- Educational choices
- Global environment

Mitigation Types in HIA

High Control
Direct Impacts

Low Control
Indirect Impacts

Regulatory

Negotiated

Voluntary

Principles of Medical Ethics

- **Non-maleficence** — **First, do no harm**
- **Beneficence** — **Do good if able**
- **Autonomy** — **Self-determination**
- **Justice** — **Equal opportunity**

Respect, Protect, Remedy

Corporation — **Respect**

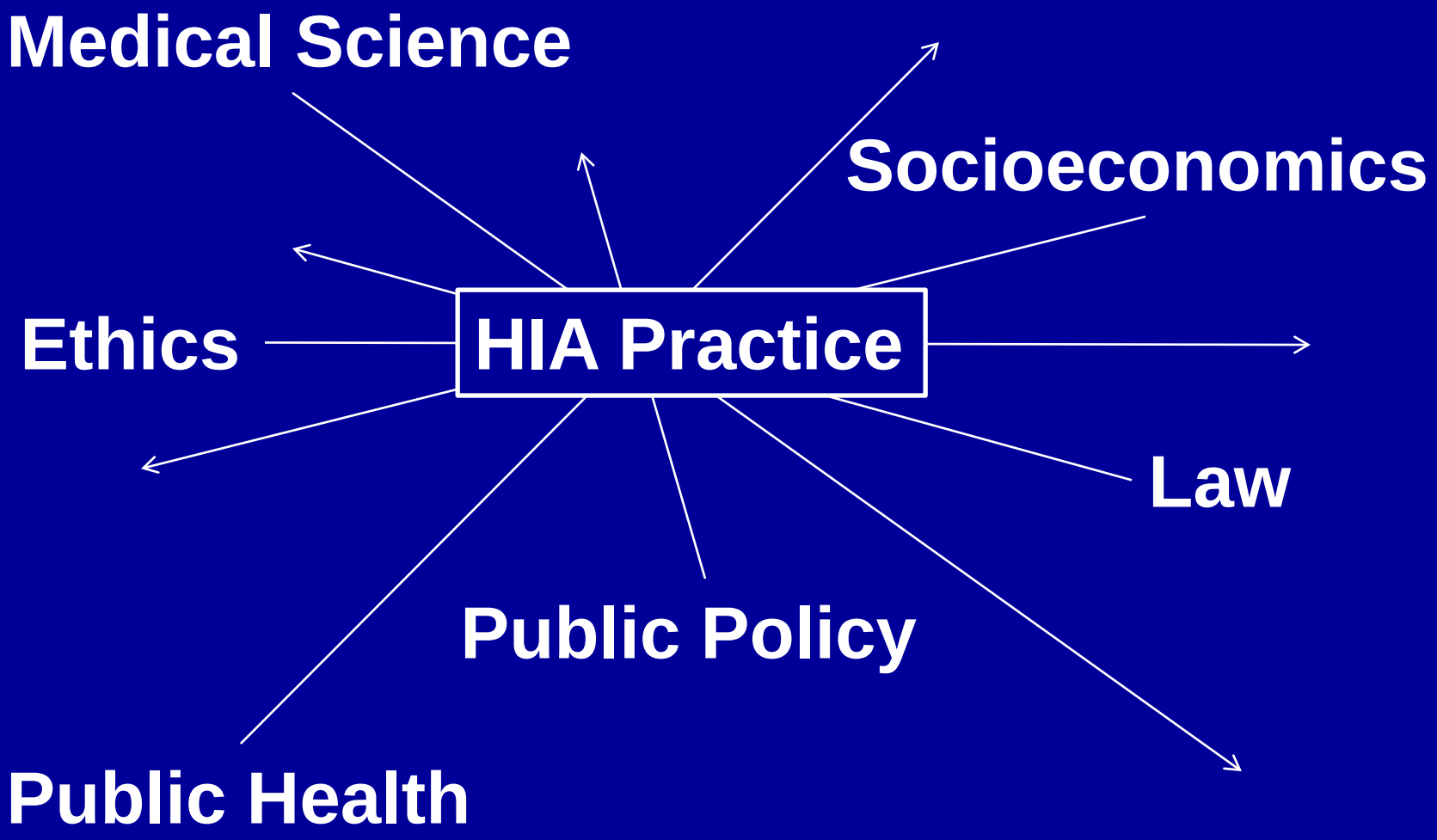
- Do no harm
- Do good when able
- Protect autonomy
- Seek justice

Governments — **Protect**

People — **Remedy**

~John Ruggie – UN Secretary General's Special Representative on Human Rights

Disciplines in HIA



HIA as Preventive Medicine

- Early intervention for population health
- Promotes awareness
  - Lawmakers
  - Permitting agencies
  - Public
- May influence project/policy design
- Maximize benefits
- Minimize risk

Questions?

Options for incorporating HIA in environmental review			
Alaska's Model	**Hybrid**	**Internal MDH staff**	**Desktop/Rapid HIAs ONLY**
Focus—Large natural resource projects (generally NEPA projects)	Focus—Environmental review projects (meeting certain criteria)	Focus—Environmental review projects (meeting certain criteria)	Focus—Environmental review projects (meeting certain criteria)
Staff—2: 1 health department lead for review and approval of HIAs; 1 staff person to help facilitate data collection & meetings with communities Consultant group to perform HIA	Staff—2 HIA planner & epidemiologist • Large HIAs with specialized expertise contracted out • Med HIAs done in house	Staff—4.5 All HIAs done in house with staff with appropriate skillsets	Staff—1 use screening tool and/or toolkit to review most important health impacts
COST —$35,000 per year to support staff at health department from DNR $200,000-250,000 per HIA paid to consultant group	COST—1- epidemiologist $70k 1—HIA planner $55k $125,000*/year Specialized or large HIAs contracted out-$200,000/HIA	COST—1- epidemiologist $70k 1—water quality specialist $70k 1—air quality specialist $70k 1—HIA planner $55k 1/2—GIS specialist $30k $295,000*/year	COST—25-50% of MDH staff person ($70,000) $17,500-35,000*/year
NO of HIAs PERFORMED— 1-2/year (comprehensive HIA)	NO of HIAs PERFORMED— 2-4/year (depending on type of HIA: comprehensive to rapid)	NO of HIAs PERFORMED— 3-6/year (depending on type of HIA: comprehensive to rapid)	NO of HIAs PERFORMED— 6-20/year (desktop)
QUALITY—High quality; review of many health indicators	QUALITY— High/medium quality (depends on time and level of review); review of many health indicators	QUALITY—High/medium quality (depends on time and level of review); review of many health indicators	QUALITY—Low quality; quick review of selected health indicators
TIME—at a minimum 1 year	TIME--3 to 18 months	TIME—3 to 18 months	TIME—1 month or less
COMMUNITY ENGAGEMENT LEVEL—some, usually linked to the EIS review process	COMMUNITY ENGAGEMENT LEVEL—some, a range (depends on time and level of review)	COMMUNITY ENGAGEMENT LEVEL—some, a range (depends on time and level of review)	COMMUNITY ENGAGEMENT LEVEL—none
PAYER—Project proposer pays	PAYER—Project proposer of	PAYER— Project proposer pays	PAYER—state for staff time

DNR for HIA DNR pays consultant and health department	large projects pays for HIA; some state funding to support MDH staff	for HIA; state funding to support MDH staff when there are no large projects	

*Includes only salary, not benefits, etc.

Other ideas:

- develop HIA toolkit for environmental review projects
- train responsible government units (RGUs) to perform desktop HIAs using HIA toolkit (67% of environmental review for private sector is done by the county or city; MPCA 21%; DNR 4%)

A REVEW OF HUMAN HEALTH INFORMATION RELEVANT TO THE NORTHMET SDEIS

Abstract

This document presents a brief overview of the references to human health in the NorthMet SDEIS and provides a preliminary review of existing health data related to the proposed project.

Paul J Anderson, MD MPH
Anderson.Paul1@mayo.edu

1.1 Introduction

This document reviews how human health is addressed in the NorthMet SDEIS and collects readily available public health data that are relevant to the proposed NorthMet Mine, near Babbitt, Minnesota. These data provide a very high-level and preliminary overview of health in the region. This is not a formal health impact assessment, but it is a broad overview of some valuable health data from Cook, Lake, and St. Louis Counties. The purpose of this document is to demonstrate how human health data can be relevant to decision making large natural resource development projects.

1.2 Project Description

The NorthMet project is part of northeastern Minnesota's Duluth Complex, a large undeveloped deposit of copper, nickel and other precious metals. PolyMet controls 100 percent of the NorthMet ore body through a long-term lease and proposes a mining process that will recover copper, nickel and precious metals.

The NorthMet project is not in the Boundary Waters Canoe Area watershed. It is about 175 river miles upstream of Lake Superior.

1.2.1 The Duluth Complex

The Duluth Complex, a well-known geological formation near the eastern end of the historic Mesabi Iron Range, contains large quantities of copper, nickel, cobalt, platinum, palladium and gold. It holds the world's third-largest accumulation of nickel and the world's second-largest accumulation of copper and platinum-group metals.

The complex stretches for 30 miles just south of the eastern end of the historic Mesabi Iron Range in northeastern Minnesota – the major iron ore source for the domestic steel industry for more than 100 years.

1.2.2 The NorthMet Deposit

The NorthMet ore body is near a number of shut-down iron ore mines and the operational Peter Mitchell open pit mine approximately one mile north. The ore body comprises 275 million tons proven and probable reserves grading of 0.79% copper equivalent with Measured and Indicated Mineral Resources of 694 million tons grading 0.74% copper equivalent. Please refer to the Updated Technical Report for assumptions and explanations.

1.2.3 The Erie Plant

Located approximately six miles west of the NorthMet ore body, the Erie Plant includes crushing and milling facilities, electric substations, tailings facilities, an office building, a road and rail that connects to the NorthMet deposit, and other essential infrastructure. Though the processing plant is capable of producing 100,000 tons of ore per day, the NorthMet project is designed to process 32,000 tons of ore per day, using less than one third of the Erie Plant's capacity.

(The above information was taken directly from http://www.polymetmining.com/)

2.0 Human Health in the NorthMet SDEIS

There is no dedicated public health section in the North Met EIS. There are, however, 59 occurrences of "Human Health" in almost 2300 pages of the PolyMet SDEIS, and there is a section on public safety. The majority of the references to health are in definitions in the front of the document or contained in comments at the end of the document that refer to human health as the basis of a standard or the rationale for a legal decision. The remaining references give only brief commentary regarding a variety of topics that include:

- Air quality regulations/standards
- Asbestos exposure
- Environmental justice
- Water quality regulations
- Noise, light, vibration from blasting

Table 1. Human Health discussion in the NorthMet EIS

Page(s)	Topic	Comment	
33-69	Table of Contents Executive Summary	Discussion of health standards and glossary/definitions	The NorthMet Project Proposed Action would also contribute air pollutants with risk guideline values for assessing potential human health effects (air toxic pollutants) during construction, mining, and processing activities. These pollutants were all found to be below state and federal risk guidelines. Additionally, the

			NorthMet Project Proposed Action would not adversely affect visibility in nearby Class I areas, such as the BWCAW and Voyageurs National Park. The NorthMet Project Proposed Action would cause noise, affecting some sensitive receptors. Nearby residences or other permanent sensitive receptors would not be affected, and some wildlife may avoid the area at times.
364	Mercury, project meets human health standards		The "mercury in fish tissue" pollutant listed in Table 4.2.2-2 indicates that the mercury content in sampled fish tissue from these waters was found to be above the state's human health chronic standard.
582	Air quality standards		Minnesota has also promulgated Minnesota Ambient Air Quality Standards (MAAQS) to further protect human health. Minnesota has been granted air permitting authority by the USEPA, so the NorthMet Project Proposed Action will be issued a single permit by the MPCA.
586	Air quality standards		The MPCA also monitors for a range of chemicals, referred to as air toxics, which like the criteria pollutants, potentially affect human health.
696	Description/definition of hazardous material		A waste can also be determined to be hazardous if it poses a substantial present or potential hazard to human health or the environment when Improperly treated, stored, transported, disposed, or otherwise managed. Hazardous waste does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (*Minnesota Statute* 116.06 Subdivision 11)
917	Description of Water Quality standards		Human health-based primary drinking water standards for copper and lead are "at the tap" values applicable to treated water systems and not to "in situ" groundwater values (see Note 3 to Table 5.2.2-2). *Minnesota Rules* addressing the water quality standards applicable to Class 1 waters used for domestic consumption specifically state that the primary drinking water standards for copper and lead do not apply to Class 1 surface waters or groundwater
923, 927	Description of MN human health standards for water quality	Fond du Lac water quality standards	The USEPA primary drinking water standards (40 CFR 141) set mandatory MCLs for drinking water contaminants to protect the public from consuming water that presents a risk to human health. The USEPA has also established secondary drinking water standards (40 CFR 143) for 15 contaminants that are intended to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color, and odor. These contaminants are not considered a risk to human health
1054	Water quality in Hoyt Lakes--Aluminum		Further, aluminum has not been an issue for the City of Hoyt Lakes. In fact, the City treats the raw water from Colby Lake with alum, which probably adds aluminum to the water. The City is not required to monitor for aluminum, as there is no human health-based drinking water standard for aluminum
1302,-4,-8,-11	Air quality Major source standards		Compliance with state and federal ambient air quality standards and growth increments, designed to protect human health and the environment, were evaluated using generally accepted state and federal threshold criteria.
1328—43 (18 refs)	Health Risk Assessment section	Mostly air quality, heaviest discussion of human health	**5.2.7.2.3 Potential Estimated Human Health Risk from the Plant and Mine Sites Air Emissions (see section)**

1334	Global effects and human health		Climate changes can involve changes in temperature as well as changes in other meteorological conditions, such as precipitation patterns and shifts in seasons. These changes could affect forest ecosystems, water resources, other unique ecosystems, agriculture, and human health over the next century.
1338	Mercury		The analysis used the MPCA's Mercury Risk Estimation Method to assess the potential incremental change in fish mercury concentrations and the potential incremental risks to human health.
1343,1346	Asbestosis		As part of the recommendations, the Scientific Advisory Board recommended additional review be conducted to re-evaluate the uncertainty factors, including recent cohort studies conducted on amphibole fibers in Minnesota (USEPA 2013). A review of the toxicological literature for asbestos was performed for the MDNR (ERM 2009). A brief description of potential human health effects from inhalation exposure to asbestos fibers, summarized from this toxicological literature review, follows.
1364	Blasting and human health		The environmental effects of blasting at non-ferrous mining operations are regulated by the MDNR to ensure that the effects of ground vibrations from production blasts would not be Detrimental to human health or welfare or property outside the mining area.
1401	Socioeconomics		Disproportionate effects on minority (including Native American) or low-income populations, including human health or environmental effects, and subsistence—especially if the NorthMet Project Proposed Action results in large reductions in abundance or major redistribution of subsistence resources, substantial interference with harvestable access to active subsistence sites, or major increases in non-rural resident hunting (Barnard Dunkelberg 2009).
1414	Environmental Justice		EO 12898, (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* 1994), directs federal agencies to incorporate EJ into their mission and activities. Federal agencies are to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, or subject communities to discrimination under such actions, because of their race, color, or national origin.
1781 ff	Comment Response Credentials References	18-20 references. Tribal groups do call for assessment of Health Impacts.	

2.1 Occurrences of "Pubic Health"

There are 12 Instances for public health, all of which refer to public health as the goal of a standard or the rationale of a legislation.

- 2 in the glossary
- 1 reference in the section on the 1854 treaty
- 2 references in explanation of the health standards for NAAQS and MAAQS
- 2 references explaining the legal history of Green House Gases regulation
- 2 references in the asbestosis section (which refers to workers already covered by OSHA/MSHA regulations)
- 1 reference to hazardous materials spills as a threat to public health. A careful analysis of spill probability has been conducted.
- 2 occurrences in the credentials and references section.

2.2 Occurrences of 'Workforce'

5 references to the workforce in the Socioeconomics chapter regarding employment

4 references to the incoming workforce, housing, economic benefits, etc.

1 reference in the land exchange comments

2.3 Occurrences of 'Public Safety'

1 reference (225) to mine pit reclamation

3 references under socioeconomics/emergency services

1 reference to public safety regarding HazMat spills

2 references to emergency planning information

1 reference to a document discussing public safety

2.4 Summary

In general, the NorthMet SDEIS does make many references to human health standards and addresses a few human health issues such as asbestos exposure for the workforce, air quality standards, and water quality standards. However, the document contains no dedicated treatment of human health concerns and most importantly, there is very little if any human health data presented. A large body of human health data is readily available on the internet and accessible to individuals with basic training in epidemiology.

3.0 Sources of Health Data

Minnesota produces a large amount of county-level health data that can be easily reviewed by the public. The following data sources were used during this review:

1. Minnesota Health Data and Statistics

   http://www.health.state.mn.us/macros/topics/stats.html

2. Centers for Disease Control (CDC Wonder)

   http://wonder.cdc.gov

3. Minnesota Injury Data Access System (MIDAS)

   http://www.health.state.mn.us/injury/midas/ub92/index.cfm

4. University of Washington Rural Health Research Center

   http://depts.washington.edu/uwruca/ruca-download.php

5. Health Resources and Services Administration (HRSA)

   http://muafind.hrsa.gov/

6. Native American Health Data

   (Currently this is a data gap)

4.0 Health Data by Health Effect Categories

4.1 HIA Definition

While this is not a formal health impact assessment, it is important to describe HIA as a public health tool. Health impact assessment is a combination of procedures, methods and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.

4.2 HIA Methods

As presented in the July 2011 Alaska "Technical Guidance for Health Impact Assessment," an HIA will:

- Provide a formal mechanism to engage the relevant stakeholders and key regulatory decision makers;
- Review proposed project specifics;
- Review the physical and general environmental setting of the proposed project;
- Identify potentially affected communities (PACs);
- Analyze the sufficiency of baseline health;
- Select key health impacts using both a set of defined health effects categories (HECs) and input from stakeholder meetings;

- Conduct qualitative impact rating and ranking analysis; and,
- Propose a series of recommendations tied to potential impacts.

4.3 HIA Type

An HIA can be a short desktop exercise that takes an expert practitioner less than 2 weeks to prepare, a rapid assessment that takes several months, or a comprehensive report that requires a year or more to complete (see below). Each type involves different approaches to baseline data collection and stakeholder engagement. The type of HIA chosen by the practitioner depends on a variety of factors including the type of project, the timeframe available for HIA completion, and the resources available for performing the HIA.

4.4 Desktop HIA

The desktop HIA is a qualitative assessment and is most appropriate for projects with few anticipated health impacts. The HIA team often does not pursue extensive stakeholder engagement although some involvement is usually required. The desktop HIA is useful for determining whether a more detailed review is needed. A desktop HIA often doubles as a screening exercise and it can reveal the need for further work.

4.5 Rapid Appraisal HIA

A rapid appraisal HIA is considered to be a site-specific HIA that uses available health information *without* conducting new field survey work. Data sources may include peer-reviewed scientific literature, health department databases and tribal health service data sources. A rapid appraisal HIA may evolve into a comprehensive HIA.

4.6 Comprehensive HIA

The hallmark of the comprehensive HIA is collection of new data, to address important data gaps identified during the scoping process. A comprehensive HIA also pursues extensive stakeholder engagement. A comprehensive HIA may be appropriate for projects that involve:

- Resettlement of existing communities;
- Significant population influx;
- Major disruption of subsistence practices;
- Major impacts to key social determinants of health; and,
- Information gaps related to a well-known aspect of a project.

4.7 Areas outside the scope of the HIA

In general, an HIA does not address classic occupational health concerns (e.g., physical hazards or environmental hazards encountered by workers), which are referred to as 'inside the fence' and are addressed by federally mandated health and safety protocols enforced by the Occupational Safety and Health Administration (OSHA) and the Mining Safety and Health Administration (MSHA).

4.8 Health Effect Categories (HECs)

The State of Alaska has developed a grouping of HECs, shown below in Table 1, which are a standard set of effects categories that have been developed and discussed in the July 2011, "Technical Guidance for Health Impact Assessment (HIA) in Alaska."[1]

Health Effects Categories

Health Effects Category	Pathway Description
Social Determinants of Health (SDH)	The SDH are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power, access, and resources at global, national, state, regional, and local levels. The SDH are mostly responsible for health inequities -- the unfair and avoidable differences in health status seen within and between countries. This category reviews outcomes and determinants related to mental health, maternal and child health, substance use, social exclusion, psychosocial distress, historical trauma, family dynamics, economic status, educational status, social support systems, and employment status.
Accidents and Injuries	This category contains health outcomes and determinants related to accidents and injuries. The key outcomes considered are increases and decreases in intentional and unintentional injuries with fatal and nonfatal results. The key determinants in this category include items such as the presence of law enforcement, traffic patterns, alcohol involvement, distance to emergency services, and the presence of prevention programs.
Exposure to potentially hazardous materials	This category contains health outcomes and determinants that may arise from exposure to hazardous materials. The key health outcomes considered are increases and decreases in documented illnesses or exacerbation of illnesses commonly associated with pollutants of potential concern. These may be mediated through inhalation, ingestion, or physical contact.
Food, Nutrition, and Subsistence Activity	This category includes health outcomes and determinants related to food security, dietary choices, and the consumption of subsistence foods. The key health outcomes considered are nutrient levels, malnutrition or improvements in nutrient intake, and the subsequent increases or decreases in related diseases. The key determinants include diet composition, food security, and the consumption of subsistence foods.

Health Effects Categories

Health Effects Category	Pathway Description
Infectious Disease	This category includes health outcomes and determinants that result from infectious diseases. The key health outcomes include rates of increase or decrease for a range of infectious diseases, such as sexually transmitted infections (STI), respiratory illness, or skin infections. Important health determinants may include immunization rates, and the presence of infectious disease prevention efforts.
Water and Sanitation	This category includes changes to access, quantity, and quality of water supplies. Key determinants reviewed may include distance to clean water, water fluoridation, indoor plumbing, water treatment facilities, adequate volume of water resources, and the existence of community facilities, such as a washeteria and/or community.
Non-communicable and Chronic Diseases	This category includes health outcomes and determinants related to chronic disease. Important outcomes include increases or decreases in mortality and morbidity rates of cancer, cardiovascular and cerebrovascular diseases, diabetes, respiratory diseases, and mental health disorders. Key determinants for chronic diseases may include smoking rates, rates of alcohol and drug abuse, physical activity levels, presence of recreation centers, as well as cancer screening rates.
Health Services Infrastructure and Capacity	This category considers health outcomes and determinants related to health care access and health care infrastructure. Important outcomes include the increase or decrease in the number of medical evacuations, clinics or hospital visit trends, health expenditures, and medication usage. Health determinants may include distance to health facilities, medevac facilities/aircraft, the presence of community health aides, and the frequency of physician visits to the area.

HECs have been developed to identify the full spectrum of possible health impacts related to a specific project. The HEC approach includes all of the biomedical and social concerns originally developed by key international health and development agencies, i.e., the World Health Organization (WHO) and the World Bank Group. In general, while each HEC may not be relevant for a given project, it is still important to systematically analyze the potential for project related impacts (positive, negative or neutral) by careful consideration of each HEC.

5.0 Summary of relevant MN Health Data by Health Effect Category (HEC)

Health information for Cook, Lake, and St. Louis county Minnesota is readily available and provides a general profile of health in the region of the proposed mine. These data could provide a very preliminary review of baseline health information that is routinely collected for the region. The statistical effect of the population of Duluth on St. Louis county health data should be carefully considered if a more precise analysis of the mine area is conducted. Health data from native American communities should also be included as available.

5.1 Social Determinants of Health:

The specific outcomes and determinants collected for large resource development projects in Alaska include:

Outcomes	Determinants
• Neonatal and infant mortality rates • Percentage of live births • Preterm births • Birth defects, morbidity and mortality • Childhood injury, morbidity and mortality • Rate of substance use during pregnancy • Rates of second hand smoke exposure • Cases of substantiated child abuse • Mean maternal age • Teen birth rate • Percentage of teens engaging in sexual activity • Rate of dental caries among children • Suicide rates • Percent attempting suicide • Cases of depression • Cases of anxiety-related disorders • Rate of substance use/abuse • Rate of heavy drinking • Rate of binge drinking • Cases of substantiated domestic violence • Prevalence of intimate partner violence • Life expectancy at birth • Mortality rate	• Population trends • Per capita income • Mean household income • Employment trends • Unemployment rate • Percent living below federal poverty level • Diversity of economic base • Income sources • Cost of living indicators • Average monthly cost of home/apartment • Educational status • School dropout rates • Household size • Primary cultural group • Primary language spoken • Divorce rate • Percent of households participating in subsistence activities • Percent of residents with health care coverage • Initiation of prenatal care • Adequacy of prenatal care

The State of Minnesota reports several outcomes and health determinants that belong to the category Social Determinants of Health. Median household income is lower in all three counties when compared to the state at large and there are more children and adults living in poverty in these areas, especially in St. Louis County. These counties have older housing units than the state average, especially in St. Louis and Lake Counties. Children are frequently tested for lead levels and few worrisome results are reported. Routinely reported measures of maternal and child health are either the same as the state averages or below state averages for this area.

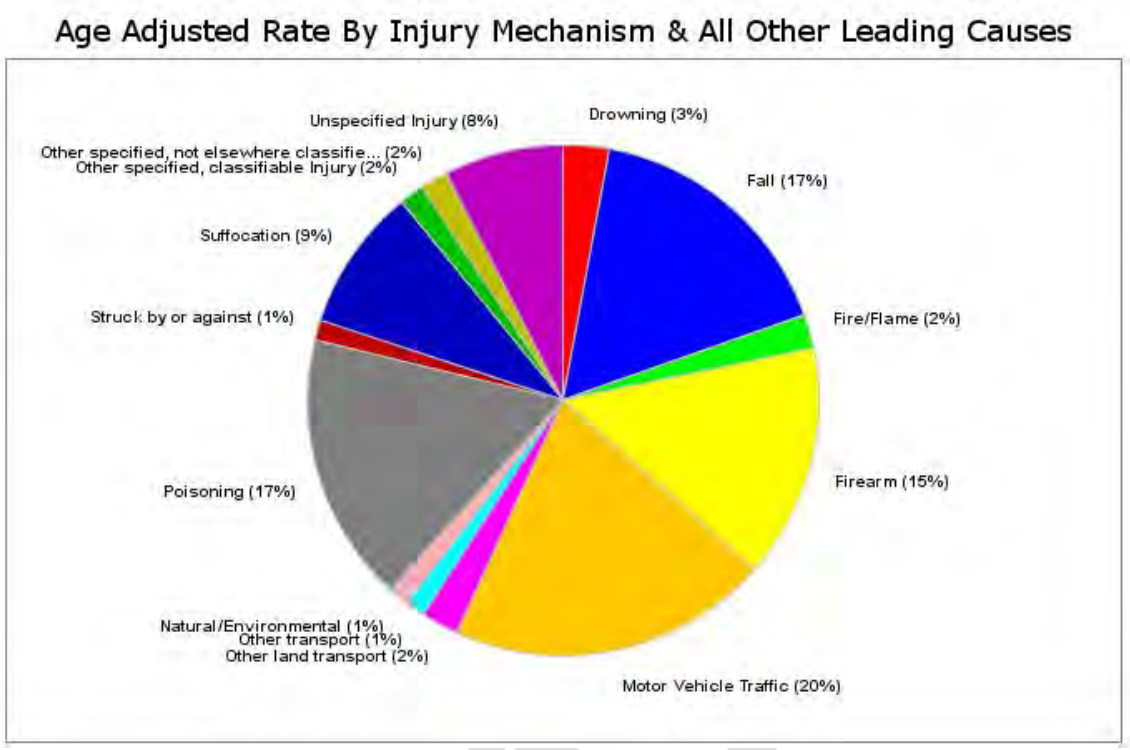
		County			
	Notes	**St. Louis**	**Lake**	**Cook**	**Minnesota**
Population Characteristics					
Median household income		$44,475.00	$48,683.00	$44,278.00	$56,944
Children without health insurance	Under age 19	6.4	6.7	10.9	6.4
Adults without health insurance	Age 18-64	11.3	11.3	14	11.7
People without health insurance	Under age 65	10.1	10.1	13.3	10.2
Children in poverty	Under age 18	21.3	17	16.6	15.3
People in poverty		17.5	10.5	10.9	11.8
Children tested for lead (2009)	Age 3 and under	94	99.1	59.2	81.3
Children with elevated blood lead levels (2009)	>= 10 micrograms/dL	0.2	0	0	0.32
Children with elevated blood lead levels (2009)	>= 15 micrograms/dL	0	0	0	0
Housing built pre-1950 (2009)		38	25	17	23
Housing built pre-1979 (2009)		76	75	50	59
Childhood immunizations		No Data	62.4	68.3	62.9
Reproductive & birth outcomes					
Infant mortality 2007-2011	Per 1000 live births	4.5	0.0	0	5
Low birth weight (%) 2007-2011	Less than 5 lbs. 8 oz.	1.5%	1.3%	0	1.8%
Premature births 2007-2011	Less than 37 weeks gestation	7.9%	1.1 (UR)%	5.6%	7.1%

5.2 Accidents and Injuries:

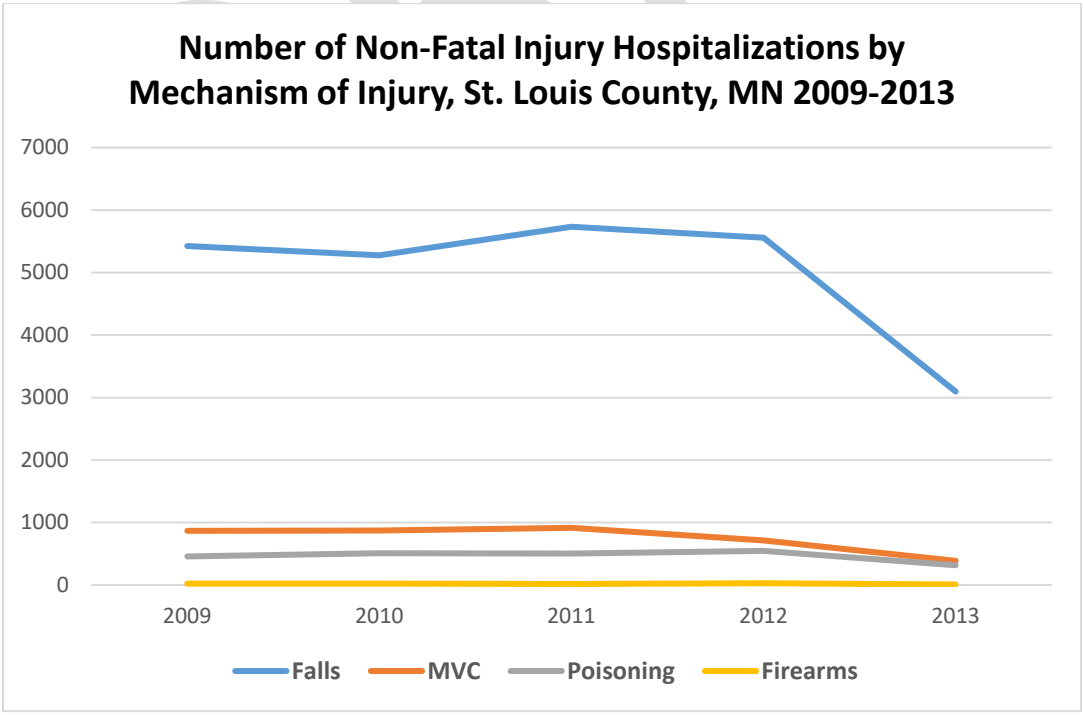
The State of Alaska collects and reports the following outcomes and determinants for the category of Accidents and Injuries:

Outcomes	**Determinants**
• Unintentional fatal injury rates o Total o % involving alcohol o Age/gender distribution o Seasonal distribution o Cause (fall, poisoning, etc.) • Unintentional non-fatal injury rates o Total o % involving alcohol o Age/gender distribution o Seasonal distribution o Cause (fall, poisoning, etc.) • Intentional fatal injury rates o Homicide o Suicide o % involving alcohol • Intentional non-fatal injury rates o Attempted Homicide o Attempted Suicide o % involving alcohol	• Community alcohol policies • Presence of law enforcement • Presence of community public safety program • Anticipated changes in traffic • Time to emergency services

The most common causes of injury fatalities in this region are falls, motor vehicle crashes, poisoning (usually alcohol or prescription drugs), or firearm deaths. These trends also exist in non-fatal injuries that require a visit to the ED or hospitalization. Of these injury mechanisms, motor vehicle crashes are the most likely to have a nexus with a large mining project via the transportation of materials and workers as well as increases in commuter traffic. Increased rates of alcohol use that often accompany workforce influx could also exacerbate these problems.



Source: CDC Wonder **(**http://wonder.cdc.gov)



Source: MIDAS (http://www.health.state.mn.us/injury/midas)

5.3 Exposure to Hazardous Materials

The State of Alaska collects and reports the following outcomes and determinants for the category of Exposure to Hazardous Materials:

Outcomes	Indicators
• Morbidity and mortality from physical hazards (i.e. radiation, noise, light) • Morbidity and mortality from materials hazards (existing air, water, and soil hazards) • Morbidity and mortality from project-specific hazards (dependent on project type, i.e. coal dust for a coal mining project)	• Human bio-monitoring data • Subsistence food contaminant levels • Water quality monitoring data • Drinking water quality data • Air quality monitoring/modeling data • Soil quality/contamination data • Presence of public water systems • Existing contaminated sites

County profile data for the area of the proposed project reveal few days of poor air quality from particulate matter and low levels of water contamination by naturally occurring toxicants such as arsenic. Private well testing is common in these areas. Other contaminants such as mercury, NOX, and naturally occurring silicates and asbestos are reviewed in the EIS, but only for the workforce.

Air quality		St. Louis	Lake	Cook	MN
Ozone-- days above standard	75 ppb	0	0	(ND)	
Fine particle-- average annual concentration	Monitored--in micrograms per cubic meter	5.5	4.9	5.2	Standard is 12
Fine particle-- average annual concentration	Modeled-- in micrograms per cubic meter	9.4	7.6	6.4	Standard is 12
Fine particle-- person-days above standard	County population times days above 35 micrograms per cubic meter	0	0	0	
Fine particle-- percentage of days above standard	Standard: 35 micrograms per cubic meter	0	0	0	
Water quality					
Number of new private wells tested		1122	173	154	

					23036
Private well with arsenic > 2 micrograms/L	New tested wells	40.7	26.6	33.1	46
Private well with arsenic > 10 micrograms/L	New tested wells	3	2.9	9.7	10.4

5.4 Food, Nutrition, and Subsistence

The State of Alaska collects the following outcomes and determinants related to Food, Nutrition, and Subsistence:

Outcomes	Indicators
• Cases of nutritional disorders (scurvy, marasmus, iron deficiency, etc.) • Cases of anemia • Rate of obesity/overweight • Rate of hypercholesterolemia • Child nutrition disorders	• Diet composition (% protein, carbohydrates, etc.) • Folic acid levels in pregnant women • Fruit and vegetable consumption • Sugar sweetened beverage consumption • Wild food harvest (% participating, % consuming) • Quantity/type subsistence resources consumed (% of diet) • Recent changes to harvest • Level of food security • Food costs

There is little readily available information on nutritional status or nutritional surveys for the communities in the region of the mine. Information on food costs are not available for this overview. Subsistence use is addressed in the North Met SDEIS.

There is, however, some information related to nutritional assistance for individuals living in poverty in Cook, Lake, and St. Louis counties. Annual health surveys such as the Bridge to Health also examine nutritional practices in the proposed mine area.

Participation in supplemental nutritional assistance program for people in poverty

	County Size	Rank/Possible Ranks	% Impoverished Paticipating
Cook	**<25,000**	**8/8**	**NA**
Lake	**<25,000**	**8/8**	**NA**
St. Louis	**>100,000**	**8/10**	**59%**

Minnesota also conducts surveys of students that include nutritional behaviors in the Minnesota Student Survey.

5.5 Chronic Non-Infectious Diseases

The State of Alaska collects the following set of outcomes and indicators related to Chronic Non-infectious diseases:

Outcomes	**Determinants**
• Diabetes rates • Cancer deaths by type • Leading causes of cancer death in Alaska Natives • Cancer rates • Most common cancer types • Leading causes of cardiovascular disease mortality • Percentage of residents with high blood pressure • Percentage of residents with high cholesterol • Heart disease mortality rates • Cerebrovascular disease mortality rates • Rate of COPD • Rate of asthma/asthma exacerbations • Cases of mental health disorders	• Percentage obese or overweight • Leisure time physical activity • Physical activity levels • Sugar sweetened beverage consumptions • Television/screen time • Tobacco use • Exposure to second hand smoke • Drug abuse • Cancer screening rates • Preventative health screenings • Percent who have received dental care

There is some indication that the area of the mine has slightly higher rates for some chronic diseases including some types of cancer. When compared to the state at large, emergency room visits and hospitalizations for Chronic lung diseases such as COPD do appear to be more common in St. Louis County as are hospitalizations for heart attack.

St.Louis/Cook/Lake	**County**	**County**	**County**	**Comparison**
	St. Louis	Lake	Cook	Minnesota
Population Characteristics				
Asthma emergency department visit	44	28.3	42.9	39.8
Asthma hospitalization	7.5	4.2 (UR)	4.0 (UR)	6.8
COPD hospitalizations	45.4	20.9	23.2	32.8
Heart attack hospitalizations	34.7	32.6	24.5	27.7

The overall rate of cancers appears elevated in St. Louis County when compared to the state of Minnesota. Some rates for particular types of cancer appear slightly elevated in St. Louis County such as bladder cancer, colorectal cancer, esophageal and pharyngeal cancers, lung and bronchus cancers, mesothelioma, and non-Hodgkin lymphoma. Mesothelioma is pathognomonic for silica/asbestos exposure and is addressed in the SDEIS. Other forms of cancer appear to occur at rates equal to the

state as a whole. This preliminary look at the data is only observational and does not necessarily indicate increased risk.

	County			Comparison
	St. Louis	Lake	Cook	Minnesota
Cancer incidence (per 100000)				
All cancer types combined	488.8	447.4	404	475.1
Bladder	26.7	23.9	20.6	22.6
Brain and other nervous system	6.6	9.8	11.3	6.6
Breast	124.3	83.9	110.6	130.7
Chronic lymphocytic leukemia	6.2	3.2	1.9	6.4
Colorectal	43.8	33.3	40.7	42.8
Esophagus	6.7	4	0	4.9
Kidney	18.1	18.7	5.4	15.8
Larynx	3.4	4.4	5.5	3.1
Leukemia	14.2	4.3	13.9	15.7
Liver and bile duct	4.2	5.3	0	4.9
Lung and bronchus	62	55.1	38.2	56.5
Melanoma	23.1	26	16.8	26.1
Mesothelioma	3.3	1.1	0	1.3
Non-Hodgkin lymphoma	24.8	21.6	32.3	23.2
Oral and pharyngeal	14.5	14.8	11.9	11.8
Pancreas	10.9	16.6	17.1	10.8
Thyroid	11.4	6.1	18.1	11.8

5.6 Infectious and Communicable Diseases

The following outcomes and determinants are commonly reported for natural resource development projects in Alaska:

Outcomes	Determinants
• Cases of tuberculosis • Cases of influenza • Cases of pneumonia • Cases of respiratory syncytial virus (RSV) • Cases of methicillin resistant staph aureus (MRSA) • Cases of diarrheal illnesses • Rates of sexually transmitted infections (STI) • Rates of HIV • Rates of reportable blood-borne infections • Rates of skin infections	• Immunization rates • STI education efforts/practices

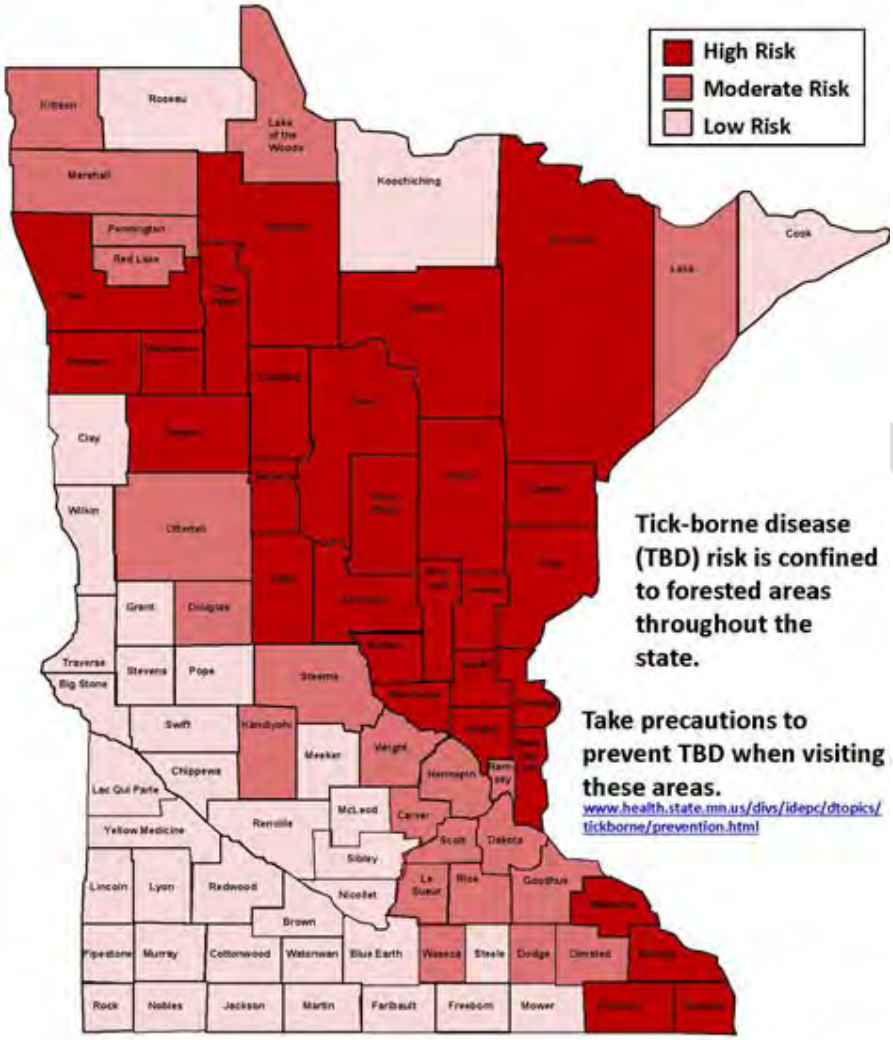
Infectious diseases are reported by region in Minnesota and so data from the northeastern region best represents the area of the proposed project. St. Louis County does have elevated rates of Lyme's Disease, a tick borne illness that is more common in Northern Minnesota. St. Louis County also has elevated rates of Chlamydia, most likely due to the influence of urban centers such as Duluth. Of these two disease groups, a rise in STD transmission is the most likely to have a nexus with the project.

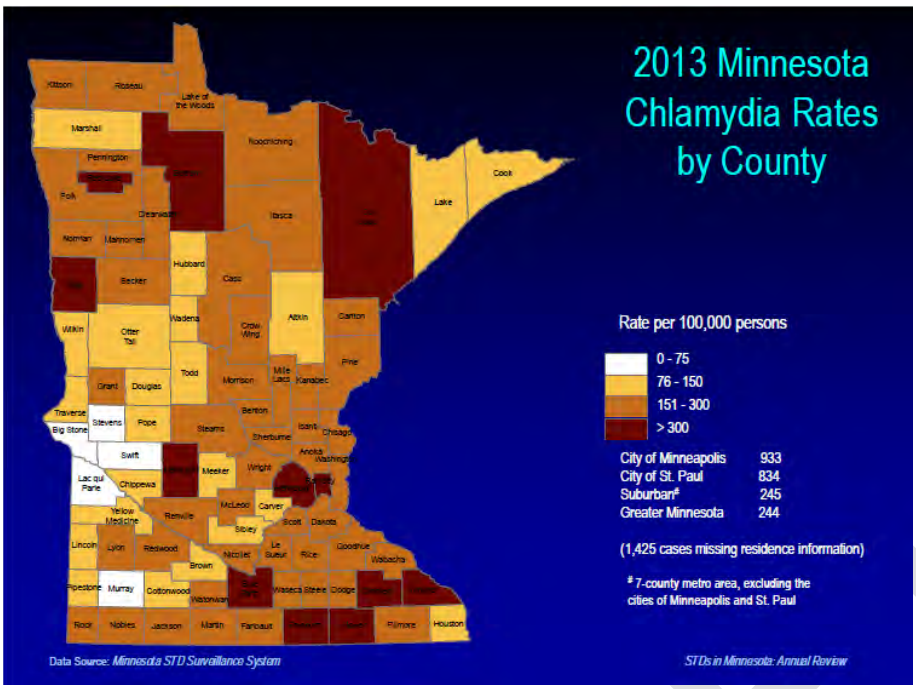
Disease incidence (per 100,000)	Northeastern Minnesota	Comparison Minnesota
Vector Borne Diseases		
West Nile	0.0	1.6
Lyme	86.8	50.4
STDs		
HIV other than AIDS	4.4	9.0
AIDS	6.2	6.3
Chlamydia	573.4	682.4
Gonorrhea	53.1	117.9
Syphilis	4.1	17.3

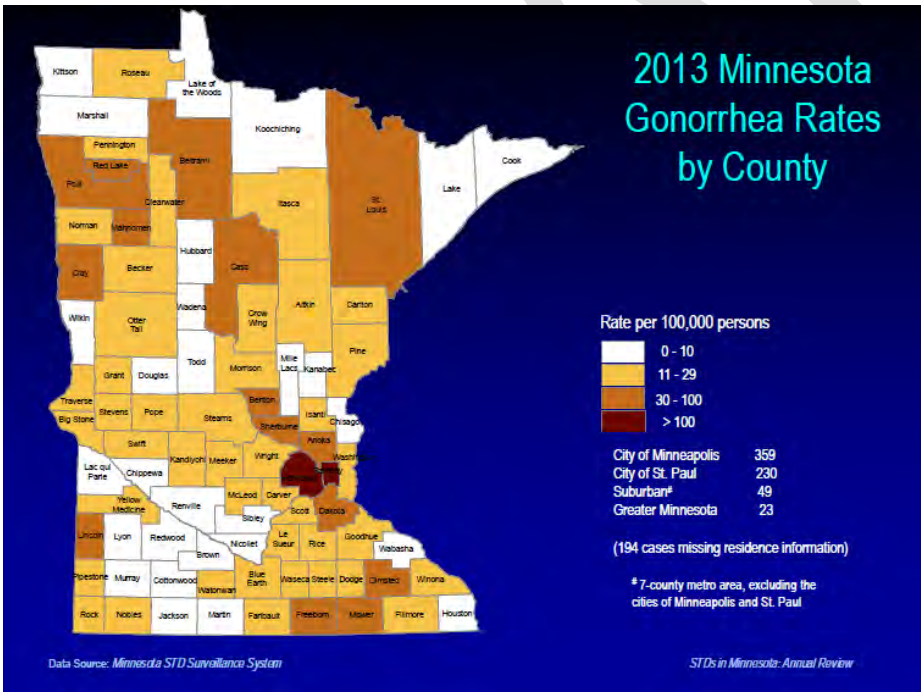
**Northeastern Minnesota includes Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis Counties*

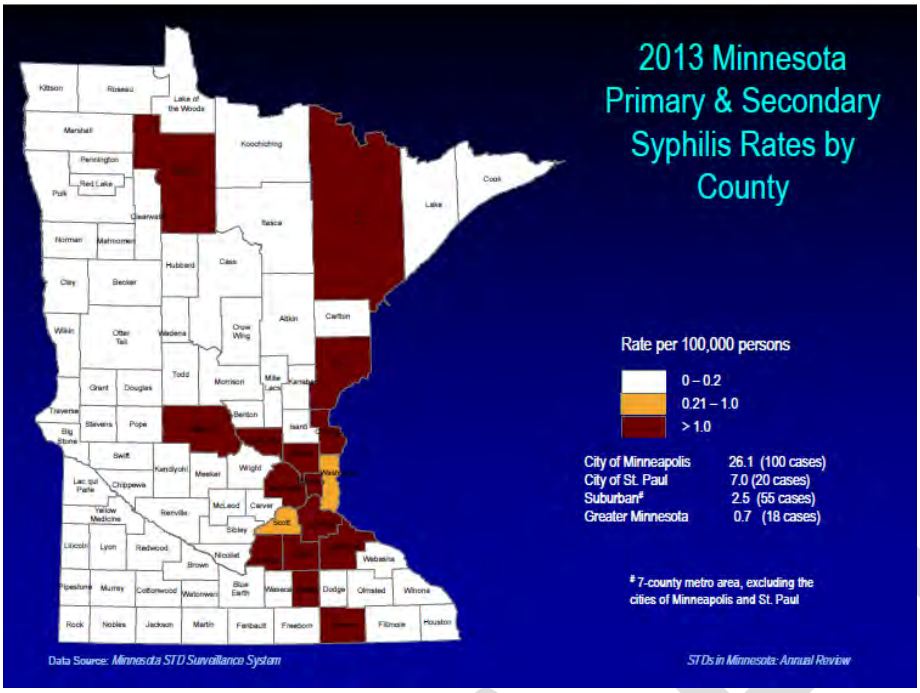
Minnesota Tick-borne Disease Risk*

*Based on average incidence (cases/100,000 population) of Lyme disease and human anaplasmosis cases in Minnesota, 2007-2011




2013 Minnesota Chlamydia Rates by County
Rate per 100,000 persons
0 - 75
76 - 150
151 - 300
> 300
City of Minneapolis 933
City of St. Paul 834
Suburban# 245
Greater Minnesota 244
(1,425 cases missing residence information)
7-county metro area, excluding the cities of Minneapolis and St. Paul
Data Source: Minnesota STD Surveillance System
STDs in Minnesota: Annual Review


2013 Minnesota Gonorrhea Rates by County
Rate per 100,000 persons
0 - 10
11 - 29
30 - 100
> 100
City of Minneapolis 359
City of St. Paul 230
Suburban# 49
Greater Minnesota 23
(194 cases missing residence information)
7-county metro area, excluding the cities of Minneapolis and St. Paul
Data Source: Minnesota STD Surveillance System
STDs in Minnesota: Annual Review


2013 Minnesota Primary & Secondary Syphilis Rates by County
Rate per 100,000 persons
0 – 0.2
0.21 – 1.0
>1.0
City of Minneapolis 26.1 (100 cases)
City of St. Paul 7.0 (20 cases)
Suburban# 2.5 (55 cases)
Greater Minnesota 0.7 (18 cases)
7-county metro area, excluding the cities of Minneapolis and St. Paul
Data Source: Minnesota STD Surveillance System
STDs in Minnesota: Annual Review

5.7 Water and Sanitation

The following outcomes and determinants are frequently reported in Alaska related to Water and Sanitation:

Outcomes	Determinants
• Cases of gastrointestinal disease • Cases of dental reconstruction • Recent changes to water table	• Percent with in-home water service • Water and sewer service rates by regional health corporation • Distance from water sources • Description of water treatment facilities • Fluoridation of water supply • Presence of washeteria

The NorthMet EIS summarizes the condition of public water and sewer facilities throughout the study area. All of the cities evaluated have public water and wastewater systems, with varying degrees of available capacity. Residents and businesses in unincorporated areas typically rely on individual wells and septic systems. Potable water for municipal systems comes from either groundwater or surface water (notably, Duluth obtains its drinking water from Lake Superior). Most of the public water and sewer infrastructure supporting the study area communities was constructed to accommodate larger populations than currently reside in the area (e.g., the 1980 and 1990 populations listed in Table 4.2.10-

1).

Find
sewer
Previous

Table 4.2.10-15 Water and Wastewater Capacity

	Water			Wastewater		
Geography	Capacity (MGD)[1]	Average Demand (MGD)	System Issues/Upgrades	Capacity (MGD)	Average Demand (MGD)	System Issues/Upgrades
Aurora	0.864	0.222	Study underway with Biwabik to identify new water source. Considering building a new facility for both.	0.900	0.200	$7 million upgrade in the last four years.
Babbitt	0.600	0.200	None	0.500	0.200	Consulting firm hired to look into upgrading or rebuilding a new wastewater plant.
Biwabik	0.430	0.128	Study underway with Aurora to identify new water source. Considering building a new facility for both.	0.220	0.160	None
Duluth	40	19	Water tower to go online mid-May 2012 adding 900,000 gallons to the 68 million storage capacity.	100	16	The city is upgrading or replacing two wastewater lift stations each year at an annual cost of $600,000 per year.
Ely	1	0.350	$350,000 rehab work every year.	1.5	0.400	$350,000 rehab work every year.
Hibbing	3.2	2.3	None	4.5	2	Wastewater inflow & infiltration concerns throughout the city; certain neighborhoods have wastewater backups during large rain events.
Hoyt Lakes	1.5	0.307	Minor upgrades to the water plant.	0.650	0.270	Began preliminary engineering for rebuilding wastewater facility.
Soudan/ Tower[2]	0.300	0.0900	Needs new water tower.	0.176	0.13	None
Virginia[3]	5	1.7	None	4.3	2	Starting project to expand wastewater plant and reduce mercury; projected completion 1st quarter 2013.

Source: Northland Connection 2012.

[1] MGD = million gallons per day.
[2] Soudan and Tower share resources
[3] Data reflect current wastewater system. Once wastewater upgrade is complete, capacity will increase to 9.9 mg/d and average demand will go up to 3.1 mg/d.

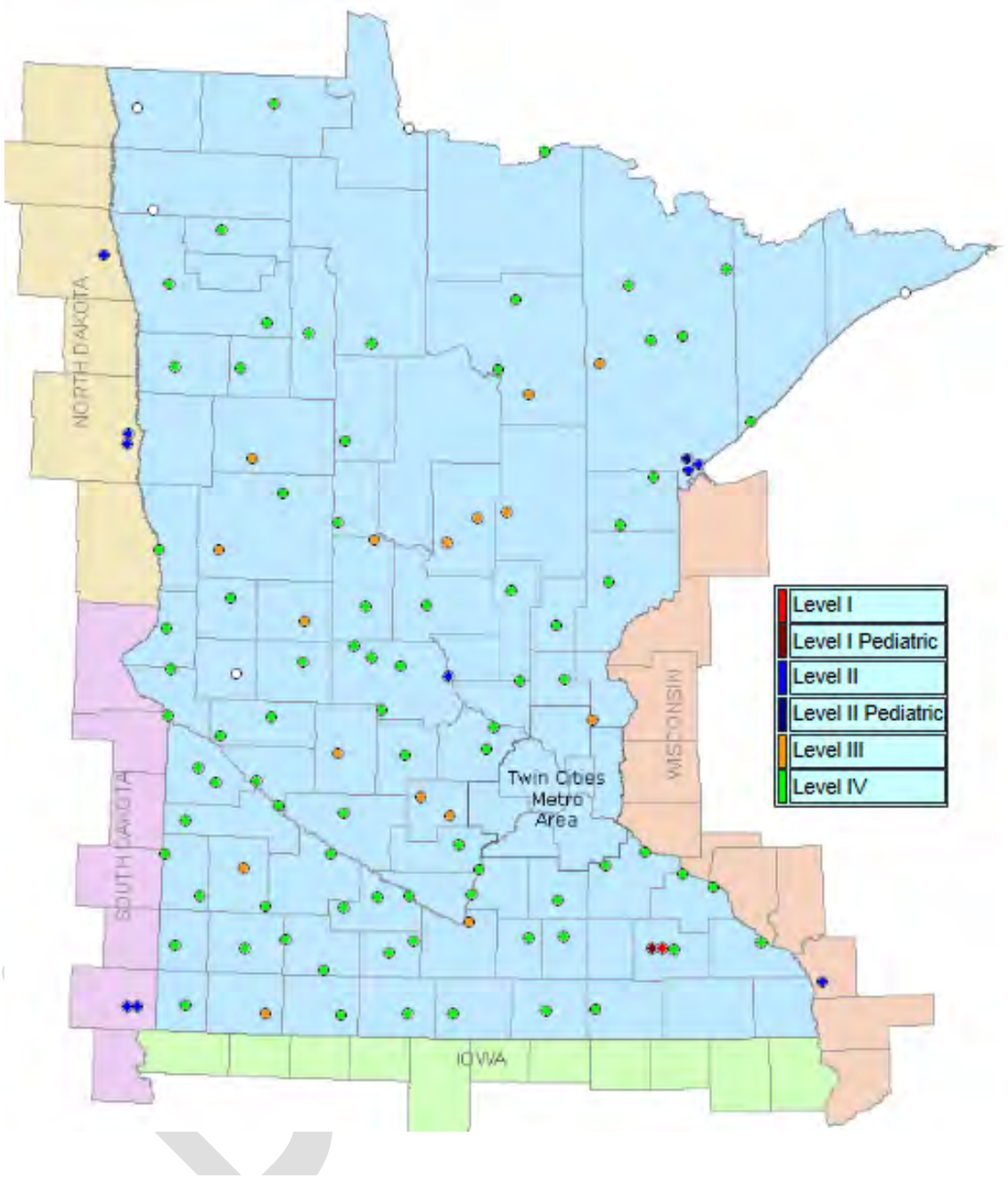
5.8 Access to Health Care

The following outcomes and determinants are reported in Alaska related to health care access:

Outcomes	Determinants
• Top hospital discharges • Top hospital inpatient days • Top hospital outpatient days	• Description of medical system in region • Community health aide program presence • Presence of local clinic/staff • Description of emergency response system • Number of medical evacuations • Mode of travel to advanced medical facilities • Medication uses • Medical expenditures

All three counties are medically underserved areas and the ratio health care providers to the general population is small. Insurance coverage for children and adults in the region is comparable to the averages for MN. Distance to trauma care is also a challenge for this region with the closest level 2 trauma region in Duluth and the closest level 1 trauma centers located in Minneapolis/St. Paul or Rochester, MN, at the Mayo Clinic.

- **Nearest level II trauma center is Duluth. Nearest Level 1 Trauma center is MSP or Rochester (Mayo Clinic)** (http://www.health.state.mn.us/traumasystem/map.html)
-
-
-

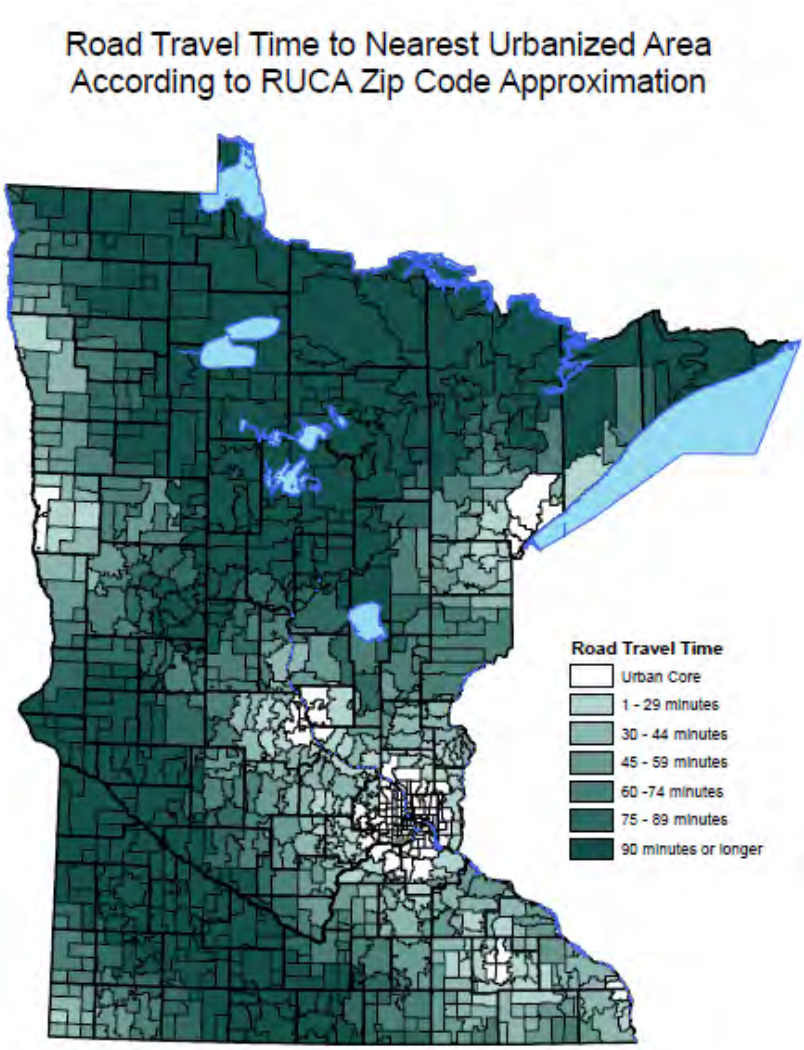

NORTH DAKOTA
SOUTH DAKOTA
WISCONSIN
IOWA
Twin Cities
Metro
Area
Level I
Level I Pediatric
Level II
Level II Pediatric
Level III
Level IV

Cook County and Portions of St. Louis County, including the Hoyt Lakes Region, are designated as MUA and MUP (Ely and surrounding, including Babbitt) (MUA score is between 50-60).

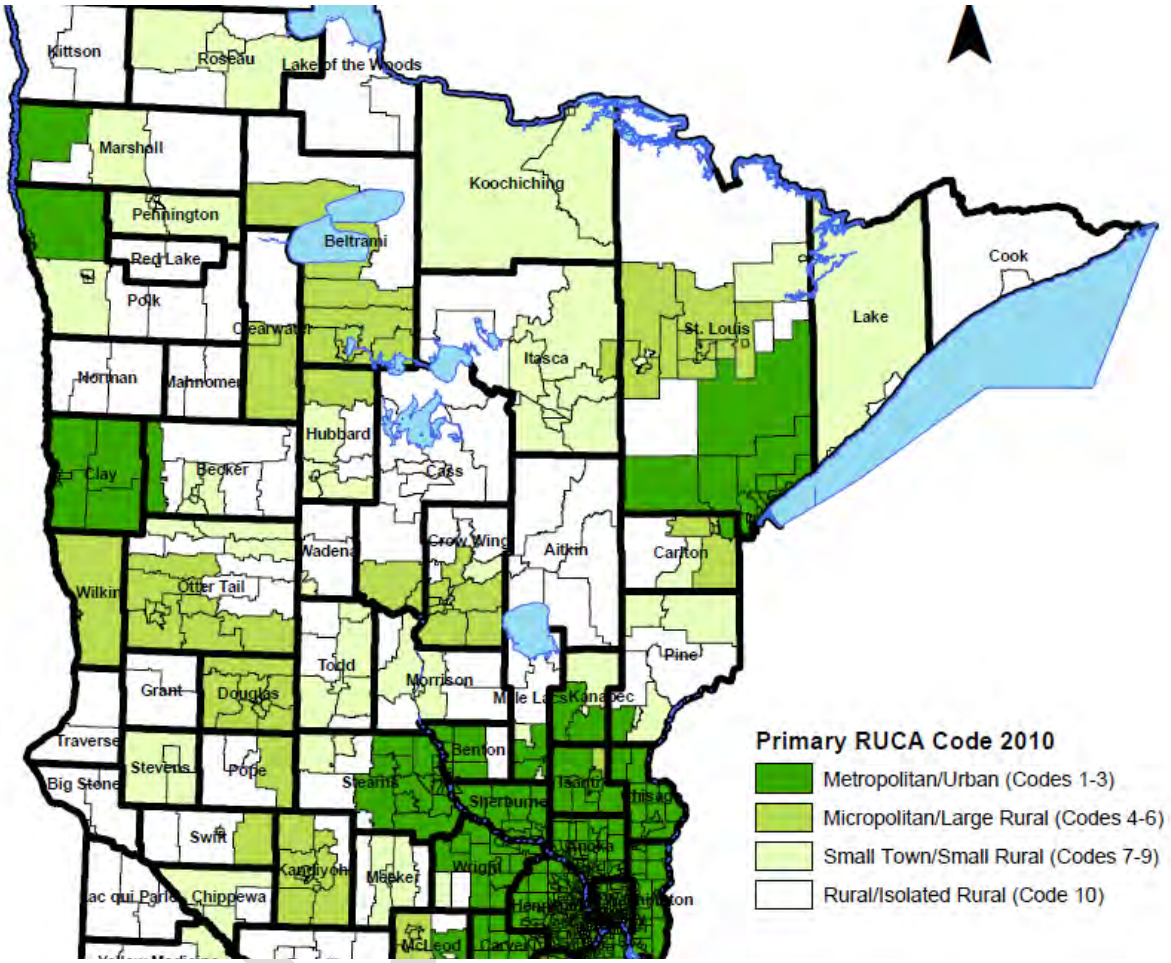
"The IMU scale is from 0 to 100, where 0 represents completely underserved and 100 represents best served or least underserved. Under the established criteria, each service area found to have an IMU of 62.0 or less qualifies for designation as an MUA.

The IMU involves four variables - ratio of primary medical care physicians per 1,000 population, infant mortality rate, percentage of the population with incomes below the poverty level, and percentage of the population age 65 or over. The value of each of these variables for the service area is converted to a weighted value, according to established criteria. The four values are summed to obtain the area's IMU score"(http://www.hrsa.gov/shortage/mua/index.html)\

- **All areas in St. Louis, Cook, and Lake counties are > 60 minutes from nearest urbanized area, many areas >90 minutes.** http://www.health.state.mn.us/divs/orhpc/define.html



Rural and Urban Commuting Areas (RUCA), which provide an alternative method for analyzing health care workforce data by geography. The RUCA categories are based on size of the city or town and the daily commuting of the population to identify urban cores and adjacent territory economically integrated with those cores. Additional information on RUCA is available from the University of Washington's RUCA site



6.0 Key Observations from Human Health Data

In a desktop exercise such as this, a preliminary and high level review of human health data can provide useful information into the environmental review process. In some cases, even a rapid review of health information may reveal challenges or strengths in a region that can be helpful for decision makers. In other cases, health data may reveal a need for further investigation to see if apparent differences in the data have a plausible connection to the proposed project. In nearly all cases, health data allows for decision makers to consider human health in their planning and establishes a baseline for human health status prior to potential project initiation.

6.1 Social Determinants of Health

There are a number of basic observations that arise from a review of data regarding the social determinants of health.

Median Household Income

First, all three counties appear to have median household income levels that fall below the averages for the state as a whole. Median household income is often one of the key links with decreased health status and health outcomes.

Children in Poverty

Second, there appear to be slightly higher numbers of children living in poverty in these three counties relative to the state at large and this can also be associated with decreased future health status for children.

Older Housing Units

Third, a larger percentage of housing units appear to be older housing from before 1950 or 1970. This can indicate an increased safety risk for families from lead based paint and from vulnerability to weather and household hazards. It may also indicate that residents have decreased funds available for new home construction, rental, or purchases in these counties.

Other issues

Immunizations, lead testing, and birth outcomes appear to be the same or better than the state at large. There was no immunization data readily available for St. Louis County at the time of writing.

Potential Benefits

The influx of workers, their families, direct jobs, support jobs and capital expenditures into the region can produce a significant positive change in median household income for these counties if a) hiring programs are predominantly local and b) support services for mining operations are also local. Regional capitalization on these benefits would also depend on some reliable means to capture financial gains in sustainable local infrastructure to ameliorate boom and bust cycle effects. Increases in local income could also provide much needed updates to current housing stock (which is older than the state, in general) through incentives for new home construction or funds provided for renovation of existing homes in the area.

Potential Risks

Influx of a non-resident workforce can produce sharp elevations in housing prices, increases in class sizes at school, the costs of goods and services, and the competition for health care and other services. Individuals in this region, especially children, appear financially disadvantaged relative to the state at large, and it would be difficult for financially challenged individuals to adapt to these events. Adequate workforce housing arrangements that prevent inflation of housing costs in the region could be very protective for financially challenged communities. Man camps or other arrangements have been found effective in preventing housing inflation and a host of other problems associated with rapid worker influx.

6.2 Accidents and Injuries

The leading causes of injury mortality and morbidity in the region come from falls, motor vehicle crashes, and poisoning which typically indicates self-induced overdose with alcohol or drugs, often prescription medications. There are several potential ways that a large project can create an impact in this health effect category.

Falls

Falls are the leading cause accidental injury in the nation and are generally predominant in older individuals and commonly occur in the home. A nexus between falls and the project is unlikely.

Motor Vehicle Crashes

Motor vehicle crashes, however, are already a leading cause of death and injury in the region and there are many unfortunate examples in the U.S. of connections between projects and this injury category, especially during construction. Transportation of workers and materials to and from the mine site can significantly increase traffic volumes, place oversize vehicles on the roadway, and accelerate deterioration of public road surfaces. In addition, workers commuting to and from the mine area on rural roadways when they are fatigued, distracted, or intoxicated can also increase the number of injuries to the general public that occur from motor vehicle crashes related to the project. It is important to note that the plan for the NorthMet project is to move materials by rail using existing rail corridors and this drastically reduces materials transport on roadways during mine operation.

Poisoning

Poisoning from overdose with alcohol or drugs is a complex phenomenon that involves mental health, psychosocial distress, substance availability, and social behavior patterns. It is common for non-resident workforces to bring an increase in behaviors that can exacerbate this problem in local communities. Increased income does not automatically predict increased substance abuuse, but in regions where substance abuse is already a pattern, increased income is more likely to fuel further substance abuse than in regions where substance abuse is less common.

Potential Benefits

Large projects can bring significant benefits to a region in the area of accidents and injuries. Many projects make significant contributions to improve road quality and maintenance to prepare for heavy

usage by workers and in movement of heavy equipment and materials. In addition, the best projects with vigorous workplace safety cultures can often improve roadway safety because their drivers and workers receive rigorous training and daily indoctrination into a culture of safety. This often has ripple effects in the community where the workforce has an interface with the public. Company vehicles and drivers are usually closely monitored and maintained and in the most proactive companies, drivers receive annual certification training.

Large companies often pursue local hire and attract families that can strengthen the social fabric of a town can provide a vitalizing effect for a region. Large projects often have strict alcohol policies, employee health programs, and employee counseling services that reduce the likelihood of substance abuse, untreated mental health conditions, and self-injurious behaviors.

Potential Risks

Large projects can also present significant risks in the area of accidents and injuries. The most important potential negative impacts related to the proposed NorthMet project in this category could be an increase in the number of fatal and non-fatal motor vehicle crashes through increased traffic volumes created by project vehicles and increases in long distance commuting. Deterioration of road surfaces could exacerbate both of these phenomena. Proactive road improvement projects and the provision of shuttle services to workers from population centers are common preparatory activities used by many mining companies and can significantly reduce the possibility that existing injury patterns will be worsened in the region.

Proactive efforts to prepare adequate response systems for the triage and care of injury victims may be appropriate in the region and are discussed under access to health care below.

6.3 Infectious Diseases

Rates for several infectious diseases are already elevated in St. Louis County and some of these may have a nexus with a new mining project in the region.

Sexually Transmitted Infections

Rates for Chlamydia, Gonorrhea, and Syphilis are all elevated in St. Louis County relative to the rest of the state. Virtually all large natural resource development projects must address sexually transmitted infections (STI) in their workforce and this topic often has important impacts in the community as well.

Lyme's Disease

A tick-borne illness, Lyme's disease is elevated in the region of the project, and it suggests an important area of health awareness for new workers to the region and general workplace health and safety.

Potential benefits

Large resource development projects can produce benefits in a region by providing educational materials and courses regarding sexual health among their workers, providing STI screening services, and STI prevention tools such as family planning services, educational materials, condoms, and birth control. Local hire can reduce the need for a migrant workforce and this may be associated with more

stable sexual behaviors and can prevent worsening of existing patterns of STIs such as Chlamydia, Gonorrhea, and Syphilis. Closed "man camps" can, in some cases, provide a safe, alcohol and drug free environment for individuals who are working away from their families and support systems for extended periods. In general, large projects produce the most benefit in a region when they internalize the costs of maintaining a workforce by providing housing, transportation, and support services for displaced workers.

Large projects can benefit a region by joining in efforts to prevent disease through advertising campaigns to their workforce and the surrounding communities. Any educational messaging about how to prevent Lyme's disease while at work and play would be addressing a high profile public health challenge for communities in the region.

Potential Risks

Unmanaged and rapid influx of a non-resident workforce can significantly worsen patterns of sexually transmitted infections in communities surrounding a project. Non-resident workers or workers who are away from their families for prolonged periods often experience isolation, loneliness, irregular and extended shift work, fatigue, boredom when not working, and a host of other factors that render them vulnerable to adverse coping strategies that include risky sexual behaviors, substance abuse, and other socially destructive activities. If unmanaged, the workforce for this project could potentially produce an increase in rates of STI which are already high in this region. A robust program for prevention, screening, and treatment of STI should be a feature of workplace wellness program for the project.

6.4 Health Care Access

The region of the proposed project is rural, and is also a Medically Underserved Area (MUA)/Medically Underserved Population (MUP) with a reduced number of providers. The nearest level 1 trauma centers in Minnesota are located in Minneapolis/St. Paul followed by Rochester. Decreased access to health care services can make it more difficult for a region to sustain an incoming workforce or to cope with acute changes in the health of a population from a new development project.

Potential Benefits

Large projects often bring medical services to underserved areas. While these services are often provided exclusively for workers, community services may also be provided. In addition, the provision of health care professionals or clinics often prevents the local healthcare system from bearing the burden of an incoming workforce. Project resources that are invested into local medical infrastructure can prevent undue strain on the health care system and even develop new capacities in previously under developed areas. Any augmentation of health care services near the project area or in Duluth in an effort to prepare for the care of a workforce would bring significant benefit to the community.

Potential Risks

The influx of a workforce often includes workers and families with medical needs. This can produce an unmanageable strain on clinics as they attempt to care for existing patients and a host of new workers and their families. In addition to increased patient load, a new workforce can also bring a new set of health concerns for themselves and their families. For underserved areas, workforce influx can in some

cases create an unforeseen burden on the health care system and create an overall diminished level of health in the region of the project.

Comment #3

MINNESOTA MILK PRODUCERS ASSOCIATION
PO Box 65 | Brooten, MN 56316
E-Mail: mmpa@mnmilk.org | Web: www.mnmilk.org

October 15, 2024

Dear EQB Board:

Minnesota Milk Producer's Association ("MMPA") would like to raise a few items for your consideration in your next or future board meetings:

1) Water Appropriation Permits not mentioned

We were surprised that the issue of water appropriation permits was not mentioned in any of the comments on the EAW process. The issue we would like to raise is that obtaining water appropriation permits has become a significant challenge for our members seeking to develop feedlots in Minnesota. Farmers, living and working on the land, want an abundant supply of water for their animals and their families. And MMPA agrees that water use in Minnesota needs to be sustainable. However, we are concerned that inconsistent, unpredictable, and extremely lengthy timelines for water appropriation permitting are stopping livestock projects and negatively affecting our industry's growth in Minnesota.

One incremental improvement would be to clarify that RGUs need not wait for the results of a fully completed aquifer pumping test before completing the EAW process. Minn. Stat. 116D.04, subd. 16 requires an assessment of water resources available for appropriation in an EAW but does not require a fully completed aquifer pumping test. Allowing EAWs to move forward with an assessment of available resources rather than waiting for the exhaustive investigation of a pump test would help provide certainty with this element of the project approval process. It would also be consistent with Minn. R. 4410.1700, subp. 7.C., which requires RGUs to consider the mitigation of environmental effects by on-going regulatory authority, such as Minnesota's protective water appropriation permitting process.

2) Comments on the Report on Mandatory Environmental Review Categories

The draft Legislative Assessment Report on Mandatory Environmental Review Categories included in your September 18 board packet (the "Report") made recommendations about two environmental review categories that are important to Minnesota's dairy industry and MMPA members.

a) Fuel conversion facilities

The Report recommends that Minn. R. 4410.4300, Subp. 5 be clarified to include anaerobic digestion facilities. Anaerobic digesters can be used to capture biogas from dairy manure and use it as renewable natural gas. This eliminates greenhouse gas emissions from manure handling and offsets the use of fossil fuels.

MINNESOTA MILK PRODUCERS ASSOCIATION
PO Box 65 | Brooten, MN 56316
E-Mail: mmpa@mnmilk.org | Web: www.mnmilk.org

MMPA believes anaerobic digesters benefit dairy farmers, benefit the environment, and can help Minnesota achieve its renewable energy goals. As noted in the Report, these facilities are already subject to extensive permitting requirements.

With that background, we ask that any EQB recommendations regarding this category avoid adding unnecessary regulatory, approval, or environmental review burdens on the development of anaerobic digesters used in manure handling systems.

The Report confirms that the EAW category for fuel conversion facilities was originally intended to address coal or peat gasification. MMPA would argue that the anaerobic digestion of manure is materially different than coal or peat gasification. Digestion of manure begins and ends with a liquid manure stream that is minimally changed through the digestion process, much less "converted" to a byproduct, as coal or peat would be through the gasification process. Anaerobic digestion of manure simply degrades a portion of volatile organic solids that are suspended in the liquid manure stream—harnessing a natural process—to release, capture, and recover biogas. We believe this should be considered differently than coal or peat gasification plants, and that subjecting manure digesters to environmental review would run counter state and federal policy efforts currently in place to promote renewable energy and greenhouse gas reduction.

b) Animal Feedlots

With respect to the mandatory EAW category for animal feedlots, the Report recommends evaluating possible threshold changes and adding an EIS threshold. MMPA disagrees with any proposal to expand the scope of mandatory EAWs for feedlots, or to add a mandatory EIS category for feedlots. This has already been debated at the legislature in 2024, with ultimately inaction occurring as we believe all parties agreed there is not environmental benefit.

Modern livestock farms look much different today than they did in 1982, when this mandatory category was adopted—they are highly engineered, highly regulated, and highly protective of the environment. The State's general permit does not allow for any discharge of pollutants from a feedlot's production area to surface waters, and it tightly regulates the land application of manure. These permits, along with the State's water appropriation permitting process, effectively mitigate any potential for significant environmental effects from animal feedlots. Indeed, a feedlot EIS has not been completed nor recommended by MPCA staff for over 20 years.

What's more, the State general permit for feedlots is updated every five years, which provides a more-effective opportunity to address any other environmental concerns that might arise with feedlots generally. And any concerns with larger-scale farms could be addressed more effectively through individual permits. The MPCA has already explored individual permits for larger-scale farm proposals, and the MPCA retains the right to order an EIS if it believes that is required. A mandatory EIS category is not necessary.

MINNESOTA MILK PRODUCERS ASSOCIATION
PO Box 65 | Brooten, MN 56316
E-Mail: mmpa@mnmilk.org | Web: www.mnmilk.org

Thank you for your attention to these matters. We are happy to discuss further should you have questions.

Sincerely,

Lucas Sjostrom
Minnesota Milk Executive Director