

TACONITE EMPLOYEE COMMUTING

An Examination of Employment Data Provided
by Taconite Mining Companies of the
Mesabi Iron Range

**SOCIO-ECONOMIC SECTION
COPPER-NICKEL PROJECT
MINNESOTA ENVIRONMENTAL
QUALITY COUNCIL**

MARCH 28, 1977

PERSPECTIVE

The socio-economic section is planning to develop a model to forecast population growth and dispersal as a function of copper-nickel development. In the process of developing these models, information is being gathered to validate the assumptions in the model. The following preliminary report is the initial phase of the first of three data gathering efforts which will contribute to the validation of population dispersal.

Further refinement of this report will continue through the delineation of zip code areas, a survey of taconite and construction workers, a survey and analysis of building permit information, and a household survey for the East End of the Iron Range. This report is presented for the perusal of the industrial liaison group as a compilation of the data compiled from the taconite companies.

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Data showing the residence (zip code) of employees was furnished the Copper-Nickel Project by five taconite mining companies in northeastern Minnesota. This data, which indicates the commuting pattern between work place and residence for taconite employees provides an important analogy for predicting the living patterns of future copper-nickel employees. The commuting patterns demonstrated by taconite employees will be viewed in conjunction with a household survey of the East Range area and a survey of current taconite and construction employees to help determine where and when population resulting from copper-nickel development might locate. Of course, an important assumption made in developing a predictive model of this sort is that the patterns exhibited by taconite employees with regard to the work/residence relationship will be reasonably close to the pattern to be expected from copper-nickel employees.

In summary, the data show a commuting pattern for taconite employment which demonstrates much less travel than some preconceived notions had indicated. While there are a number of employees who travel great distances (zip codes from Wisconsin, Duluth, and the old Cuyuna Range in central Minnesota are not uncommon), the great percentage of employees live within 20 miles of the mining operation and, in three of the four examples used, more than half live within 10 miles of the plant.

The data also reflect the dominance of a single mining company in each of the cities. The present experience of Reserve in Silver Bay and Babbitt and Erie's recent reduction of output and employment serve

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ample warning as to what could happen across the East Range. While Babbitt and Hoyt Lakes surely demonstrate the extreme case, reduction on the part of any taconite company could have serious economic ramifications in any of these cities.

Four points need clarification in regard to the data. One, zip codes generally include an area greater than the municipal boundary of the city. Two, the data of only four of the five taconite companies was considered. Three, the data from Erie Mining Company and Reserve Mining Company present problems. Four, only zip code areas which contain at least two percent of total company employment are considered.

Since employment figures are displayed according to zip code, it cannot be interpreted that these employees reside within the city corresponding to that zip code area. In fact, it is expected from locational trends of new residences that a significant portion of each employment number by zip code lives outside the corporate municipal boundaries. However, at this point there is no empiric indication of the magnitude of the percentage of employment living in the rural area and the data will be presented in terms of the city within the zip code area.

For purposes of this disucssion, the data of only four of the companies were considered--U.S. Steel's Minntac Operation (Minntac), Eveleth Taconite Company (Evtac), Erie Mining Company (Erie), and Reserve Mining Company (Reserve). It is felt that the operations of the Hanna Mining Company, located west of Hibbing, have a sphere of

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employment influence significantly to the west of the area likely to feel the impact of copper-nickel (what is referred to as the East Range) and thus may have a commuting pattern which would not be indicative of East Range commuting patterns.

The data from Erie and Reserve pose a problem in that each company has, in fact, two locations, but the data is aggregated to a single operation. Reserve has the Babbitt operation which is of interest here, but the Silver Bay operation was included in the data. However, for purposes of this analysis, it is sufficient to assign all the North Shore employment (zip codes beginning with 556 plus Duluth) to the Silver Bay operation and all the inland employment to the Babbitt operation. For purposes of total employment at Babbitt, 53.4 percent of total Reserve employment (2931 on December 15, 1976) or 1565 was used. This percentage corresponds to that given to the Copper-Nickel Project for employment on November 30, 1976 by Reserve Company officials and also that percentage used in the Reserve EIS prepared for the Minnesota Department of Natural Resources in August, 1975. The Erie Mining Company operates an open pit mine, the Dunka pit, which is considerably north of its main operation. For this discussion, all employment is assigned to the main plant near Hoyt Lakes for sake of simplicity. However, as an aside, from conversations with Erie officials, 75 percent of the 140 employees at the Dunka Pit live in the more northerly cities of Embarrass, Tower, Soudan, Ely, and Babbitt and thus have shorter distances to travel to work than indicated below. This accounts for 35 percent of total Erie employment in these cities.

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Because the concern here is only with the major commuting trends, only those zip code areas which contain at least two percent of total company employment are considered (see Table 1). This includes more than 90 percent of total employment in three cases and 75 percent in the other.

Table 1

Company	Employment in zip code areas with at least 2% of Total Employment	Percent of Company Total	All Others	Percent of Company Total
Erie	2566	92	222	8
Eveleth Tac. Co.	667	90	78	10
Reserve	1419	90	146	10
U.S. Steel	2675	75	870	25
Total(four companies)	7327	85	1316	15

Minntac and Evtac are similar in that both are immediately adjacent to the Virginia-Eveleth-Gilbert urban area, the major population center of the East Range. As well, Reserve and Erie are similar in that they are isolated from this major urban area. Significantly, Minntac and Evtac show surprisingly close figures and Reserve and Erie display characteristics which are similar.

U.S. Steel--Minntac

The data given the Copper-Nickel Project by U.S. Steel's Minntac plant are

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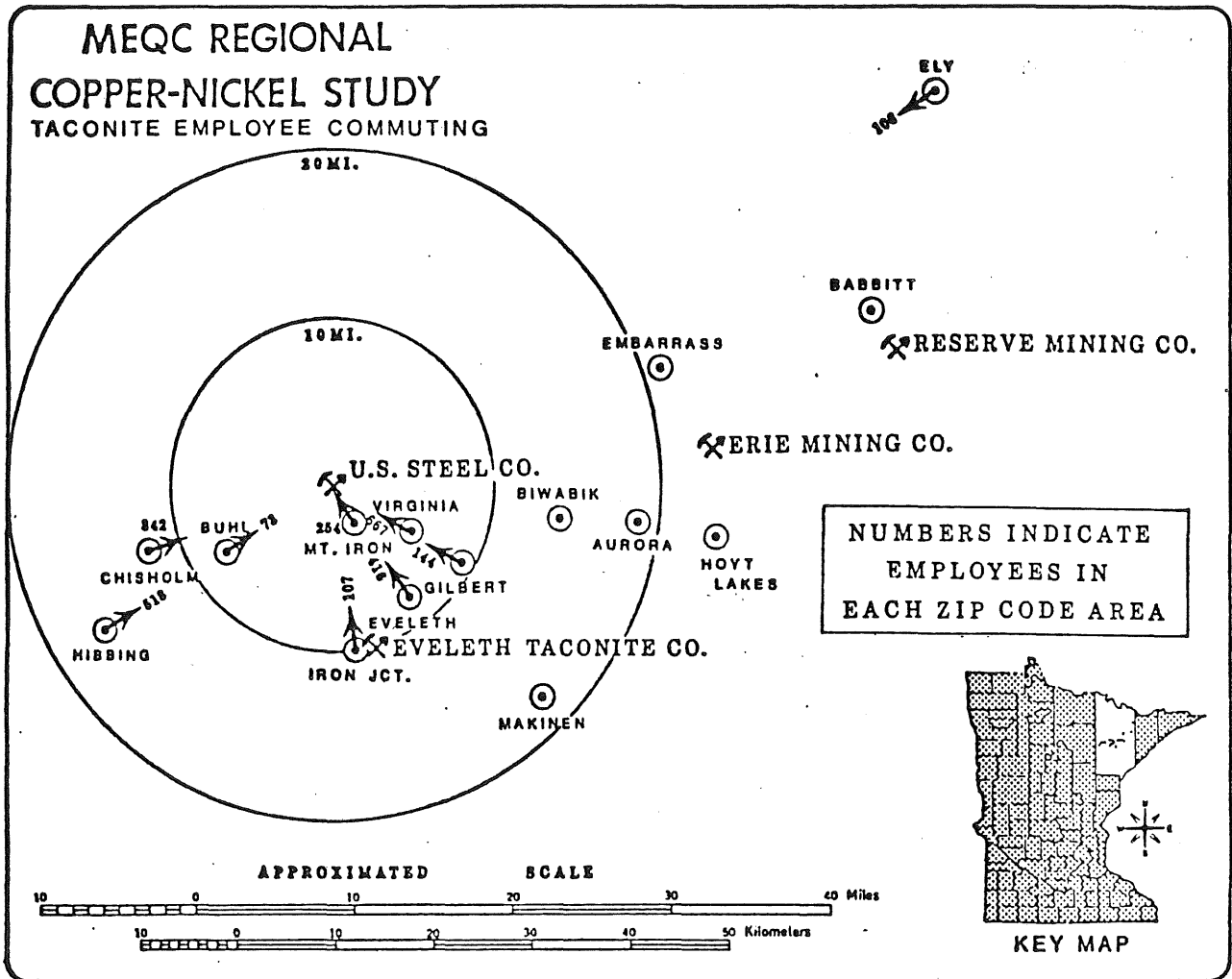
dated November, 1976, and show a total of 3545 employed at the operation, located north of Mountain Iron (see map).

Table 2

MINNTAC EMPLOYMENT BREAKDOWN

	<u>Number</u>	<u>Percentage</u>
Employees in zip code areas within 10 mile radius of plant	1841	52
Employees in zip code areas within 20 mile radius of plant	2984	84
Employees in the Virginia, Eveleth and Gilbert zip code areas	1227	35

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The ten mile radius from the plant includes the zip code areas of Britt, Buhl, Eveleth, Gilbert, Iron Junction, Kinney, Mountain Iron, Parkville, and Virginia.

Eveleth Taconite Company

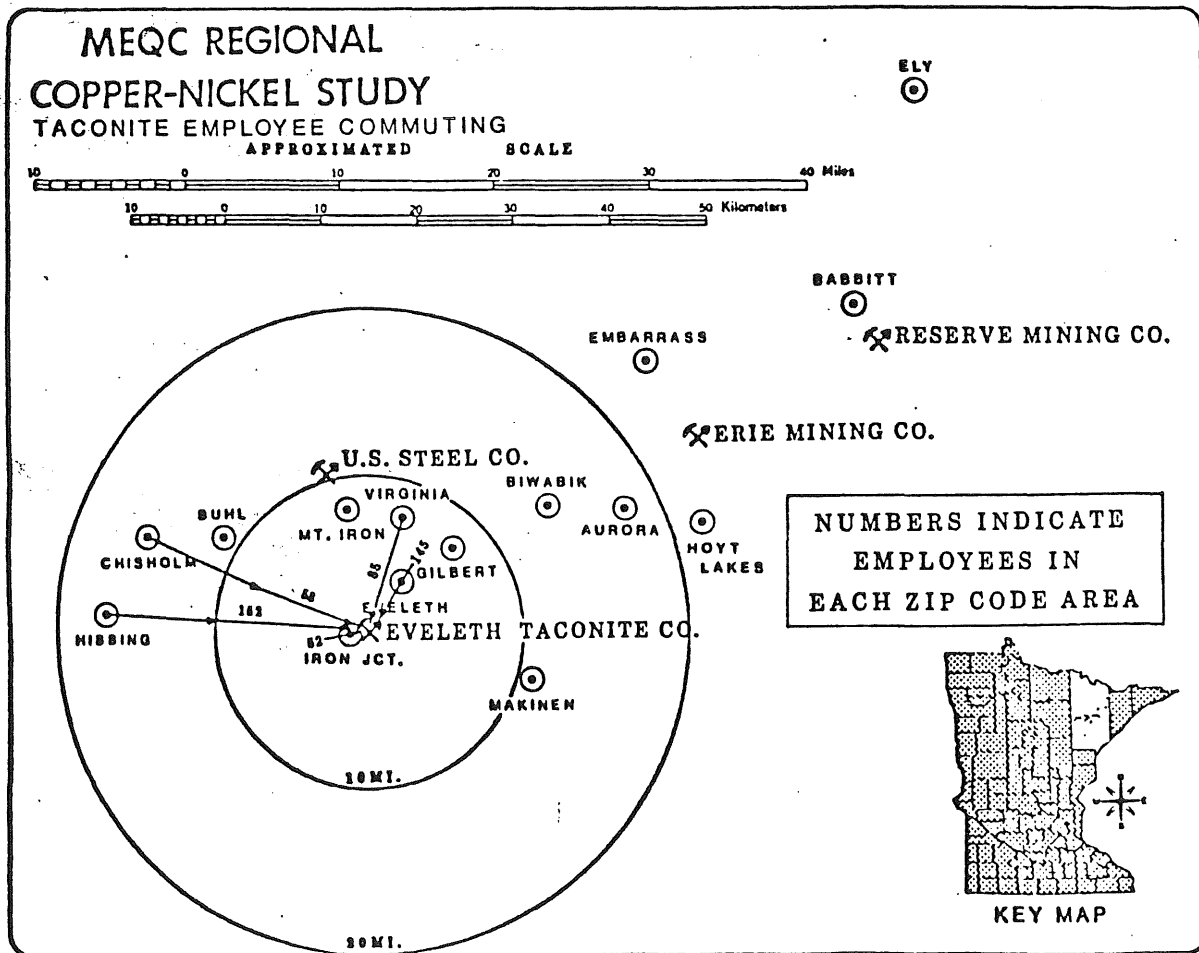
The Oglebay Norton Company was able to provide the Copper-Nickel Project with employment data dated January, 1976, which show a total of 745 employed at the Eveleth Taconite Company, located south of Eveleth near Iron Junction (see map).

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Table 3

EVELETH TACONITE EMPLOYMENT BREAKDOWN

	<u>Number</u>	<u>Percentage</u>
Employees in zip code areas within 10 mile radius of plant	385	52
Employees in zip code areas within 20 mile radius of plant	658	88
Employees in the Virginia, Eveleth and Gilbert zip code areas	252	34



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The ten mile radius from the plant includes the zip code areas of Buhl, Eveleth, Gilbert, Iron Junction, Kinney, Makinen, Mountain Iron, Parkville, Virginia and Zim.

As mentioned above, the similarity between Minntac and Evtac is remarkable. The percentage of employees living within a ten mile radius is identical, those living in the Virginia-Eveleth-Gilbert area is nearly the same, and those within twenty miles is quite close.

Table 4

	<u>Minntac</u>	<u>Evtac</u>
% of employees within 10 mile radius	52	52
% of employees within 20 mile radius	84	88
% of employees within Virginia-Eveleth-Gilbert	35	34

Reserve Mining Company

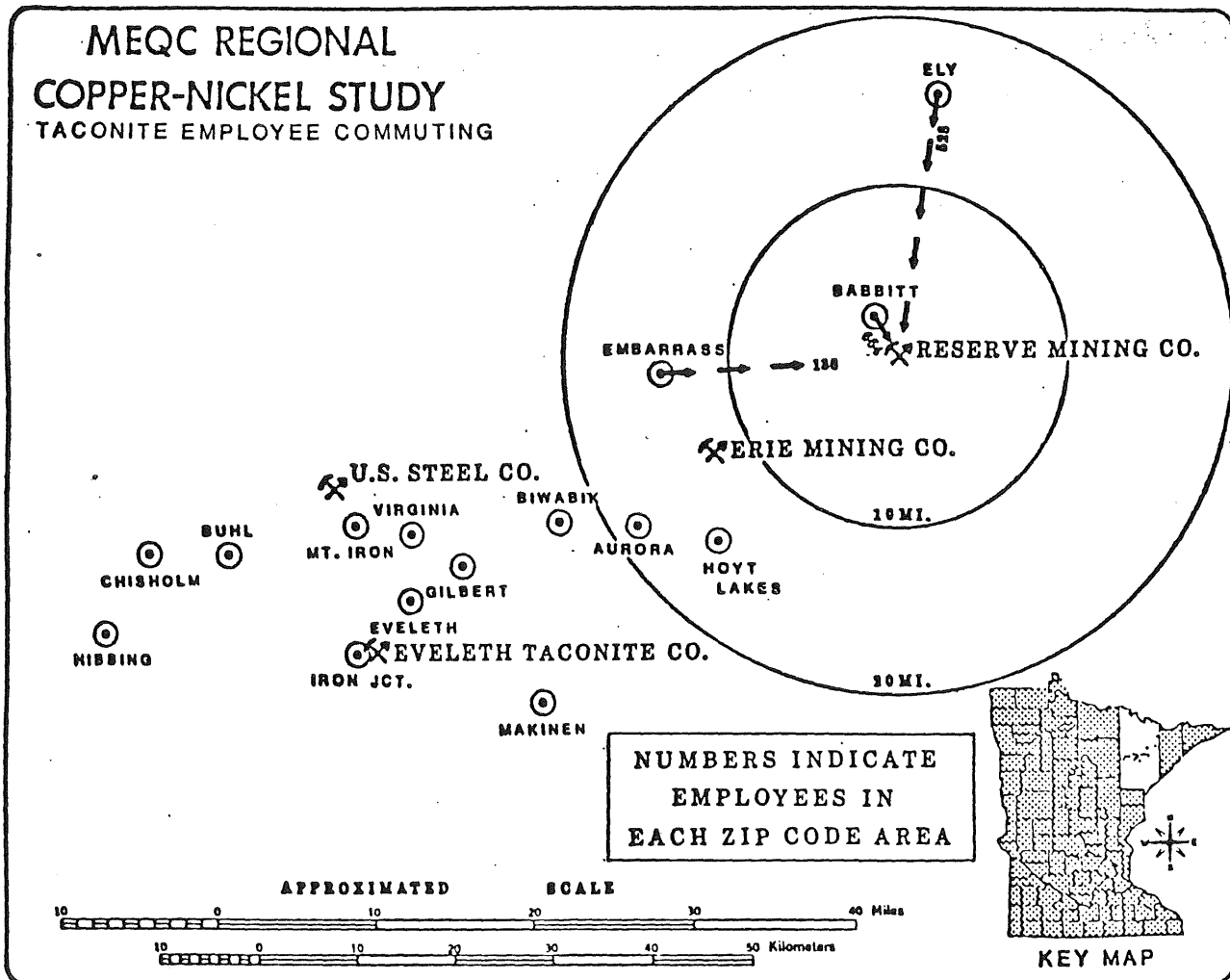
The Copper-Nickel Project received from Reserve Mining Company data which show 2931 employed at their operations. As noted earlier, it is assumed that 53.4 percent of this, or 1565, is at the operation located just south of Babbitt (see map). The data are dated December 15, 1976.

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Table 5

RESERVE EMPLOYMENT BREAKDOWN

	<u>Number</u>	<u>Percentage</u>
Employees in zip code areas within 10 mile radius of plant	664	42
Employees in zip code areas within 20 mile radius of plant	1432	92
Employees in the Virginia, Eveleth and Gilbert zip code areas	37	2



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Babbitt is the only zip code area within a ten mile radius of Reserve's Babbitt operation.

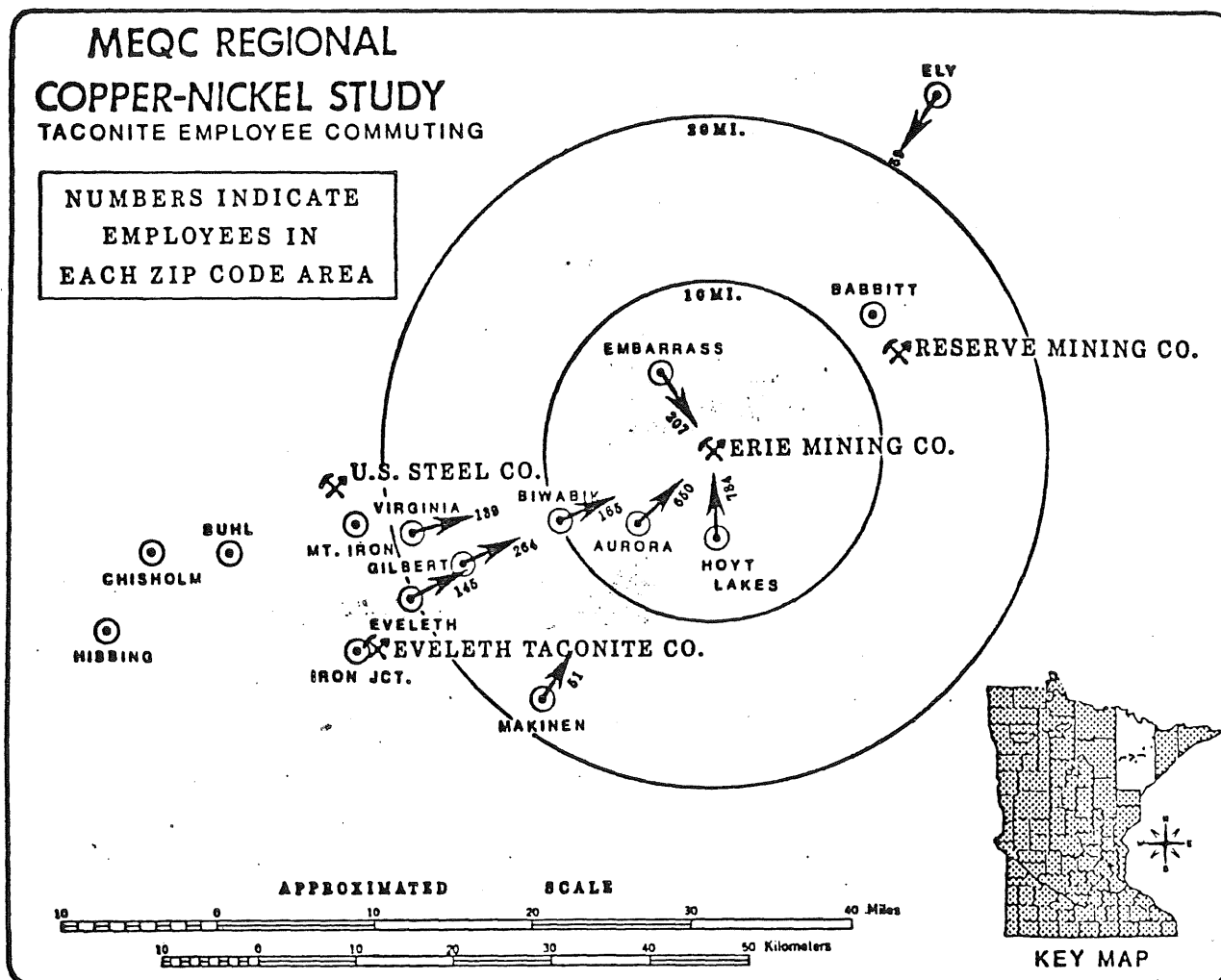
Erie Mining Company

The data given to the Copper-Nickel Project by the Erie Mining Company, dated October 18, 1976, show a total of 2788 employees at their operation located just north of Hoyt Lakes (see map).

Table 6

	<u>Number</u>	<u>Percentage</u>
Employees in zip code areas within 10 mile radius of plant	1806	65
Employees in zip code areas within 20 mile radius of plant	2574	92
Employees in the Virginia, Eveleth and Gilbert zip code areas	548	20

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The ten mile radius from the plant includes the zip code areas of Aurora, Biwabik, Embarrass, and Hoyt Lakes.

In the case of Erie and Reserve, each has an identical percentage of its employees who live within a twenty mile radius of its operation. The other categories vary considerably, due in part to Erie's relative proximity to the Virginia-Eveleth-Gilbert area.

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Table 7

	<u>Erie</u>	<u>Reserve</u>
% of employees within 10 mile radius	65	42
% of employees within 20 mile radius	92	92
% of employees in Virginia-Eveleth-Gilbert	20	2

Data by East Range Community

When the data from the four taconite companies are arranged according to the eight East Range communities which are included in the Copper-Nickel Impact area, a number of interesting features are brought to attention. Notable are the number of zip code areas with about the same number of taconite employees and the number of zip code areas highly dependent upon one mining company for a large share of total taconite employment (see Table 8).

Table 8

	<u>U.S. Steel Minntac</u>	<u>Eveleth Taconite</u>	<u>Reserve Mining</u>	<u>Erie Mining</u>	<u>4 Company Total</u>
Aurora	40 (5)	27 (4)	15 (2)	650 (89)	732 (100)
Babbitt	8 (1)	1 (0)	664 (94)	37 (5)	710 (100)
Biwabik	32 (15)	5 (2)	6 (3)	165 (79)	208 (100)
Ely	106 (15)	1 (0)	528 (76)	59 (9)	694 (100)
Eveleth	416 (58)	145 (20)	10 (1)	145 (20)	716 (100)
Gilbert	144 (33)	22 (5)	7 (2)	264 (60)	437 (100)
Hoyt Lakes	27 (3)	5 (1)	4 (0)	784 (96)	820 (100)
Virginia	667 (73)	85 (11)	20 (1)	139 (15)	911 (100)
TOTAL	3545	745	1565	2788	

Percentage of total in ().

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Distribution of Employment

A striking feature of the data is that six of the eight zip code areas (Gilbert and Biwabik are the exceptions) have total employment from these four taconite operations of about the same magnitude--near the 700 to 900 range. Interestingly, each zip code area has at least one employee from each company. Gilbert and Biwabik may be in that no-man's land between the companies in the Virginia-Eveleth area and those at the extreme eastern end of the Range and thus find themselves at a locational disadvantage in attracting mining employees as residents. Virginia, on the other hand, though only a few miles from Gilbert, finds itself with the greatest number of employees from the four companies. It is evidently the right combination of size and location to attract greater numbers of workers from the two companies in the Virginia-Eveleth area.

Employment Dominance

Each of the eight zip code areas' mining employment is dominated by a single taconite company. At the low end of the scale are Eveleth and Gilbert with 58 percent and 60 percent, respectively, of the four-company total employment from one company. Eveleth is also the only zip code area to have significant (greater than 20 percent) employment from three of the four companies. (Reserve being the exception, due presumably to its distance from the city.)

The other extreme of single-firm dominance is, not unexpectedly, Hoyt Lakes and Babbitt. Hoyt Lakes with 96 percent of its four-company total employed

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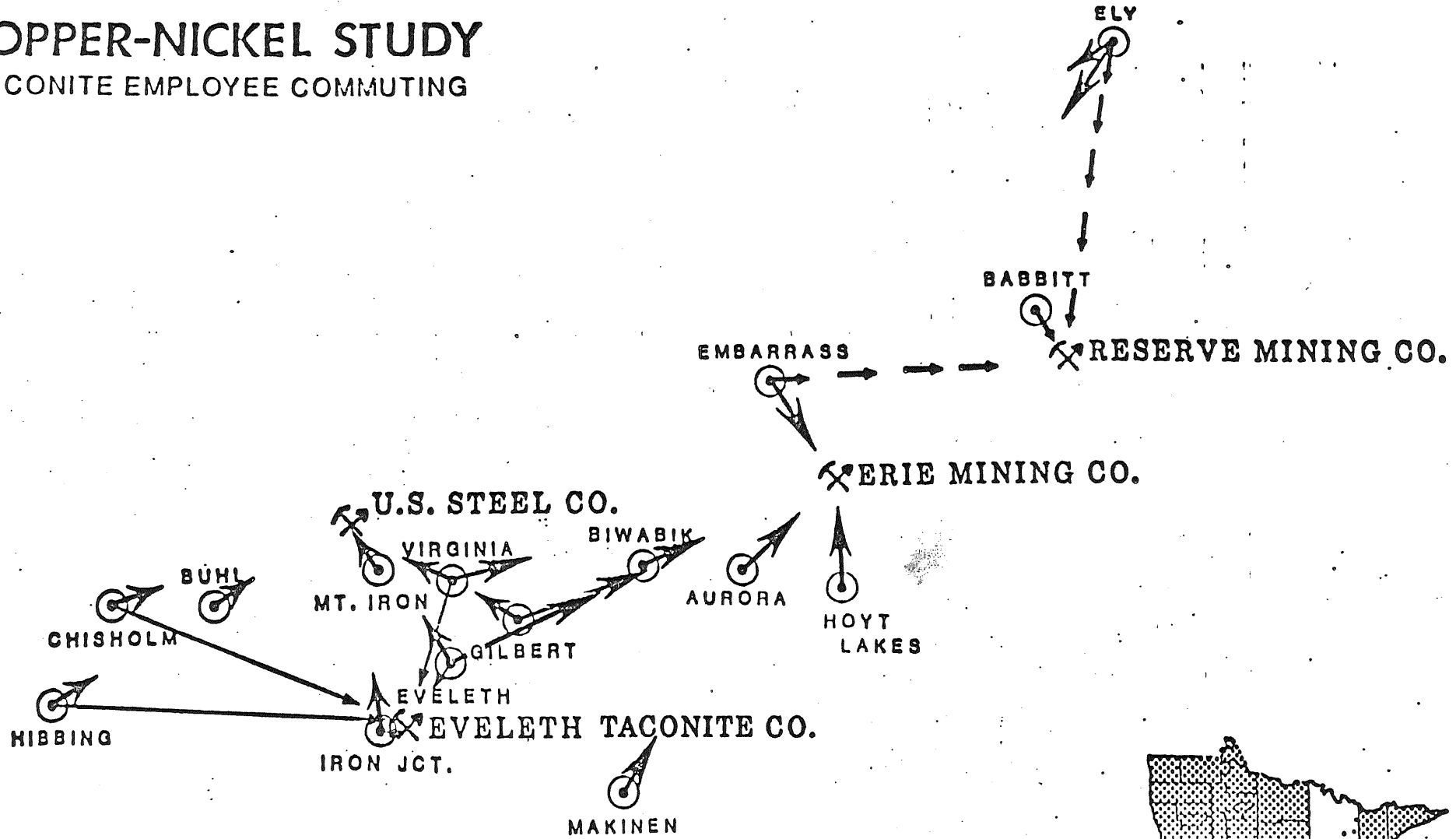
at Erie and Babbitt with 94 percent at Reserve are similar, too, in that they were originated as company towns in the mid-fifties and have nearly two-thirds of their total employment (employment in all sectors) in the mining industry.

Table 9

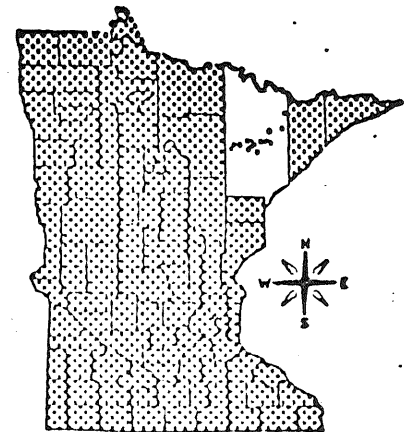
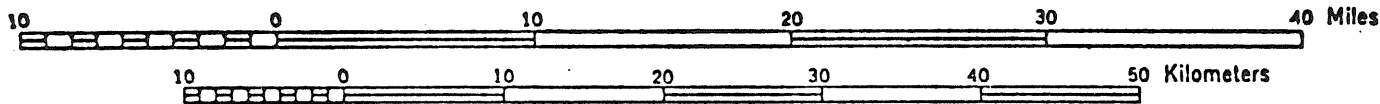
<u>City</u>	<u>Zip Code</u>	<u>City</u>	<u>Zip Code</u>
Angora	55703	Hoyt Lakes	55750
Aurora	55705	Iron Junction	55751
Babbitt	55706	Kelly Lake	55754
Biwabik	55708	Kinney	55758
Britt	55710	McKinley	55761
Buhl	55713	Makinen	55763
Chisholm	55719	Mountain Iron	55768
Ely	55731	Parkville	55773
Embarrass	55732	Soudan	55782
Eveleth	55734	Tower	55790
Forbes	55738	Virginia	55792
Gilbert	55741	Winton	55796
Hibbing	55746	Zim	55799

M. QC REGIONAL COPPER-NICKEL STUDY

TACONITE EMPLOYEE COMMUTING



APPROXIMATED SCALE



KEY MAP