

1 GLOSSARY

2 **1854 Treaty Authority:** An inter-tribal natural
3 resource management agency that manages the
4 off-reservation hunting, fishing, and gathering
5 rights of the Grand Portage and Bois Forte Bands
6 of the Lake Superior Chippewa in the territory
7 ceded under the Treaty of 1854.

8 **1854 Treaty of La Pointe:** In 1854, the
9 Chippewa of Lake Superior entered into a treaty
10 with the United States whereby the Chippewa
11 ceded to the United States ownership of their
12 lands in northeastern Minnesota. These lands are
13 generally known as the “1854 ceded territory.”
14 Article 11 of the 1854 Treaty provides, “...*And*
15 *such of them as reside in the territory hereby*
16 *ceded, shall have the right to hunt and fish*
17 *therein, until otherwise ordered by the*
18 *President.*” The Chippewa of Lake Superior who
19 reside in the ceded territory are the Fond du Lac,
20 Grand Portage, and Bois Forte Bands.

21 **Acid rock drainage:** Produced by the oxidation
22 of sulfide minerals, chiefly iron pyrite disulfide
23 (FeS₂). This is a natural chemical reaction which
24 can proceed when minerals are exposed to air and
25 water. Acidic drainage is found around the world,
26 as a result of both naturally occurring processes
27 and activities associated with land disturbances,
28 such as highway construction and mining where
29 acid-forming minerals are exposed to air. These
30 acidic conditions can cause metals in geologic
31 materials to dissolve, which can lead to
32 impairment of water quality when acidic and
33 metal-laden discharges enter waters used by
34 terrestrial and aquatic organisms.

35 **Ad valorem tax:** A tax based on the value to real
36 estate or personal property. Municipal ad valorem
37 taxes are also known as “property taxes.”

38 **Adverse effect (for cultural resources):** A
39 significant alteration to the qualifying
40 characteristics of a historic property included in or
41 eligible for inclusion in the National Register.

42 **Adverse effect:** A harmful or undesired effect
43 from the proposed project on the environment.

44 **AERMOD air dispersion model:** The United
45 States Environmental Protection Agency
46 (USEPA)-approved model designed to predict
47 short-range (up to 50 kilometers) dispersion of air

48 pollutant emissions from stationary industrial
49 sources.

50 **Air dispersion model:** A computer program that
51 incorporates a series of mathematical equations
52 used to predict downwind concentrations in the
53 ambient air resulting from emissions of a
54 pollutant. Inputs to a dispersion model include the
55 emission rate; characteristics of the emission
56 release such as stack height, exhaust temperature,
57 and flow rate; and atmospheric dispersion
58 parameters such as wind speed and direction, air
59 temperature, atmospheric stability, and height of
60 the mixed layer.

61 **Airblast overpressure:** A transient air pressure,
62 such as the shock wave from an explosion, that is
63 greater than the surrounding atmospheric
64 pressure.

65 **Ambient air quality:** The quality of the portion
66 of the atmosphere, external to buildings, to which
67 the public has general access.

68 **Ammonium nitrate fuel oil (ANFO):** Primary
69 blasting agent used in open-pit mining; a mixture
70 of solid ammonium nitrate and liquid fuel oil.

71 **Amphibole:** A class of silicate minerals
72 containing iron and magnesium.

73 **Anthropogenic:** Relating to or resulting from the
74 influence of human beings on nature.

75 **Aquatic biota:** Collective term describing the
76 organisms living in or depending on the aquatic
77 environment.

78 **Aquifer:** A subsurface saturated rock unit or
79 formation of sufficient permeability to transmit
80 groundwater and yield usable quantities of water
81 to wells and springs.

82 **Archaeological site:** The physical remains of any
83 area of human activity, generally greater than 50
84 years of age, for which a boundary can be
85 established. Examples of such resources could
86 include domestic/habitation sites, industrial sites,
87 earthworks, mounds, quarries, canals, roads, etc.
88 Under the general definition, a broad range of site
89 types would qualify as archaeological sites
90 without the identification of any artifacts.

91 **Archaic period:** A cultural period circa 9,000 to
92 3,000 years ago, or 7,000 to 1,000 B.C.; its
93 characteristic features included semi-permanent
94 seasonal camps, atlatls and bannerstones, deer
95 hunting, some copper tools, and the first long-
96 distance trade.

97 **Area of Potential Effect (APE):** The geographic
98 region in which a historic or cultural property may
99 be impacted as a result of the construction and
100 operation of the NorthMet Project Proposed
101 Action or alternatives.

102 **Attainment:** Air quality in the locality that meets
103 the established standards.

104 **Autoclave:** A mineral processing pressure vessel
105 for conducting chemical reactions such as sulfide
106 mineral oxidation and leaching of metals.

107 **Batholith:** A large emplacement of igneous
108 intrusive rock that forms from cooled magma
109 deep in the earth's crust.

110 **Bedrock isopach map:** A map of the bedrock
111 thickness within a tabular unit or stratum, usually
112 illustrated with contour lines.

113 **Bedrock outcrop:** A visible exposure of bedrock
114 on the surface of the earth.

115 **Beneficiation:** Crushing and separating ore into
116 valuable substances or waste.

117 **Bentonite:** An absorptive and colloidal clay used
118 especially as a sealing agent or suspending agent.

119 **Best Available Control Technology (BACT):**
120 An emission limitation (including a visible
121 emission standard) based on the maximum degree
122 of reduction for each pollutant subject to
123 regulation under the Clean Air Act that would be
124 emitted from any proposed major stationary
125 source or major modification, taking into account
126 energy, environmental, and economic impacts and
127 other costs.

128 **Best Management Practice (BMP):** The
129 schedule of activities, prohibition of practices,
130 maintenance procedures, and other management
131 practices to avoid or minimize pollution or habitat
132 destruction to the environment. BMPs can also
133 include treatment requirements, operating
134 procedures and practices to control runoff,
135 spillage, or leaks; sludge or waste disposal; or
136 drainage from raw material storage.

137 **Bioaccumulation:** The accumulations of
138 chemicals in the tissue of organisms through any

139 route, including respiration, ingestion, or direct
140 contact with contaminated water or sediments.

141 **Bioassay:** A type of scientific experiment that is
142 typically conducted to measure the effects of a
143 substance on a living organism and is essential in
144 monitoring environmental pollutants.

145 **Biodiversity:** The degree of variation in lifeforms
146 within a given species, ecosystem, or biome. It is
147 a measure of the health of ecosystems.

148 **Biotic community:** A group of interdependent
149 organisms inhabiting the same region and
150 interacting with each other.

151 **Biwabik Iron Formation:** An approximately 1.9-
152 billion-year-old sequence of iron-rich sedimentary
153 rocks that was metamorphosed at its easternmost
154 extent by approximately 1.1-billion-year-old
155 intrusions of the Duluth Complex.

156 **Brownfield site:** Abandoned or underutilized
157 industrial or commercial property available for
158 reuse which may be contaminated by the presence
159 or potential presence of a hazardous substance or
160 pollutant.

161 **Buffer zone:** An area or region distinguished
162 from adjacent parts by a distinctive feature or
163 characteristic.

164 **Calcareous fen:** Rare and distinctive wetlands
165 characterized by a substrate of non-acidic peat and
166 dependent on a constant supply of cold, oxygen-
167 poor groundwater rich in calcium and magnesium
168 bicarbonates.

169 **CALPUFF model:** The USEPA-approved non
170 steady-state puff dispersion model that simulates
171 the effects of time- and space-varying
172 meteorological conditions on pollution long-range
173 transport, transformation, and removal.
174 CALPUFF can be applied in complex terrain
175 conditions.

176 **Class I area:** Under the Clean Air Act, a Class I
177 area is one in which some criteria pollutants,
178 visibility, and other air quality related values
179 (AQRVs) are protected more stringently than
180 under the national ambient air quality standards.
181 Class I areas include national parks, wilderness
182 areas, monuments, and other areas of special
183 national and cultural significance.

184 **Class II area:** Under the Clean Air Act, Class II
185 areas are all areas that have been demonstrated to
186 be in attainment with the federal National
187 Ambient Air Quality Standards that are not

188 designated as Class I areas; modest increments of
189 new pollution would be allowed.

190 **Clean Air Act (CAA):** The Clean Air Act of
191 1970 is a United States federal law intended to
192 control air pollution and protect air quality. The
193 act—which underwent major revisions in 1990
194 and 2003—deals with ambient air pollution (that
195 which is present in the ambient air) as well as
196 source-specific air pollution. The Clean Air Act
197 sets standards for air quality that limit the amount
198 of various pollutants to specified levels. The
199 Clean Air Act also sets deadlines for governments
200 and industries to meet the standards. The federal
201 USEPA is ultimately responsible for establishing
202 national standards and enforcing the Clean Air
203 Act. State and local authorities that have approved
204 plans to control air pollution are given local
205 authority by the USEPA to administer these
206 regulations.

207 **Clean Air Interstate Rule (CAIR):** The USEPA
208 issued the CAIR in March 2005. This rule
209 provides states with a solution to the problem of
210 power plant pollution that drifts from one state to
211 another. The rule uses a cap and trade system to
212 reduce target pollutants—sulfur dioxide (SO₂)
213 and nitrogen oxides (NO_x)—by 70 percent.

214 **Clean Water Act (CWA):** A federal act that
215 establishes the basic structure for regulating
216 discharges of pollutants into the waters of the
217 United States and regulating quality standards for
218 surface waters. The basis of the Act was enacted
219 in 1948 and was called the federal Water
220 Pollution Control Act, but the Act was
221 significantly reorganized and expanded in 1972.
222 “Clean Water Act” became the Act’s common
223 name with amendments in 1972. Under the Clean
224 Water Act, the United States has implemented
225 pollution control programs including industrial
226 wastewater standards and water quality standards
227 for all contaminants in surface waters. The Act
228 has made it unlawful to discharge any pollutant
229 from a point source into navigable waters, unless
230 a permit is obtained.

231 **CWA Section 404 Permit:** Permit that authorizes
232 the discharge of dredged or fill material into
233 waters of the United States, including many
234 wetlands. Responsibility for implementing
235 Section 404 is shared by the United States Army
236 Corps of Engineers (USACE) and USEPA. Permit
237 that regulates the discharge of dredged and fill
238 material into waters of the United States,
239 including wetlands. Responsibility for
240 administering and enforcing Section 404 is shared

241 ~~by the United States Army Corps of Engineers~~
242 ~~(USACE) and USEPA.~~

243 Closure: The process of terminating and
244 completing final steps in reclaiming any specific
245 portion of a mining operation. Closure begins
246 when, as prescribed in the Permit to Mine, there
247 will be no renewed use or activity by the
248 permittee.

249 Coarse tailings: 50% or more of waste
250 byproducts of mineral beneficiating processes
251 other than heap and dump leaching, is retained on
252 a No. 200 sieve and consists of rock particles,
253 which have usually undergone crushing and
254 grinding, from which the profitable mineralization
255 has been separated.

256 **Comprehensive Environmental Response,**
257 **Compensation, and Liability Act (CERCLA):**
258 Commonly known as Superfund, legislation
259 enacted in 1980 which created a tax on the
260 chemical and petroleum industries and provided
261 broad federal authority to respond directly to
262 releases or threatened releases of hazardous
263 substances that may endanger public health or the
264 environment.

265 **Comprehensive Land Use Plan:** A document
266 adopted by local elected officials that establishes
267 policies and guidance for land use, municipal
268 growth, public services, and infrastructure.
269 Comprehensive plans can provide the rationale
270 and legislative basis for local zoning and
271 subdivision ordinances.

272 **Coniferous bog recharge:** The amount of
273 precipitation that maintains and refills coniferous
274 bogs, which are perched wetlands with generally
275 no groundwater connection.

276 **Connected action:** According to Council on
277 Environmental Quality (CEQ) regulations (40
278 CFR Part 1508.25), actions are connected if they
279 automatically trigger other actions which may
280 require environmental impact statements, cannot
281 or will not proceed unless other actions are taken
282 previously or simultaneously, and/or are
283 interdependent parts of a larger action and depend
284 on the larger action for their justification.

285 **Consent decree:** Also referred to as a consent
286 order, this is a final, binding judicial decree or
287 judgment memorializing a voluntary agreement
288 between parties to a suit or dispute in return for
289 withdrawal of a criminal charge or an end to a
290 civil litigation. In a typical consent decree, the
291 defendant has already ceased or agrees to cease

292 the conduct alleged by the plaintiff to be illegal
293 and consents to a court injunction barring the
294 conduct in the future.

295 **Consultation (for cultural resources):** The
296 process of seeking, discussing, and considering
297 the views of other participants, and, where
298 feasible, seeking agreement with them regarding
299 matters arising in the Section 106 process. The
300 Secretary's "Standards and Guidelines for federal
301 Agency Preservation Programs pursuant to the
302 National Historic Preservation Act" provide
303 further guidance on consultation.

304 **Contact period:** Relating to the period of initial
305 interaction between an indigenous people with an
306 outside culture. In the United States, the term
307 refers to an era of initial interaction between
308 Native Americans and Europeans.

309 **Cooperating Agency:** According to CEQ
310 regulations (40 CFR Part 1508.5), "Cooperating
311 Agency" means any federal agency other than a
312 lead agency which has jurisdiction by law or
313 special expertise with respect to any
314 environmental impact involved in a proposal (or a
315 reasonable alternative) for legislation or other
316 major federal action significantly affecting the
317 quality of the human environment.

318 **Council on Environmental Quality (CEQ):** An
319 agency within the Executive Office of the
320 President that established the procedures to
321 implement the National Environmental Policy Act
322 of 1970. Regulations are found in 40 CFR 1500,
323 et seq.

324 **Criteria air pollutant:** Seven common air
325 pollutants for which the USEPA has set primary
326 (may harm human health) or secondary (may
327 affect the environment and/or cause property
328 damage) national air quality standards. These
329 pollutants are: particulate matter less than or equal
330 to 10 microns in size, particulate matter less than
331 or equal to 2.5 microns in size, sulfur dioxide,
332 nitrogen dioxide, carbon monoxide, ozone, and
333 lead.

334 **Cubic feet per second:** The rate of flow
335 representing a volume of 1 cubic foot passing a
336 given point in 1 second.

337 **Cultural resources:** Archaeological, traditional,
338 and built environment resources, including but not
339 necessarily limited to buildings, structures,
340 objects, districts, and sites.

341 **Cumulative effect:** The effects on the
342 environment that would result from the
343 incremental effect of the NorthMet Project
344 Proposed Action when added to other past,
345 present, and reasonably foreseeable future actions,
346 regardless of who undertakes such actions.
347 Cumulative effects can result from individually
348 minor but collectively significant actions taking
349 place over a period of time.

350 **Cutoff trench:** A trench which is below the
351 foundation base line of a dam or other structure
352 and is filled with an impervious material, such as
353 clay or concrete.

354 **Cuyuna Range:** An iron range to the southwest
355 of the Mesabi Range, largely between Brainerd
356 and Aitkin within Crow Wing County, Minnesota.

357 **Density factor:** A pre-determined qualitative
358 value which is then assigned to wild rice stands
359 based on the density of wild rice present.

360 **Detection limit:** The lowest quantity of a material
361 that can be detected from the absence of that
362 material within a stated confidence.

363 **Direct effect (for cultural resources):** A
364 physical alteration to the qualifying characteristics
365 of a historic property included in or eligible for
366 inclusion in the National Register.

367 **Disseminated sulfide:** Deposits of sulfide
368 minerals which are distributed more or less
369 uniformly within the surrounding waste rock.

370 **Dissolved oxygen:** The amount of gaseous
371 oxygen dissolved into an aqueous solution,
372 whether through diffusion from the air, aeration
373 by agitation, or as a waste product of
374 photosynthesis.

375 **Drawdown:** The lowering of the water level
376 relative to a background condition.

377 **Drift:** Material such as sand, clay, gravel, and
378 rocks transported and deposited by a glacier or
379 glacial process.

380 **Drilling log:** A record of events or features of the
381 formations penetrated or encountered during
382 boring. Also known as a boring log.

383 **Duluth Complex:** A mafic intrusive igneous
384 geological formation with quantities of copper,
385 nickel, cobalt, platinum, palladium, and gold. The
386 Duluth Complex lies at the eastern end of the
387 Mesabi Iron Range in northeastern Minnesota.

388 **Ecological land type:** A hierarchical level of the
389 National Hierarchical Framework of Ecological
390 Units and Ecological Classification System that is
391 determined based on differences in vegetation,
392 soils, climate, geology, and/or hydrology.

393 **Effect (for cultural resources):** Alteration to the
394 qualifying characteristics of a historic property
395 included in or eligible for inclusion in the
396 National Register.

397 **Effluent:** An outflow or discharge of a liquid.

398 **Eligible (for cultural resources):** Cultural
399 properties formally determined as such in
400 accordance with the regulations of the Secretary
401 of the Interior and all other properties that meet
402 the National Register criteria.

403 **Emergency Planning and Community Right-
404 to-Know Act (EPCRA):** A federal act enacted in
405 1986 to help communities plan for emergencies
406 involving hazardous substances. It establishes
407 requirements for federal, state, and local
408 governments; Indian tribes; and industry
409 regarding emergency planning and “Community
410 Right-to-Know” reporting on hazardous and toxic
411 chemicals.

412 **Endangered Species:** The classification provided
413 to an animal or plant in danger of extinction
414 within the foreseeable future throughout all or a
415 significant portion of its range as defined in the
416 Endangered Species Act (ESA).

417 **Endangered Species Act:** A federal act enacted
418 in 1973 to provide for the conservation of
419 ecosystems upon which threatened and
420 endangered species of fish, wildlife, and plants
421 depend. The ESA authorizes the determination
422 and listing of species as endangered and
423 threatened, and prohibits unauthorized taking,
424 possession, sale, and transport of endangered
425 species. Section 7 of the ESA requires federal
426 agencies to ensure that any action authorized,
427 funded, or carried out by them is not likely to
428 jeopardize the continued existence of listed
429 species or modify their critical habitats.

430 **Environmental Justice:** The fair treatment and
431 meaningful involvement of all people regardless
432 of race, color, national origin, age, or income with
433 respect to the development, implementation, and
434 enforcement of environmental laws, regulations,
435 and policies. Fair treatment means that no group
436 of people—including racial, ethnic, age or
437 socioeconomic groups—should bear a
438 disproportionate share of the negative
439 environmental consequences resulting from
440 industrial, municipal, and commercial operations
441 or the execution of federal, state, local, and tribal
442 programs and policies. Executive Order 12898
443 directs federal agencies to make achieving
444 environmental justice part of their missions by
445 identifying and addressing disproportionately high
446 and adverse effects of agency programs, policies,
447 and activities on minority and low-income
448 populations.

449 **Ephemeral:** Lasting for a short time or a short-
450 lived organism. An ephemeral waterbody is a
451 wetland, stream, or pond that exists briefly during
452 and following a period of rainfall or snow melt.

453 **Evapotranspiration:** The amount of water
454 removed from a land area by the combination of
455 direct evaporation from the soil and plant
456 transpiration.

457 **Factor of Safety:** Used to describe the ratio of
458 resisting forces to driving forces along a potential
459 failure surface, whereby a Factor of Safety of 1.0
460 represents equilibrium between the estimated
461 resisting shear strength to the applied shearing
462 load. Systems are often designed to a Factor of
463 Safety above 1.0 to allow for unexpected loads,
464 unexpected operating conditions, and variations in
465 estimated material properties.

466 **Fen:** Peat-forming wetlands that receive nutrients
467 from sources other than precipitation—usually
468 from upslope sources through drainage from
469 surrounding mineral soils and from groundwater
470 movement. These systems are often covered by
471 grasses, sedges, rushes, and wildflowers. Over
472 time, peat may build up and separate the fen from
473 its groundwater supply. When this happens, the
474 fen receives fewer nutrients and may become a
475 bog.

476 **Final closure:** The period of time when ore-
477 extracting activities of a mine or ore-production
478 activities of a processing facility cease to
479 continue, and decommissioning and reclamation
480 activities are being completed.

481 **Fine tailings:** More than 50% of waste
482 byproducts of mineral beneficiating processes,
483 other than heap and dump leaching, passes the
484 No. 200 sieve and consists of rock particles,
485 which have usually undergone crushing and
486 grinding, from which the profitable mineralization
487 has been separated. Materials used in the existing
488 LTVSMC Tailings Basin, generally smaller than
489 74 microns in particle size.

490 **Fish assemblage:** The list of fish species that
491 occupy a given area, which is used as a sensitive
492 indicator of overall ecosystem health, habitat
493 degradation, or environmental contamination.

494 **Fish consumption advisory:** Federal, state, or
495 local government guideline restricting the amount
496 of fish consumption when certain species of fish
497 are unsafe to eat due to the presence of harmful
498 chemicals in their tissues.

499 **Floodplain:** The lowland areas adjacent to lakes,
500 wetlands, streams, and rivers that are prone to
501 being inundated by water during flood conditions.

502 **Flotation tailings:** Materials left over after
503 valuable minerals have been separated during a
504 flotation process.

505 **Footwall:** The mass of rock underlying a mineral
506 deposit or the bedrock located beneath a fault
507 plane.

508 **Forb:** A flowering, herbaceous (non-woody)
509 plant other than a grass species.

510 **Fragmentation:** A decrease in the area of
511 contiguous habitat available to wildlife.

512 **Fugitive dust:** Particulate matter composed of
513 soil that is not emitted from a stack, vent, or hood;
514 can include emissions from haul roads, wind
515 erosion or exposed surfaces, and other activities in
516 which soil is removed and redistributed.

517 **GAP land cover:** A hierarchically organized
518 vegetation cover map developed as part of the
519 U.S. Geological Survey's Gap Analysis Program
520 (GAP). Units of analysis are Minnesota
521 Ecological Classification System subsections.

522 **General Land Office (GLO):** The GLO records
523 managed by U.S. Bureau of Land Management
524 are the repository for all Federal land title records
525 issued between 1820 and the present.

526 **Geographic Information System (GIS):** A
527 system designed to store, modify, analyze, or
528 present various types of geographical spatial data.

529 **Geosynthetic membrane cover system:** A
530 process designed to exclude certain waste rock
531 materials from oxidation, and which would
532 include the installation of limestone, overburden,
533 a geomembrane material, cover soil, and a
534 vegetative soil layer.

535 **Geotechnical assessment:** An assessment of the
536 stability of a slope or ground surface under load;
537 used to identify risks or potential hazards of
538 structural failure.

539 **Giants Range:** The Giants Range batholith is a
540 body of granite in northeastern Minnesota that lies
541 between the Mesabi and Vermilion iron-mining
542 districts. It outcrops as a narrow belt that strikes
543 east-northeast and occupies an area of about 1,000
544 square miles. The Giants Range goes from just
545 north of Hibbing (the "Hill of Three Waters" is in
546 the Hull-Rust Mine) to Babbitt and rises from 200
547 to 400 feet above the surrounding area.

548 **Glacial deposit:** A collection of various-sized
549 rocks and debris that is deposited by a glacier as it
550 advances or recedes across a landscape. There are
551 many types of deposits, including till, drift,
552 erratics, and moraines.

553 **Glacial till:** Direct glacial deposits of rocks,
554 gravel, or boulders that are unsorted and
555 unstratified.

556 **GoldSim:** A probabilistic simulation platform for
557 visualizing and simulating many types of
558 physical, financial, or organizational systems.
559 Most GoldSim applications fall into one of three
560 categories: environmental systems modeling,
561 business and economic modeling, or engineered
562 systems modeling.

563 **Greenhouse gas:** Gases that trap heat in the
564 atmosphere. Some greenhouse gases, such as
565 carbon dioxide, occur naturally and are emitted to
566 the atmosphere through natural processes and
567 human activities. The principal greenhouse gases
568 that enter the atmosphere because of human
569 activities are carbon dioxide, methane, nitrous
570 oxide, and fluorinated gases.

571 **Groundwater Containment System:** An active
572 or passive measure (typically, either is
573 engineered) put into place to prevent or
574 significantly reduce the migration of contaminants
575 or groundwater flow, in groundwater or in the
576 groundwater aquifer.

577 **Groundwater divide:** The boundary between two
578 adjacent groundwater basins represented by a high
579 point in the water table.

580 **Groundwater drawdown:** The lowering of the
581 groundwater level (water table) relative to a
582 background condition in a specific aquifer.

583 **Groundwater mound:** The increase or rise in
584 height of a water table due to concentrated
585 recharge in a given area.

586 **Groundwater plume:** The downgradient
587 extension or spread of contaminated groundwater
588 within the pore spaces or fractures of soil or rock.

589 **Groundwater:** The water located beneath the
590 ground surface in soil or rock pore spaces or
591 fractures.

592 **Hardness:** A measure of the amount of minerals
593 that are dissolved in a water source; a higher
594 mineral content indicates harder water, while
595 lower mineral content indicates softer water.

596 **Hazardous air pollutant:** Air pollutants that are
597 not covered by ambient air quality standards, but
598 may present a threat of adverse human health
599 effects or adverse environmental effects, and are
600 specifically listed on the federal list of 189
601 hazardous air pollutants in 40 CFR 61.01 or in
602 section 112(b) of the CAA.

603 **Hazardous material:** Any item or agent
604 (biological, chemical, physical) that has the
605 potential to cause harm to humans, animals, or the
606 environment, either by itself or through
607 interaction with other factors. The term includes
608 hazardous substances, hazardous waste, marine
609 pollutants, and elevated-temperature materials—
610 materials designated as hazardous under the
611 provisions of 49 CFR 172.101. Hazardous
612 material categories include: explosives, gases,
613 flammable liquids, flammable solids, spontaneous
614 combustibles/dangerous when wet, oxidizers and
615 organic peroxides, poisons and infectious
616 substances, and corrosives.

617 **Hazardous waste:** Defined in the *Minnesota*
618 *Statutes* as any refuse, sludge, or other waste
619 material (or combinations of materials) in solid,
620 semi-solid, liquid, or contained gaseous form
621 which, because of its quantity, concentration, or
622 chemical, physical, or infectious characteristics,
623 may cause or significantly contribute to an
624 increase in mortality or an increase in serious
625 irreversible, or incapacitating reversible illness, or
626 pose a substantial present or potential hazard to

627 human health or the environment when
628 improperly treated, stored, transported, disposed
629 of, or otherwise managed.

630 **Hazardous Materials Response Team:**
631 Personnel specially trained to handle dangerous
632 goods, which include materials that are
633 radioactive, flammable, explosive, corrosive,
634 oxidizing, asphyxiating, biohazardous, toxic,
635 pathogenic, or allergenic.

636 **Health risk limits (HRL):** A concentration of a
637 substance or chemical adopted by rule of the
638 Commissioner of Health that is a potential
639 drinking water contaminant because of a systemic
640 or carcinogenic toxicological result from
641 consumption (*Minnesota Statute* 103H.005).

642 **Herbaceous:** Plants with leaves and stems that
643 die down at the end of each growing season, and
644 have no woody or persistent stems above ground.

645 **Herbivore:** An organism that is anatomically and
646 physiologically adapted to survive by consuming
647 only plant-based foods.

648 **Hilsenhoff Biotic Index:** An index of organic
649 pollution that utilizes macroinvertebrate
650 tolerances of pollution to assess water quality in
651 streams and rivers.

652 **Historic property:** Any prehistoric or historic
653 district, site, building, structure, or object included
654 in, or eligible for inclusion in, the National
655 Register of Historic Places maintained by the
656 Secretary of the Interior. This term includes
657 artifacts, records, and remains that are related to
658 and located within such properties. The term
659 includes properties of traditional religious and
660 cultural importance to an Indian tribe or Native
661 Hawaiian organization and that meet the National
662 Register criteria.

663 **Humidity cell: Geochemical kinetic tests**
664 **designed to mimic weathering at the laboratory or**
665 **at bench scale (controlled setting) to obtain bulk**
666 **reaction rates. The test determines the rate of acid**
667 **generation and the variation over time in leachate**
668 **water quality.**

669 **Hydraulic conductivity:** A measure of the ease
670 with which a medium transmits water, such as
671 water moving through pore spaces or fractures in
672 soil or rock.

673 **Hydrograph:** A graph showing the variation of
674 discharge with respect to time, with discharge
675 meaning the volume of water flowing past a

676 specific point versus the time it takes for it to do
677 so, generally cubic feet per second (cfs).

678 **Hydrology:** The science dealing with the origin,
679 distribution, and circulation of waters of the earth
680 such as rainfall, streamflow, infiltration,
681 evaporation, and groundwater storage.

682 **Hydrometallurgical residue:** Waste residues in
683 the form of sludges that contain concentrations of
684 metals as well as sulfur-bearing minerals in
685 crystalline and amorphous form.

686 **Hydrometallurgical:** Pertaining to
687 hydrometallurgy; involving the use of liquid
688 reagents in obtaining metals from their ores.

689 **Igneous rock:** Rock formed from cooling and
690 solidification of magma (molten rock).

691 **Impaired water:** As defined under Section
692 303(d) of the Clean Water Act, waters that are too
693 polluted or degraded to meet the water quality
694 standards set by states, territories, or authorized
695 tribes.

696 **IMPLAN:** Economic modeling software that
697 analyzes how local economies function and the
698 economic consequences for a particular project in
699 a geographic region.

700 **In-advance mitigation:** A form of mitigation that
701 is designed, permitted, and constructed in advance
702 of a permitted impact.

703 **Indirect effect (for cultural resources):** An
704 alteration to the qualifying characteristics of a
705 historic property included in or eligible for
706 inclusion in the National Register that would not
707 be considered a direct effect, which could include
708 effects to a property's use, setting, or feeling, or
709 introduction of incompatible visual, atmospheric,
710 or audible elements.

711 **Infiltration:** The process of water entering the
712 soil at the ground surface and the ensuing
713 movement downward. Infiltration becomes
714 percolation when water has moved below the
715 depth at which it can return to the atmosphere by
716 evaporation or evapotranspiration.

717 **In-kind mitigation:** The replacement of the
718 impacted aquatic site with one of the same
719 hydrologic regime and plant community types
720 (same species composition).

721 **In-place mitigation:** The replacement of the
722 impacted aquatic site will take place in the same
723 watershed as the proposed impacted resource. The

724 USACE St. Paul District Policy uses the term “in-
725 place” to include on site, which is defined as an
726 area located on the same parcel of land as the
727 impact site, or on a parcel of land contiguous to
728 the impact site.

729 **In situ:** This refers to actions happening “in
730 place” or “in position” where they would naturally
731 occur.

732 **Integrity (for cultural resources):** The ability of
733 a property to convey its significance based on its
734 location, design, setting, materials, workmanship,
735 feeling, and association.

736 **Invasive species:** Organisms that cause, or are
737 likely to cause, harm to the economy,
738 environment, or human health due to their
739 tendency to out-compete other species.

740 **Laurentian Divide:** A geological formation that
741 runs along the crest of low, rocky hills and divides
742 the Red River and Rainy River basins from the
743 Minnesota River and Lake Superior basins. The
744 Laurentian Divide is part of the Northern Divide,
745 a continental divide that separates drainages to the
746 Hudson Bay and Arctic Ocean from all other
747 drainages in North America. Streams on the north
748 slope of the divide flow through Canada to
749 Hudson Bay. On the south side of the divide,
750 streams flow south to either Lake Superior and the
751 Atlantic Ocean, or the Mississippi River and the
752 Gulf of Mexico.

753 **Laydown area:** Material and equipment storage
754 area during the construction phase of a project.

755 **L_{dn}:** The day-night average sound level.

756 **Leachate:** Solution of product obtained by
757 leaching, in which a substance is dissolved by the
758 action of a percolating liquid.

759 **Legacy contamination:** Historic or existing
760 pollution.

761 **Location quotient:** The ratio between the local
762 economy and the economy of a reference unit.

763 **Logging slash:** The residue (e.g., treetops and
764 branches) left on the ground after logging.

765 **Long-term closure:** An assessment of the
766 sustainability of the site “post-closure” and
767 defining the need for long-term monitoring and
768 maintenance required by the site (i.e., the
769 “burden” placed on succeeding generations).

770 **Low solubility:** Not easily dissolved in water.

771 **Lynx analysis unit:** Landscape-scale analysis
772 areas used for lynx management.

773 **Macroinvertebrate:** An invertebrate (i.e., animal
774 without vertebrae or backbone) that is large
775 enough to be seen without the use of a
776 microscope. Freshwater benthic
777 macroinvertebrates comprise the following three
778 animal phyla: Athropoda (crustaceans, insects,
779 spiders), Annelida (segmented worms), and
780 Mollusca (mollusks).

781 **Management Area:** The framework that defines
782 intended land and resource uses on national forest
783 lands, including timber harvesting regimes,
784 Recreational Opportunity Spectrum designations,
785 and other similar characteristics.

786 **Management Indicator Habitat (MIH):**
787 Categories of forest types, including dominant
788 species, stand age class, and stand condition.

789 **Maximum Contaminant Level (MCL):** The
790 highest level of a contaminant that is allowed in
791 drinking water under the Safe Drinking Water
792 Act. MCLs are enforceable standards.

793 **Maximum Contaminant Level Goals**
794 **(MCLGs):** The level of a contaminant in drinking
795 water below which there is no known or expected
796 risk to health. MCLGs allow for a margin of
797 safety and are non-enforceable public health
798 goals.

799 **Mercury:** A highly toxic element that is found
800 both naturally and as an introduced contaminant
801 in the environment. Although concentrations in
802 water are very low, mercury accumulates through
803 the aquatic food chain, resulting in high
804 concentrations in fish that can threaten the health
805 of people and wildlife.

806 **Mesabi Iron Range:** A vast deposit of iron ore
807 and the largest of four major iron ranges in the
808 region collectively known as the Iron Range of
809 Minnesota. Discovered in 1866, it is the chief
810 deposit of iron ore in the United States. The
811 Mesabi Iron Range is a belt of iron ore 110 miles
812 long, averaging 1 to 3 miles wide, and reaching a
813 thickness as great as 500 feet. It is located
814 between Grand Rapids and Babbitt, Minnesota.
815 The Mesabi Range was known to the local Ojibwe
816 as *Misaabe-widjiw* which means “Giant’s
817 Mountain” or “Big-Man’s Mountain.”

818 **Mesic prairie:** A plant community dominated by
819 native grasses, with soil moisture content that is
820 between wet and dry.

821 **Mesotrophic:** Refers to a body of water having a
822 moderate amount of dissolved nutrients.

823 **Metamorphic rock:** Rock that has been changed
824 from an original form to a new form due to heat
825 and pressure.

826 **Methylmercury (MeHg):** A form of organic
827 mercury which can accumulate up the food chain
828 in aquatic systems and lead to high concentrations
829 in predatory fish, which, when consumed by
830 humans, can result in an increased risk of adverse
831 effects in highly exposed or sensitive populations.

832 **Mine pit dewatering:** Removal of water from the
833 mine pit(s).

834 **Mineland reclamation:** To reclaim, restore,
835 enhance, or develop areas that have been affected
836 by mining.

837 **Mineral interest:** The ownership rights to
838 exploit, mine, and/or produce any or all of the
839 minerals lying below the surface of a property.

840 **Minerotrophic:** Soils and vegetation whose water
841 supply comes mainly from streams or springs,
842 resulting in high nutrient levels and reduced
843 acidity.

844 **Minnesota Ambient Air Quality Standards**
845 **(MAAQS):** Air quality standards established
846 under authority of *Minnesota Rules 7009* that
847 apply for outdoor air to protect human health and
848 public welfare.

849 **Mitigation measure:** Actions to reduce, avoid, or
850 offset the potential adverse environmental
851 consequences of development activities.

852 **Modeling:** Predicting the probability of an
853 outcome given a set amount of input data.

854 **Monte Carlo simulation:** A computerized
855 mathematical technique that allows people to
856 account for risk in quantitative analysis and
857 decision-making. The simulation furnishes the
858 decision-maker with a range of possible outcomes
859 and the probabilities they will occur for any
860 choice of action.

861 **MODFLOW:** A computer model used to
862 simulate the flow of groundwater through aquifer.

863 **National Ambient Air Quality Standards**
864 **(NAAQS):** Air quality standards established
865 under authority of the Clean Air Act that apply for
866 outdoor air to protect human health and public
867 welfare.

868 **National Environmental Policy Act (NEPA) of**
869 **1970:** Under NEPA, projects and activities that
870 require federal agency approvals or funding must
871 undergo an evaluation of their impacts. The CEQ
872 regulations (40CFR 1500, et seq.) contain the
873 procedures for implementing NEPA.

874 **National Historic Preservation Act (NHPA):**
875 Legislation enacted in 1966 intended to preserve
876 historical and archaeological sites in the United
877 States. Among other things, the Act requires
878 federal agencies to evaluate the impact of all
879 federally funded or permitted projects on historic
880 properties (buildings, archaeological sites, etc.)
881 through a process known as Section 106 Review.
882 The main purpose for the establishment of the
883 Section 106 Review process is to minimize
884 potential harm and damage to historic
885 properties. It allows interested parties an
886 opportunity to comment on the potential impact
887 projects may have on significant archaeological or
888 historic sites. Additionally, the Act established the
889 Advisory Council on Historic Preservation, State
890 Historic Preservation Offices, National Register
891 of Historic Places, and the list of National Historic
892 Landmarks.

893
894 **National Pollutant Discharge Elimination**
895 **System (NPDES) Permits:** Permits issued to
896 regulate wastewater discharges to lakes, streams,
897 wetlands, and other surface waters. In Minnesota,
898 these permits establish specific limits and
899 requirements to protect surface and groundwater
900 quality for a variety of uses, including drinking
901 water, fishing, and recreation. An individual
902 NPDES permit for an industrial facility may cover
903 a number of different waste types and activities,
904 including industrial process wastewater, contact
905 and non-contact cooling water, stormwater,
906 contaminated groundwater pumpouts, water
907 supply treatment backwash, and wastewater
908 treatment sludges.

909 **National Register criteria:** The criteria
910 established by the Secretary of the Interior for use
911 in evaluating the eligibility of properties for
912 inclusion on the National Register (36 CFR part
913 60).

914 **National Register of Historic Places:** The
915 official list of the Nation's historic places worthy
916 of preservation. Authorized by the National
917 Historic Preservation Act of 1966, the National
918 Park Service's National Register of Historic
919 Places is part of a national program to coordinate
920 and support public and private efforts to identify,

921 evaluate, and protect America's historic and
922 archeological resources.

923 **New source performance standard:** Pollution
924 control standards issued by the USEPA and under
925 Section 111 of the Clean Air Act which dictate the
926 level of pollution that a new stationary source
927 (constructed on or after January 30, 2004) may
928 emit.

929 **Noise-sensitive receptors:** Locations or areas
930 where dwelling units or other fixed, developed
931 sites of frequent human use occur.

932 **Non-degradation:** As applied under the Clean
933 Water Act and federal regulations, the term refers
934 to both a policy and a regulatory process for the
935 preservation of existing uses, preventing
936 unnecessary degradation of high water quality,
937 and protecting and maintaining specific
938 waterbodies with outstanding characteristics.

939 **North American Industrial Classification**
940 **System (NAICS):** The standard used by federal
941 statistical agencies in classifying business
942 establishments for the purpose of collecting,
943 analyzing, and publishing statistical data related to
944 the United States business economy.

945 **Oligotrophic:** Lacking in plant nutrients such as
946 phosphates, nitrates, and organic matter, and
947 consequently having few plants and a large
948 amount of dissolved oxygen throughout.

949 **One Hundred Mile Swamp:** A large wetland
950 located between Babbitt and Hoyt Lakes,
951 Minnesota that has been rated high quality due to
952 high watershed integrity, large amount of interior
953 forest, and high-quality lowland coniferous
954 forests.

955 **Open bog:** A carpet of living sphagnum moss
956 growing over a layer of acid peat.

957 **Ore stripping ratio:** Ratio of waste rock to ore.

958 **Ore surge pile:** A temporary ore storage pile
959 located near the Rail Transfer Hopper, which
960 would help maintain a steady delivery of ore to
961 the Processing Plant.

962 **Ore:** A type of rock that contains minerals with
963 important elements including metals that are
964 economically extracted through mining processes.

965 **Outcrop area:** A visible exposure of bedrock or
966 ancient superficial deposits on the surface of the
967 Earth.

968 **Outfall:** The discharge point of a waste stream
969 into a body of water; alternatively, it may be the
970 outlet of a river, drain, or a sewer where it
971 discharges into a lake or other body of water.

972 **Out-of-kind mitigation:** The replacement of an
973 impacted aquatic site with one of a different
974 hydrologic regime and plant community type
975 (different species composition).

976 **Out-of-place mitigation:** The replacement of the
977 impacted aquatic site will take place in a different
978 watershed as the proposed impacted resource.

979 **Outlier:** An observation that is numerically
980 distant from the rest of the data.

981 **Overburden:** Material of any nature,
982 consolidated or unconsolidated, that overlies a
983 deposit of useful materials, ores, or coal,
984 especially those deposits that are mined from the
985 surface by open cuts.

986 **Overstory:** The larger, taller trees which occupy
987 a forest area and shade young trees, hardwoods,
988 brush, and other deciduous varieties that are
989 growing beneath the larger trees (i.e., understory).

990 **Oxidation:** A common chemical reaction
991 involving the combination of a substance such as
992 sulfide minerals with oxygen.

993 **Paleoindian period:** A cultural period circa
994 12,000 to 9,000 years ago, or 10,000 to 7,000
995 B.C.; the earliest North American archaeological
996 epoch, characterized by retreating glaciers,
997 mastodons and other large mammals, and small
998 mobile groups of hunters.

999 **Particulate matter:** Fine liquid or solid particles
1000 such as dust, smoke, mist, fumes, or smog, found
1001 in ambient air or emissions.

1002 **Paste or thickened tailings:** Tailings that have
1003 been significantly dewatered to a point where they
1004 will form a homogeneous nonsegregated mass
1005 when deposited from the end of a pipe.

1006 **Peat deposit:** Deposits of partially decayed
1007 organic material (vegetation) that typically forms
1008 in wetland bog areas.

1009 **Perched:** Contained by an underlying impervious
1010 layer, often used in reference to wetlands.

1011 **Perennial:** Occurring or persisting for more than
1012 2 years, often in reference to plant species.

1013 **Perimeter dam:** Outer constructed embankments
1014 of a tailings basin.

1015 **Permeability:** A measure of the ability of a
1016 material (such as soil or rock) to transmit fluids.

1017 **Permeable reactive barrier:** On-site method for
1018 remediating contaminated water that combines a
1019 passive chemical or biological treatment zone
1020 with subsurface fluid flow management.

1021 **Permit to Mine: Pursuant to MN Rules 6132, a**
1022 **permit to mine means a legal approval issued**
1023 **by the commissioner of the Minnesota**
1024 **Department of Natural Resources to conduct a**
1025 **mining operation. Under WCA provisions,**
1026 **wetlands must not be impacted as part of a project**
1027 **for which a permit to mine is required, except as**
1028 **approved by the commissioner (MN Rules**
1029 **8420.0930).**

1030 **pH:** A measure of relative acidity or alkalinity of
1031 a solution, expressed on a scale from 0 to 14, with
1032 the neutral point at 7. Acid solutions have pH
1033 values lower than 7, and basic (alkaline) solutions
1034 have pH values higher than 7.

1035 **Phase I Environmental Site Assessment (ESA):**
1036 An environmental site assessment and report that
1037 identify potential or existing environmental
1038 contamination liabilities associated with a specific
1039 property.

1040 **Piezometer:** A device that measures the pressure
1041 or level of groundwater at a specific point.

1042 **Point source discharge:** Discharge of wastewater
1043 or other materials at a single location.

1044 **Porosity:** A measure of the void (i.e., “empty”)
1045 spaces in a material.

1046 **Post-closure:** Phase of activities (inspection,
1047 maintenance, and reporting) that occur after the
1048 closure activities are complete.

1049 **Post-contact period:** Relating to the period of
1050 time subsequent to the initial interaction of an
1051 indigenous people with an outside culture. In the
1052 United States, the term refers to an era of
1053 significant European influence for which a written
1054 record exists.

1055 **Precipitation:** Any product of the condensation
1056 of atmospheric water vapor that falls under
1057 gravity. The main forms of precipitation include
1058 drizzle, rain, sleet, snow, and hail.

1059 **Pre-contact period:** Relating to the period of
1060 time before contact of an indigenous people with
1061 an outside culture. In the United States, the term
1062 refers to an era before significant European

1063 influence for which a written record does not
1064 exist.

1065 **Prevention of Significant Deterioration:** A
1066 federal preconstruction permitting program that
1067 applies to areas that are not violating National
1068 Ambient Air Quality Standards.

1069 **Private mineral estate:** The ownership of
1070 mineral rights on land, which allows the owner to
1071 mine or produce any minerals lying below the
1072 surface of the property.

1073 Process water: Any water that, during
1074 manufacturing or processing, comes into direct
1075 contact with or results from the production or use
1076 of any raw material, intermediate product,
1077 finished product, byproduct, or waste product.

1078 **Pumping test:** Conducted to evaluate an aquifer
1079 by “stimulating” the aquifer through constant
1080 pumping, and observing the aquifer’s drawdown
1081 in observation wells. It is a tool that
1082 hydrogeologists use to characterize a system of
1083 aquifers, aquitards, and flow system boundaries.

1084 **Rail Transfer Hopper:** A unit located at the
1085 Mine Site and would consist of a raised platform
1086 from which haul trucks would dump ore into a
1087 hopper over a pan feeder, which would discharge
1088 into a rail car below it.

1089 Reclamation: Activities that successfully
1090 accomplish the requirements of MN
1091 Administrative Rules parts 6132.2000 to
1092 6132.3200. Actions intended to return the land
1093 surface to an equivalent undisturbed condition.
1094 Restoration of mined land to original contour, use,
1095 or condition. Steps or operations integral to
1096 mining that prepare the land for post-mining use
1097 are called reclamation. When the objective of
1098 reclamation is to return the land to pre-mining
1099 conditions and uses, it is sometimes called
1100 restoration.

1101 **Recreation Opportunity Spectrum (ROS):** The
1102 framework expressing the desired range of
1103 recreational activities that will be encouraged and
1104 permitted on national forest lands.

1105 **Remediation:** Actions taken to respond to a
1106 hazardous material release or threat of a release
1107 that could affect human health and/or the
1108 environment.

1109 **Riparian:** Relating to or located on the bank of a
1110 natural watercourse (or a river or stream).

1111 **Rock buttress:** A rock aggregate structure built
1112 against a slope for reinforcement and support.

1113 **Rosgen geomorphic survey:** A four-level
1114 hierarchy survey designed to classify streams
1115 based on quantifiable field measurements to
1116 produce consistent and reproducible descriptions
1117 of stream types and conditions.

1118 Saturated overburden: That material unable to
1119 contain or hold more moisture of any nature,
1120 consolidated or unconsolidated, that overlies a
1121 deposit of useful materials, ores, or coal,
1122 especially those deposits that are mined from the
1123 surface by open cuts.

1124 **Scenic Integrity Objective (SIO):** A statement of
1125 the intended visual conditions of national forest
1126 lands. Scenic Integrity Objectives are part of the
1127 United States Forest Service Scenery
1128 Management System.

1129 **Section 303(d) of the Clean Water Act:** A
1130 portion of the federal act that requires states,
1131 territories, and authorized tribes to develop lists of
1132 impaired waters. These impaired waters do not
1133 meet water quality standards that the regulatory
1134 authorities have set for them, even after point
1135 sources of pollution have installed the minimum
1136 required levels of pollution control technology.
1137 The law requires that these jurisdictions establish
1138 priority rankings for waters on the lists and
1139 develop total maximum daily loads for these
1140 waters.

1141 **Section 404 of the Clean Water Act:** see CWA
1142 Section 404 Permit.

1143 **Section 401 water quality certification:**
1144 According to the Clean Water Act, anyone who
1145 wishes to obtain a federal permit for any activity
1146 that may result in a discharge to navigable waters
1147 of the United States must first obtain a state
1148 Section 401 water quality certification to ensure
1149 that the project will comply with the state water
1150 quality standards. For example, if someone
1151 proposes to discharge dredged or fill material into
1152 waters of the United States, including many
1153 wetlands, they generally must obtain a Section
1154 404 permit from the USACE and, in Minnesota, a
1155 Section 401 water quality certification from the
1156 Minnesota Pollution Control Agency.

1157 ~~For example, if someone proposes to discharge~~
1158 ~~dredged or fill material to navigable waters of the~~
1159 ~~United States, including wetlands, they must~~
1160 ~~obtain a Section 404 permit from the USACE and,~~
1161 ~~in Minnesota, a Section 401 water quality~~

1162 ~~certification from the Minnesota Pollution Control~~
1163 ~~Agency.~~

1164 **Sedge meadow:** An open, groundwater-
1165 influenced, sedge- and grass-dominated wetland
1166 that typically borders streams but is also found on
1167 pond and lake margins and above beaver dams.
1168 Soils are nearly always sapric peat and range from
1169 strongly acid to neutral in pH.

1170 **Sedimentary rock:** Rock formed from
1171 consolidation of loose sediment that has
1172 accumulated in layers.

1173 **Severed mineral interest:** Any whole or partial
1174 interest in any or all minerals underlying land that
1175 has been separated from surface land ownership.

1176 **Significance (for cultural resources):** The
1177 importance of a cultural property for its historical,
1178 architectural, archeological, engineering, or
1179 cultural values based upon the National Register
1180 criteria.

1181 **Significant effect:** An effect that is predicted to
1182 be above an identified threshold and/or an effect
1183 that was determined by the lead agencies to have a
1184 magnitude that is large based on the context and
1185 intensity of that effect.

1186 **Slimes:** The mixture of fine particles derived from
1187 ore, tailings, rock, or clay generally held in
1188 suspension in water as generated during ore
1189 processing.

1190 **Sludge:** A semi-solid residue containing a
1191 mixture of solid waste material and water from air
1192 or water treatment processes.

1193 **Slug test:** A type of aquifer test where water is
1194 quickly added or removed from a groundwater
1195 well to monitor and determine the hydraulic
1196 conductivity of the material in which the well is
1197 located.

1198 **Slurry wall:** An underground reinforced wall in
1199 areas of soft earth or with a high water table
1200 typically made of concrete or bentonite; often
1201 used to restrict flow of groundwater from one area
1202 to another.

1203 **Spigots:** Devices used to discharge tailings for
1204 conventional storage. They are typically located
1205 along the embankment(s) of a facility.

1206 **Spill Prevention Control and Countermeasure**
1207 **(SPCC) Plan:** A written plan that includes
1208 requirements for oil spill prevention,
1209 preparedness, and response to prevent oil

1210 discharges to navigable waters and adjoining
1211 shorelines.

1212 **Standard:** A level of quality or attainment set by
1213 Minnesota water use classifications (Minnesota
1214 Rules 7060, 7050, and 7052), USEPA primary
1215 MCLs (pMCL), USEPA secondary MCLs
1216 (sMCL), and MDH HRLs.

1217 **Standard Industrial Classification (SIC) codes:**
1218 A system for categorizing businesses in the
1219 United States, used by the United States
1220 government from 1937 to 1996. The Standard
1221 Industrial Classification system was replaced by
1222 the North American Industry Classification
1223 System in 1997.

1224 **State Disposal System (SDS) permit:** In
1225 Minnesota, this is a permit that establishes the
1226 terms and conditions that must be met when a
1227 facility discharges wastewater to the ground
1228 surface or subsurface.

1229 **State Historic Preservation Office (SHPO):** The
1230 office and official appointed or designated
1231 pursuant to section 101(b)(1) of the National
1232 Historic Preservation Act to administer the State
1233 Historic Preservation Program or a representative
1234 designated to act for the State Historic
1235 Preservation Officer.

1236 **Stormwater:** According to Minnesota Rules,
1237 Chapter 7090, stormwater is defined as storm
1238 water runoff, snow melt runoff, and surface runoff
1239 and drainage.

1240 **Strahler order:** A stream order system used to
1241 classify stream segments based on the number of
1242 tributaries upstream, with headwater streams
1243 being first-order streams.

1244 **Stream geomorphic monitoring:** The
1245 monitoring of changes in stream geology or
1246 features over time.

1247 **Streamflow:** The flow of water in streams, rivers,
1248 and other channels. A major element of the water
1249 cycle, it is one component of the runoff of water
1250 from the land to waterbodies, with the other
1251 component being surface runoff.

1252 **Structure (for cultural resources):** Any human-
1253 built, aboveground object, which may include, but
1254 is not limited to, a building, bridge, road, railroad,
1255 etc. Although not exclusive, structures are
1256 generally considered to be from contact and post-
1257 contact periods, as opposed to archaeological
1258 sites, which are generally considered to be
1259 associated with the pre-contact period.

1260 **Subaqueous:** Existing or situated under water.

1261 **Subsistence:** The source from which food and
1262 other items necessary to exist are obtained.

1263 **Substrate:** The type of material that rests at the
1264 bottom of a stream, river, lake, etc., which could
1265 include sand, gravel, mud, or boulders.

1266 **Sulfate:** A chemical compound which is a salt of
1267 sulfuric acid, and develops when oxidation of
1268 metal sulfides occurs.

1269 **Sulfide mineral:** A class of minerals containing
1270 sulfides, many of which contain metals.

1271 **Sulfide:** Compounds of sulfur with other metallic
1272 elements.

1273 **Surface right:** The landowner's rights to the
1274 upper boundary (surface) of the land only, which
1275 does not include subsurface rights.

1276 **Surface water divide:** The boundary between
1277 two adjacent surface water basins, often dictated
1278 by land topography.

1279 **Surficial aquifer:** Shallow aquifers typically less
1280 than 50 feet.

1281 **Surficial glacial deposit:** A collection of various
1282 sized rocks and debris deposited by glacial
1283 activity that is left on the earth's surface after the
1284 glacier recedes.

1285 Surficial groundwater: Groundwater in surficial
1286 aquifers, which continuously is unconfined and
1287 moves along the hydraulic gradient from areas of
1288 recharge to streams and other places of discharge.

1289 **Surrogate:** A method to statistically analyze
1290 using modified data.

1291 **Taconite:** A low-grade iron ore, containing about
1292 27 percent ~~silica-iron~~ and 51 percent silica found
1293 as a hard rock formation in the Lake Superior
1294 region.

1295 Tailings: Waste byproducts of mineral
1296 beneficiating processes other than heap and dump
1297 leaching, consisting of rock particles, which have
1298 usually undergone crushing and grinding, from
1299 which the profitable mineralization has been
1300 separated.

1301 **Tailings basin:** Land on which is deposited, by
1302 hydraulic or other means, the material that is
1303 separated from the mineral product in the
1304 beneficiation or treatment of ferrous minerals
1305 including any surrounding dikes constructed to

1306 ~~contain the material. An on-site water filled~~
1307 ~~enclosure that receives discharges of wastewater~~
1308 ~~containing solid residues from processing of~~
1309 ~~minerals. The solid residues settle due to gravity~~
1310 ~~and separate from the water.~~

1311 ~~Tailings: Sandy to silty waste material left over~~
1312 ~~after mineral processes, such as flotation, that~~
1313 ~~separate valuable ore minerals from other~~
1314 ~~minerals.~~

1315 **Take:** To harass, harm, pursue, hunt, shoot,
1316 wound, kill, trap, capture, or collect, or to attempt
1317 to engage in any such conduct, a threatened or
1318 endangered wildlife species. To pick, dig, collect,
1319 or destroy, or to attempt to engage in any such
1320 conduct, a threatened or endangered plant species.

1321 **Threatened Species:** Any species which is likely
1322 to become an endangered species within the
1323 foreseeable future throughout all or a significant
1324 portion of its range as defined in the Endangered
1325 Species Act.

1326 **Till:** See Glacial Till.

1327 **Total maximum daily load (TMDL):** A
1328 calculation of the maximum amount of a pollutant
1329 that a waterbody can receive and still safely meet
1330 water quality standards.

1331 **Toxics Release Inventory (TRI):** A USEPA
1332 maintained database containing data on disposal
1333 or other releases of over 650 toxic chemicals from
1334 thousands of United States facilities and
1335 information about how facilities manage those
1336 chemicals through recycling, energy recovery, and
1337 treatment.

1338 **Traditional Cultural Property (TCP):** A
1339 property that is eligible for inclusion in the
1340 National Register because of its association with
1341 cultural practices or beliefs of a living community
1342 that are rooted in that community's history, and
1343 are important in maintaining the continuing
1344 cultural identity of the community.

1345 **Tribal Historic Preservation Officer (THPO):**
1346 The tribal office or official appointed by the
1347 tribe's chief governing authority or designated by
1348 a tribal ordinance or preservation program who
1349 has assumed the responsibilities of the State
1350 Historic Preservation Officer for purposes of
1351 Section 106 compliance on tribal lands in
1352 accordance with section 101(d)(2) of the Act.

1353 **Trygg:** John William Trygg was a land use
1354 consultant, appraiser of natural resources, and
1355 early surveyor of Minnesota in the 1950s. He

1356 developed a system used to make historical
1357 appraisals on behalf of various Indian tribes in the
1358 Midwest. The Trygg Composite Maps, like the
1359 General Land Office (GLO) maps, depict both
1360 Native American and Euro-American features.

1361 **Unconsolidated deposit:** Sediment not cemented
1362 together; may consist of sand, silt, clay, and
1363 organic material.

1364 **Underdrain:** A drain, installed in porous fill, for
1365 drawing off surface water or water from the soil,
1366 as under the slab of a structure.

1367 **Unique Biological Areas:** This management area
1368 designation by the United States Forest Service is
1369 allocated to areas to preserve features with unique
1370 biological value within the Superior National
1371 Forest.

1372 **United States Forest Service Regional**
1373 **Foresters Sensitive Species (RFSS):** A list
1374 developed by the Regional Forester that identifies
1375 sensitive species. Sensitive species are defined as
1376 “*plant and animal species identified by the*
1377 *Regional Forester for which population viability*
1378 *is a concern as evidenced by: (a) significant*
1379 *current or predicted downward trends in*
1380 *population numbers or density, and/or (b)*
1381 *significant current or predicted downward trends*
1382 *in habitat capability that would reduce a species’*
1383 *existing distribution.”* Sensitive species are
1384 usually designated for an entire region, but
1385 independent “Forest Sensitive” lists are
1386 maintained by some individual National Forests.

1387 **United States Geological Survey (USGS)**
1388 **gaging station:** Facilities used by hydrologists to
1389 automatically monitor streams, wells, lakes,
1390 canals, reservoirs, and or other water bodies.
1391 Instruments at these stations collect information
1392 such as water height, discharge, water chemistry,
1393 and water temperature.

1394 **Unsaturated overburden:** All mineral
1395 overburden, including zones of soil formation,
1396 located above the water table.

1397 **Virginia Formation:** Geological sedimentary
1398 rock formation located ~~beneath~~above the
1399 Mesabi/Biwabik Iron Formation.

1400 **Volatile organic compound:** Organic chemicals
1401 that have a high vapor pressure at ordinary, room-
1402 temperature conditions.

1403 **Voluntary Investigation and Cleanup (VIC)**
1404 **program:** The Minnesota Pollution Control
1405 Agency’s program to allow property transactions

1406 to move forward while promoting redevelopment
1407 of contaminated property and mitigating health or
1408 environmental risks. Program benefits to
1409 communities include new development, jobs, and
1410 an increased tax base in old industrial zones.

1411 **Waste rock:** Rock without economic value that
1412 surrounds ore.

1413 **Wastewater treatment facility:** A facility at
1414 which chemical, biological, or mechanical
1415 procedures are applied to an industrial or
1416 municipal discharge to remove, reduce, or
1417 neutralize contaminants.

1418 Wastewater treatment plant: An industrial
1419 structure designed to remove biological or
1420 chemical waste products from water, thereby
1421 permitting the treated water to be used for other
1422 purposes.

1423 **Water appropriation permit:** A permit from the
1424 Minnesota Department of Natural Resources
1425 required for all users withdrawing more than
1426 10,000 gallons of water per day or 1 million
1427 gallons per year.

1428 **Water clarity:** A measure of how far light
1429 penetrates through water. The deeper light
1430 penetrates, the clearer the water. How far down
1431 light penetrates through water depends on how
1432 many particles are suspended in the water.
1433 Suspended particles reduce water clarity by
1434 absorbing and scattering light.

1435 **Water quality standard:** The foundation of the
1436 water quality-based pollution control program
1437 mandated by the Clean Water Act. Water quality
1438 standards define the goals for a waterbody by
1439 designating its uses, setting criteria to protect
1440 those uses, and establishing provisions such as
1441 antidegradation policies to protect waterbodies
1442 from pollutants.

1443 **Watershed:** A geographic area from which water
1444 is drained by a river and its tributaries to a
1445 common outlet. A ridge or drainage divide
1446 separates a watershed from adjacent watersheds.

1447 **Wetland Conservation Act (WCA):** Minnesota
1448 legislation, codified in *Minnesota Rules*, Part
1449 8420, designed to achieve no net loss in the
1450 quantity, quality, and biological diversity of
1451 existing Minnesota wetlands, by avoiding impacts
1452 to them or restoring and enhancing diminished
1453 wetlands. This program is administered by local
1454 governments with oversight by the Board of
1455 Water and Soil Resources.

1456 **Wetland delineation:** The act of establishing the
1457 boundary between wetlands and uplands (or non-
1458 wetlands) using soils, hydrology, and vegetation
1459 as indicators.

1460 **Wetland:** Those areas that are inundated or
1461 saturated by surface water or groundwater at a
1462 frequency and duration sufficient to support, and
1463 that, under normal circumstances, do support a
1464 prevalence or vegetation typically adapted for life
1465 in saturated soil conditions. Wetlands generally
1466 include swamps, marshes, bogs, and similar areas.

1467 **Wild rice:** A tall aquatic annual grass (*Zizania*
1468 *palustris*) of North America, bearing edible grain
1469 that typically grows in shallow lakes or slow-
1470 moving rivers and streams.

1471 **Woodland period:** A cultural period circa 2,500
1472 to 850 years ago, or 500 B.C. to 1250 A.D.;
1473 characterized by the beginnings of modern tribes,
1474 clay pottery, agriculture, and ceremonial burial
1475 mounds.

1476 **XP SWIMM:** Comprehensive modeling software
1477 for surface water systems.

1478 **Zoning ordinance:** Locally adopted regulations
1479 that divide a town, city, village, or county into
1480 separate districts (e.g., residential, commercial, or
1481 industrial), define the permitted and prohibited
1482 land uses in those districts, and set forth specific
1483 development requirements (such as minimum lot
1484 size, height restrictions, etc).

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