

**STATE OF MICHIGAN
IN THE HOUGHTON COUNTY CIRCUIT COURT**

THE CHARTER TOWNSHIP OF PORTAGE,
a Michigan Municipal Corporation,

Plaintiff,

-vs-

VVQ LAND HOLDINGS, LLC, a Michigan
limited liability company, and THOMAS J.
MOYLE, JR., INCORPORATED, d/b/a VALLEY
VIEW QUARRY, a Michigan Corporation,

Defendants.

and

KEVIN GRZELAK, EMILY BETTERLY
and VICTOR BETTERLY,

Plaintiffs,

-vs-

VVQ LAND HOLDINGS, LLC, a Michigan
limited liability company, and THOMAS J.
MOYLE, JR., INCORPORATED, d/b/a VALLEY
VIEW QUARRY, a Michigan Corporation,

Defendants.

Case No. 10-14647-CH
Hon. Roy Gotham

**DEFENDANTS' REPLY BRIEF REGARDING
THE EXCLUSIONARY EFFECT OF THE
TOWNSHIP'S ZONING ORDINANCE**

Case No. 10-14635-CE

NICHOLAS J. DAAVETILLA ATTORNEY AT
LAW, P.C.

By: Nicholas J. Daavetilla (P64556)
Attorneys for Plaintiff Township
417 Shelden Avenue, Suite 1
Houghton, Michigan 49931
(906) 482-6310

PENCE & NUMINEN, P.C.

By: Steven L. Pence (P27172)
Attorneys for Individual Plaintiffs
102 W. Washington Street, Suite 106
Marquette, Michigan 49855
(906) 226-2580

CLARK HILL PLC

By: Thomas M. Keranen (P32506)
Joseph S. Kopietz (P68630)
Matthew W. Heron (P61501)
Attorneys for Defendants
500 Woodward Avenue, Suite 3500
Detroit, Michigan 48226
(313) 965-8300

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“NOT IN MY BACKYARD” EXCLUSIONARY ZONING

Michigan’s exclusionary zoning statute, MCL 125.3207, outlaws efforts by a municipality to zone undesired, but lawful, uses into adjacent municipalities. This approach to disliked, but lawful, land use is a form of exclusionary zoning summarized as follows:

Municipalities often manipulate their zoning powers to exclude unwanted activities and groups of people. . . . ***The use of zoning for exclusionary purposes can take on several forms.*** “Fiscal zoning” seeks to bar uses that produce low taxes and high demand for municipal services, such as dense multifamily housing with many school age children, in favor of uses that will produce high taxes and low demands for services, such as office parks and shopping centers. ***Proponents of the “NIMBY” (“not in my backyard”) syndrome use zoning to bar “LULUs” (“locally undesirable land uses”) -- projects that are socially necessary but almost universally disliked by their neighbors, such as prisons or waste treatment facilities. . . .***

JAMES H. WICKERSHAM, *Note: The Quiet Revolution Continues: The Emerging New Model for State Growth Management Statutes*, 18 HARV ENVTL L REV 489, 506 (1994) (emphasis added).

Plaintiffs rely exclusively¹ on the testimony of Portage Township Supervisor Bruce Peterson. During his deposition testimony Mr. Peterson discussed extensively a map he had someone else create for his deposition to attempt to point out that other townships nearby are *unzoned*, in a not well-hidden effort to suggest that Defendants should take their lawful use of land to nearby townships—***and out of Portage Township.*** (Peterson Dep. pp. 33-34). Notwithstanding the fact that Mr. Peterson has no geological expertise and should be given no credence whatsoever (as explained more fully below), this exercise by Mr. Peterson and his counsel constitutes a stark demonstration of the “not in my backyard” mentality of the Plaintiffs and their use of unlawful exclusionary zoning to accomplish their goals.

¹ Plaintiffs also deposed and cite to the testimony of several “pit” owners in the area, none of whom profess to be an expert in this field, all whom are competitors at some level of the Defendants, and none of whom were willing to disparage their own businesses by negatively commenting on their product. For the most part, each deponent simply made broad generalized statements regarding their own product, without specificity, and without any evidentiary support.

ARGUMENT

Plaintiffs have failed to set forth admissible evidence or admissible expert testimony to rebut the evidence and expert testimony proffered by Defendants that the Rural Residential zoning status of the Property rises to the level of an impermissible exclusion of lawful and necessary quarry operations in the Township.

A. Plaintiffs' Expert Witness Bruce Peterson is Not an Expert in the Applicable Field and His Testimony Should be Precluded.

1. Michigan Rule of Evidence 702.

Pursuant to MRE 702, a court may only permit expert testimony when the subject of the testimony concerns “scientific, technical, or other specialized knowledge [that] will assist the trier of fact to understand the evidence or to determine a fact in issue.” MRE 702.

If the court determines that scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise if (1) the testimony is based on sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case. (MRE 702).

In *Gilbert v DaimlerChrysler Corp*, 470 Mich 749, 779 (2004), the Michigan Supreme Court clarified that in addition to the trial court’s consideration of an proffered expert’s qualifications, “MRE 702 requires the trial court to ensure that each aspect of an expert witness’s proffered testimony--including the data underlying the expert’s theories and the methodology by which the expert draws conclusions from that data--is reliable.” MRE 702 “impose[s] an obligation on the trial court to ensure that any expert testimony admitted at trial is reliable. While the exercise of this gatekeeper role is within a court’s discretion, a trial judge may neither ‘abandon’ this obligation nor ‘perform the function inadequately.’” *Id.* (citations omitted).

“Under MRE 702, it is generally not sufficient to simply point to an expert’s experience and background to argue that the expert’s opinion is reliable, and therefore admissible.” *Edry v Adelman*, 486 Mich 634, 642 (2010). MRE 702 requires that the proponent of the evidence demonstrate that the opinion has some basis in fact, that the opinion is the result of reliable principles or methods, or that the proposed expert applied his methods to the facts of the case in a reliable manner as required by MRE 702. *Id.* at 641. As recognized in *Edry*, MRE 702 incorporates the standards of reliability set forth by the United States Supreme Court in *Daubert v Merrell Dow Pharm, Inc*, 509 US 579 (1993) with respect to FRE 702. *Edry, supra.* As *Edry* further recognized, “federal courts applying *Daubert* have held that ‘the whole point of *Daubert* is that experts can’t ‘speculate.’ They need analytically sound bases for their opinions,’ *DePaepe v Gen Motors Corp*, 141 F3d 715, 720 (CA 7, 1998), and ‘[i]t is axiomatic that an expert, no matter how good his credentials, is not permitted to speculate.’ *Goebel v Denver & R G W R Co*, 215 F3d 1083, 1088 (CA 10, 2000).” *Edry, supra* at 642 n6.

2. Mr. Peterson’s Testimony Does Not Satisfy MRE 702.

Mr. Peterson has bachelors degrees in wildlife biology and in soil science and a masters degree in public administration. (Peterson Dep. pp.7-8). Mr. Peterson asserts that his claimed field of expertise is in the area of “usage of soil survey.” (*Id.* p. 15). Mr. Peterson testified by way of deposition but did not prepare a report to summarize any of his opinions. (Peterson Dep. p. 70). Further, Mr. Peterson acknowledges that his opinions are entirely based upon a soil survey from 1991 (which is now outdated). (*Id.* pp. 72-73) (“**A: Well, my opinion again is all impinged on the construction and methodology of the soil survey.**”).

Mr. Peterson acknowledges that the soil survey information as to both Houghton County and Portage Township is limited to holes bored to a depth of only five (5) feet. (*Id.* pp. 18 & 21). Further, consistent with Mr. Peterson’s background in wildlife biology, the reason these holes are

bored to a depth of only five feet is because the focus of the survey *is on the biological content of the soil—not the potential for aggregate*:

Q. The survey itself what are its limitations in terms of identifying what is under the surface?

A. **Well, everybody has to remember that it goes down to 5 feet, 60 inches. It is largely aimed at the upper portions of the earth, you know, 5 feet that is where most of the biologic activity occurs, that is where most of our interpretations that we need at as an agency and most people need occur.**

(*Id.* p. 21). Mr. Peterson acknowledged the limitations of the soil survey and that the *geology* of the land is the determinant factor in assessing aggregate content:

Q. Is there data available regarding what exists below 60 inches?

A. **Oh, yeah, there are geology maps. There are a number of studies people have drilled any holes and made geology maps, which are much more exact and much more definitive I'm sure than what is contained within the soil survey which is a very general text.**

(*Id.* p. 24). Mr. Peterson has no level of expertise in geological issues, and does not have the ability to testify competently as to the potential for aggregate in Portage Township:

Q. Is it a possibility in Portage Township that those kinds of materials, exist, gravel materials exist, underneath the 60 inch level at which the soil survey cuts off?

A. **Again, I would assume so. Again I'm not a geologist and I haven't spent the time to go drill holes but I think that would be a logical assumption.**

(*Id.* p. 27) (emphasis added); (*Id.* p. 56) (“Q: Okay. You would not claim to be an expert in geology or quarries; correct? A: **Exactly.**”). Mr. Peterson’s opinions are partially derived from inadmissible hearsay statements made to him by third parties opposed to Defendants’ use, (*Id.* p. 28) (commenting on the views of one Sally Sandford), that he never bothered to independently assess or validate. (*Id.* p. 59) (“Q: Did you happen to visit the site and see these gravelly soils? A: **No, I did not.**”). In short, Mr. Peterson is unable to provide an opinion as to whether areas he claimed are potential sources of gravel could actually yield commercially viable gravel:

- Q. But again that goes back to this is a determination of a high probability of containing gravel you have not determined the percentage that would contain commercially viable gravel deposits?
- A. ***No there is no way I can go out there and definitive state that. There is a probability of encountering it in these map units.***
- Q. You have also not determined what, if any, of that percentage contains the types of gravel required for various types of construction activities; correct?
- A. **Yeah, I would say you could say that.**

(*Id.* pp. 62-63) (emphasis added).

Throughout Mr. Peterson's deposition and, therefore, throughout Plaintiffs' brief, Mr. Peterson incorrectly categorizes the potential for gravel production. The 1991 Soil Survey relied upon by Mr. Peterson (which is now out of date) only contains two categories: (1) probable; and (2) improbable. It does not contain a "good," "high probability" or "high potential" category. These categories simply do not exist. In addition, Mr. Peterson's deposition exhibits incorrectly categorized the various soil types in Houghton County between probable and improbable. When the soil types are correctly categorized, the Soil Survey's potential for gravel potential in Houghton County drops from Mr. Peterson's asserted 14.3% to between 6.5% and 11%.²

Further, the official NRCS online database uses the three categories of "good" fair" and "poor." According to this database there are no "good" gravel resources in Portage Township and only about 3.5% are listed as "fair." A review of the location of the "fair" gravel resources demonstrates that virtually all fall within Rural Residential zoning districts. Any portion that does not is either in the Thirteen Mile Creek area, or in the tributaries to the Pilgrim River, significantly limiting any accessibility. Contrary to the Plaintiffs' suggestions, the NRCS database does not state or otherwise suggest that its estimates are "conservative." This description is not contained in the governmental survey. The NRCS classifications only provide

² Mr. Peterson had incorrectly categorized Soil Unit No. 107B, 107D, 110D, and 110E.

a potential for gravel within the zone tested—*i.e.*, 0 to 7 feet. The NRCS database makes no claim concerning gravel potential below 7 feet.

In summary, Mr. Peterson is not a geologist and yet Plaintiffs provide his testimony to the Court as though he is qualified to testify regarding geological issues. In fact, Mr. Peterson misapplies the information being relied upon by Plaintiffs. Mr. Peterson has no knowledge regarding construction standards for aggregate, therefore, no knowledge regarding need for Defendants' aggregate, and as Supervisor is engaged in an effort to shut down Defendants' use of their property. Mr. Peterson's testimony is inherently unreliable, provides no assistance to the Court, and would only serve to confuse this Court on the issues before it.

B. No Area but that Zoned Rural Residential is Suitable for Use as a Quarry.

Much of Mr. Peterson's testimony, and the testimony of Defendants' competitors being offered by the Plaintiffs, reflects an effort by the Plaintiffs to argue that a sufficient supply of aggregate exists throughout Portage Township. This argument, however, cannot overcome the geological composition of the Township. The only suitable location for the Defendants' use of VVQ is where VVQ is currently located—and no other location in Portage Township.

As stated in the Report and attached Affidavit of Dr. Vitton (**Ex. 1**), the potential for viable gravel deposits in Houghton County is extremely limited, with the only area geologically viable located along the immediate South boundary of the Portage canal, including the location of VVQ. Any additional deposits would be limited to pits with undesirable ablation³ derived lenses (*i.e.*, limited gravel deposits). In addition, any effort to look for gravel along the North-

³ The term "ablation" is defined as "Loose permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common." The term "ablation" is the main glacial mechanism which generates the small sand and gravel lenses that smaller sand and gravel operations use and which are not commercially viable. (Vitton Aff.).

side of the canal would not be feasible because of the high costs of water frontage and the excessively steep slope along M-26. Any land beyond the shoreline, especially the south shore West of the City of Houghton, is covered by large deposits of sand, and, accordingly, there is limited, if any, potential for gravel “along the canal.”

Also, soil classification 107B which is listed by Mr. Peterson as the single largest acreage of “probable” gravel deposits (8,238 acres), is now classified as having “poor” potential. The vast amount of gravel resources considered by the NRCS in Houghton County are associated with two soil groups: (1) the Trimountain-Paavala and (2) the Trimountain-Paavala-Arcadian association. These soils are not part of an outwash deposit. These soil groups are part of the “Trimountain Soil Series” which are associated with till plains and moraines⁴ which, therefore, make it unlikely for these soil groups to have viable gravel deposits.

In addition, in Dr. Vitton’s opinion the potential for gravel in the Copper Country State Forest has limited to zero potential. Though the NRCS soil database shows a “Fair” potential, the glacial geology in the Copper Country State Forest area is a major “end moraine” which would contain very little viable commercial aggregate. Also, it is not accurate for Mr. Peterson or Plaintiffs to claim that most of the soils in Portage Township contain “outwash” deposits. The Portage Gap does contain outwash features, but the Portage Gap is not located near the Copper Country State Forest. The only other area of “outwash deposits” are on the West Side of Houghton County and South of Twin Lakes. These, however, are not clear outwash but are also deltas, beaches, and stratified drift which limit their potential for commercial sand and gravel.

⁴ The Trimountain Soil Series consists of very deep, moderately drained or well drained soils on ground and end moraines. End moraines are deposits where the glacial debris is simply dropped in place without any sorting, and do not have the ability to form gravel deposits as would occur from an “outwash” gravel deposit. (Vitton Aff.).

Plaintiffs rely upon the deposition testimony of Pat Thornton and his suggestion that if he were looking for additional gravel deposits he would look in the area from his own pit through Tomasi's pit to the Payne & Dolan (Vitton) pit. This, however, is not a geologically sound approach. The Tomasi pit is located where there is no drainage area, and was formed from a limited "ablation" process, typical of the area. The Tomasi pit has thin lenses of gravel, with significant undesirable sands, silts, and clays. Dr. Vitton has personally conducted additional exploration of the 320 acre area surrounding the Vitton pit looking for additional gravel reserves. The vast majority of this area is classified as 139B (Trimountain – Paavala – Waiska complex). Though this soil is considered "fair" for gravel potential in the official online NRCS database and "probable" in the 1991 NRCS soil survey, no additional viable resources were found, only small gravel lenses embedded in sand deposits making excavation unfeasible. (Vitton Aff.).

In summary, Plaintiffs' assertions that there are other suitable locations for obtained quarried aggregate in Portage Township are unsupported in fact. Plaintiffs cannot alter the geological makeup of the Township through unreliable comments by Defendants' competitors.

C. Valley View Quarry is Appropriately Located Within the Township.

The location of VVQ is one of *very few* locations in Houghton County suited for quarried rock and gravel operations. This was implicitly recognized by Mr. Peterson when he acknowledged that with respect to any basalt rock that ran through the Northwest corner of Portage Township, VVQ was located in the less densely populated area. (Peterson Dep. pp. 69-70) ("Q: What is the population density like in that area relative to the population density of surrounding Valley View Quarry, is higher, lower? **A: I would have to assume it would be higher.**"). This suggests that VVQ is more appropriately located than any alternative location, as is also visually demonstrated through the zoning map attached as **Exhibit 2** which shows that

the igneous bedrock at VVQ's location is near the less populated municipal area in the Township. In fact, **Exhibit 3** shows that shallow to igneous rock units in Adams Township are also located near densely populated areas, demonstrating that VVQ is more appropriately located where it is *than anywhere in Adams Township*. Mr. Peterson also acknowledged that VVQ was the only location in Portage Township that supplied quarried basalt, (Peterson Dep. pp. 79-80), and that the aggregate obtained from VVQ was "very structurally sound:"

- Q. Generally what is your knowledge of the quality of aggregates that can be obtained from Valley View quarry?
- A. **My general knowledge is that the aggregate is very structurally sound and is probably very good.**

(Peterson Dep. p. 76).

D. There is a Demonstrated Need for Defendants' Use of the Property as a Quarry.

In their brief Defendants demonstrated the need for the aggregate obtained from VVQ by providing VVQ production over the past three years, identifying the limited supply of other aggregate sources in the area, the non-existence of equivalent sources of quarried aggregate in Portage Township, the need for the type and quality of aggregate supplied by VVQ through the objective construction standards imposed by, *inter alia*, MDOT, and the limited life-cycle of existing aggregate suppliers. These issues were all addressed in the Vitton Report or discussed extensively during his deposition. In addition, it is incontestable that by 2014 the State of Michigan will be required to use the Mechanistic-Empirical Pavement Design Guide that was developed in NCHRP 1-37A. (Vitton Aff. ¶ 8). This new procedure will require significant testing on aggregate used in pavement structures. It is expected that only those quarries that would satisfy these tests, such as VVQ, would have their quarried rock and gravel tested—due to its demonstrated quality. Accordingly, there is and will be a significant need for the type and

quality of quarried rock and gravel which can only be obtained in Portage Township and its surrounding area from VVQ.

This evidence is un-rebutted. As stated above, Mr. Peterson testified that VVQ was the only location that provided quarried rock in Portage Township that he was aware of, and that the aggregate supplied by VVQ was “very structurally sound” and “probably very good.” He also testified that he has no knowledge regarding the specific standards for aggregate used in construction and, therefore, their impact on supply and demand:

- Q. To your knowledge is the Michigan Department of Transportation utilizes aggregate in filling it responsibilities to Houghton County Township?
- A. **Most definitely I'm sure.**
- Q. To your knowledge do they have standards regarding the type of aggregates that can be used for particular jobs?
- A. **I'm sure they do.**
- Q. Are you familiar with any of those?
- A. ***Not explicit parameters I'm sure they have criteria that define the structural strength of the aggregate and the porosity and the abrasiveness and I'm sure they have all sorts of standards that they have to meet.***

(Peterson Dep. p. 74) (emphasis added). The opinions of Mr. Peterson have no bearing on the availability of commercially viable aggregate, and Defendants' evidence is un-rebutted.

CONCLUSION

Defendants respectfully request that this Court find that the Township's zoning of the Property is impermissible exclusionary zoning. This Court should reject Plaintiffs' efforts to improperly zone Defendants' lawful and socially necessary use of its land into other municipalities.

Respectfully submitted,

CLARK HILL PLC

By



Matthew W. Heron (P61501)
Attorneys for Defendants

Dated: April 4, 2011

Exhibit 1

STATE OF MICHIGAN
IN THE HOUGHTON COUNTY CIRCUIT COURT

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**AFFIDAVIT OF
STAN VITTON, Ph.D., P.E.**

NICHOLAS J. DAAVETILA ATTORNEY AT
LAW, P.C.

By: Nicholas J. Daavetilla (P64556)
Attorneys for Plaintiff Township
417 Shelden Avenue, Suite 1
Houghton, Michigan 49931
(906) 482-6310

CLARK HILL PLC

By: Thomas M. Keranen (P32506)
Joseph S. Kopietz (P68630)
Attorneys for Defendants
500 Woodward Avenue, Suite 3500
Detroit, Michigan 48226
(313) 965-8300

PENCE & NUMINEN, P.C.

By: Steven L. Pence (P27172)
Attorneys for Individual Plaintiffs
102 W. Washington Street, Suite 106
Marquette, Michigan 49855
(906) 226-2580

AFFIDAVIT OF STAN VITTON, Ph.D., P.E.

Stan Vitton deposes and says:

1. I am an adult, legally competent to execute this Affidavit. The facts set forth in this Affidavit are based on my personal knowledge and opinions drawn upon my education and experience, and if sworn as a witness, I can testify competently to the facts set forth herein.

2. I have reviewed the deposition transcript of Mr. Bruce Peterson. Mr. Peterson incorrectly categorized the potential for gravel production in Portage Township and Houghton County throughout his deposition. Mr. Peterson used an out of date Soil Survey of Houghton County published in 1991. Since that time, the National Resource Conservation Service (NRCS) has made three major transformations to the soil data. NRCS official soil data is easily accessible at the NRCS's Web Soil Survey. The 1991 soil data only listed two categories for gravel potential: (1) probable; and (2) improbable. It did not provide for a "good" category and there is no "high probability" or "high potential" category. These categories simply do not exist and it is misleading to suggest that they do exist.

3. In addition, Mr. Peterson's deposition exhibits incorrectly categorized the various soil types in Houghton County between probable and improbable, since within each soil unit there are both probable and improbable soil units. When the soil types are categorized, the Soil Survey's potential for gravel potential in Houghton County drops from Mr. Peterson's asserted 14.3% to a low of 6.5% depending on the percent probable and improbable up a possible maximum of 11.0%. Even with the 1991 data Mr. Peterson had incorrectly categorized Soil Unit No. 107B, 107D, 110D, and 110E.

4. Further, the current and official NRCS online database now uses the three following categories: (1) good, (2) fair, and (3) and "poor." According to this classification there

are no “good” gravel resources in Portage Township nor are there any in the entire county of Houghton. As noted in my deposition only 3.5% are listed as “fair.” A review of the location of the “fair” gravel resources demonstrate that virtually all fall within Rural Residential zoning districts. Any portion that does not is either in the Thirteen Mile Creek area, or in the tributaries to the Pilgrim River, significantly limiting any accessibility. Further as I state in my deposition, a “fair” designation does not mean that viable gravel resources exist, as my exploration of the “fair” soil deposits located in the vicinity of the Lake Annie gravel pit revealed no additional viable gravel resources. The NRCS database does not state or otherwise suggest that its estimates are “conservative.” This description is not contained in the governmental survey. Further, the NRCS classifications only provide a potential for gravel within the zone tested—*i.e.*, 0 to 7 feet. The NRCS database makes no claim concerning gravel potential below 7 feet.

5. In addition, soil unit 107B, which is listed by Mr. Peterson as the second largest acreage of “probable” gravel deposits (8,238 acres) from the 1991 was in fact rated as “improbable. Further, the vast amount of gravel resources considered by the NRCS in Houghton County is associated with two soil groups: (1) the Trimountain-Paavala and (2) the Trimountain-Paavala-Arcadian association. These two soil groups are part of the “Trimountain Soil Series” and are associated with till plains and moraines which, therefore, make it unlikely for these soil groups to have viable gravel deposits, since these soils are not part of an outwash deposit. (Mr. Peterson in his deposition continually referred to gravel soils as coming from outwash deposits.) These soils instead consist of very deep, moderately drained or well drained soils on ground and end moraines. End moraines are deposits where the glacial debris simply melts in place without any significant sorting, and do not have the ability to form gravel deposits as would occur from an “outwash” gravel deposit. Therefore it is an incontestable geological fact that Portage

Township has little to no potential for gravel resources outside of what I have already indicated. The geology of Portage Township is not conducive to gravel resources. For a gravel deposit to form there has to be significant “outwash” deposits where water sorted (i.e., separated) the sand, silt and clays from the larger cobble and boulders. This condition is not met in the areas designated by Mr. Peterson in his deposition. In addition, there are no “abundant” sources of remaining commercially viable aggregate in Houghton County, especially south of the bridge. Reliance upon any sources in Hancock do not take into account the limited supply of aggregate (especially Pebbles and Superior Sand & Gravel and the three year supply of the Payne & Dolan pit), and the fact that any aggregate from Hancock must cross the Houghton-Hancock bridge bottleneck. In addition, poor rock piles (or mine waste dumps) have significant problems meeting quality control requirements as I discussed in my Report and deposition, and will have additional problems in the future.

6. Specifically, it is also an incontestable fact, not an opinion on my part, that by 2014 the State of Michigan is required to use the Mechanistic-Empirical Pavement Design Guide that was developed in NCHRP 1-37A. This new procedure will require that the state perform significant testing on aggregate used in pavement structures. These tests will not be performed on all gravel sources no matter how large or small due to their cost, and it is most likely that only those quarries that would satisfy these tests, such as the Valley View Quarry, would have their quarried rock and gravel tested—due to its demonstrated quality. Accordingly, there is and will be a significant need for the type and quality of quarried rock and gravel which can only be obtained in Portage Township and its surrounding area from the Valley View Quarry and that cannot be obtained from any waste rock. For example, I am not aware of any waste/poor rock

pile having been inspected by and approved by the Michigan Department of Environmental Quality for general use.

7. In addition, in my opinion the potential for gravel in the Copper Country State Forest has limited to zero potential. Even though the NRCS soil database shows a "Fair" potential, the glacial geology in the Copper Country State Forest area is a major "end moraine." This area is referred to as the "Six Mile Moraine" with "dead-ice or ablation" in parenthesis. The term "dead-ice" is generally defined as former glacier ice that is no longer connected to the active glacier, therefore, melting in place. The term "ablation" is defined as "Loose permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common." The term "ablation" is the main glacial mechanism which generates the small sand and gravel lenses that smaller sand and gravel operations use and which are not commercially viable. Accordingly, in my opinion this area has a limited to zero potential for gravel.

8. It is not accurate to claim that most of the soils in Portage Township contain "outwash" deposits. The only area of "outwash deposits" shown in the SCS Soil Manual are on the West Side of Houghton County and South of Twin Lakes. These, however, are not clear outwash but are also deltas, beaches, and stratified drift which limit their potential for commercial sand and gravel. In my opinion the Portage Gap does contain outwash features, but the Portage Gap is not located near the Copper Country State Forest.

9. It is my understanding that Pat Thornton suggested in his deposition that if he were looking for additional gravel deposits he would look in the area from his own pit through Tomasi's pit to the Payne & Dolan (Vitton) pit. This is not a geologically sound approach. The Tomasi pit is located where there is no drainage area associated with it, and was formed from a

limited “ablation” process from melting glacial, typical of the area. The Tomasi pit has thin lenses of gravel, with significant and undesirable sands, silts, and clays. The Vitton pit was formed by the melting of a large chunk of ice that broke off of a retreating glacier, thereby creating Lake Annie. The drainage area that developed from Lake Annie (Spring Creek) goes directly through the Vitton pit which created a gravel “outwash.” This small “outwash” feature generated the Vitton pit, which now has a limited life of three years or so. In addition, there are no comparable glacial lakes north of the canal that would have the potential for a similar outwash deposit. I have personally conducted additional exploration of the 320 acre area surrounding this property looking for additional gravel reserves. The vast majority of this area is classified as 139B (Trimountain – Paavala – Waiska complex). This soil is considered “fair” for gravel potential in the official online NRCS database and “probable” in the 1991 NRCS soil survey. However, no additional viable resources were found during my exploration, only small gravel lenses embedded in significant sand deposits making excavation unfeasible.

10. In summary, the potential for viable gravel deposits in Houghton County is extremely limited, with the only area geologically viable located along the Portage Canal . including the Valley View Quarry and Superior Sand & Gravel. However, Superior Sand & Gravel is a glacially derived deposit whose reserve, (which has not been explored according to Mr. Thornton) could change at any time. Any additional deposits would be limited to pits with undesirable ablation derived lenses (i.e., limited gravel deposits). In addition, any effort to look for gravel along the North-side of the canal would not be feasible because of the high costs of water frontage and the excessively steep slope along M-26. Further, any land beyond the shoreline, especially the south shore west of the City of Houghton, is covered by large deposits of sand, and, accordingly, there is limited, if any, potential for gravel “along the canal.”

11. In my deposition I was asked by Mr. Pence about rock outcroppings near the Valley View Quarry and I responded that the outcroppings were near the Keweenaw Fault area, in which Mr. Pence asked if this was an area, about 20 or 30 square miles in size. I asked did he mean in Portage Township in which I said the area was about three or four square miles. I do not mean to imply that there are between three to four square miles of exposed rock outcropping in Portage Township. In fact, the amount of "exposed" rock outcrop in Portage Township in the vicinity of the Valley View Quarry would be extremely small in the area of five to ten acres within the three to four square miles I noted.

12. It is my understanding that it is the Plaintiffs' position that a rock quarry could be opened at the Hancock Airport, as the Airport utilized a nearby aggregate source during its own construction project. This is not a well-founded assumption. First, I believe the main reason that a temporary quarry was even considered for this project at the airport was that a topographic high at the end of the runways needed to be removed that consisted of a rock outcrop. I suspect that this quarry would not have been developed if it hadn't been for this need. When the last runway project was completed a number of years ago, the base material was obtained from the Vitton Quarry, since the project was conducted by Payne & Dolan. I believe that it would still have been more cost effective to use the material from the Vitton Quarry than to blast and crush the rock outcrop at the airport. Second, I would not expect a rock quarry to be allowed to open near a functioning airport due to the possibility of flying rock. Third, unlike the Valley View Quarry, any rock quarry would have to be developed below existing ground level. This would increase operational costs so as to make such a proposition not commercially viable due to haulage costs, water handling costs, and increased reclamation costs associated with below ground excavation. There are four (4) potential locations for a rock quarry north of the Portage Gap with exposed

rock and limited overburden removal requirements; (1) the top of Quincy Hill; (2) near the Airport; (3) the City of Calumet; and (4) between Calumet and Mohawk. Each of these locations are where underground mines had been located and have significantly higher residential concentrations than the area surrounding Valley View Quarry.

13. I have carefully read all of this Affidavit, and it is all true and correct to the best of my knowledge or information and belief.

Stan Vitton
Stan Vitton, Ph.D. P.E.

Dated: April 4, 2011

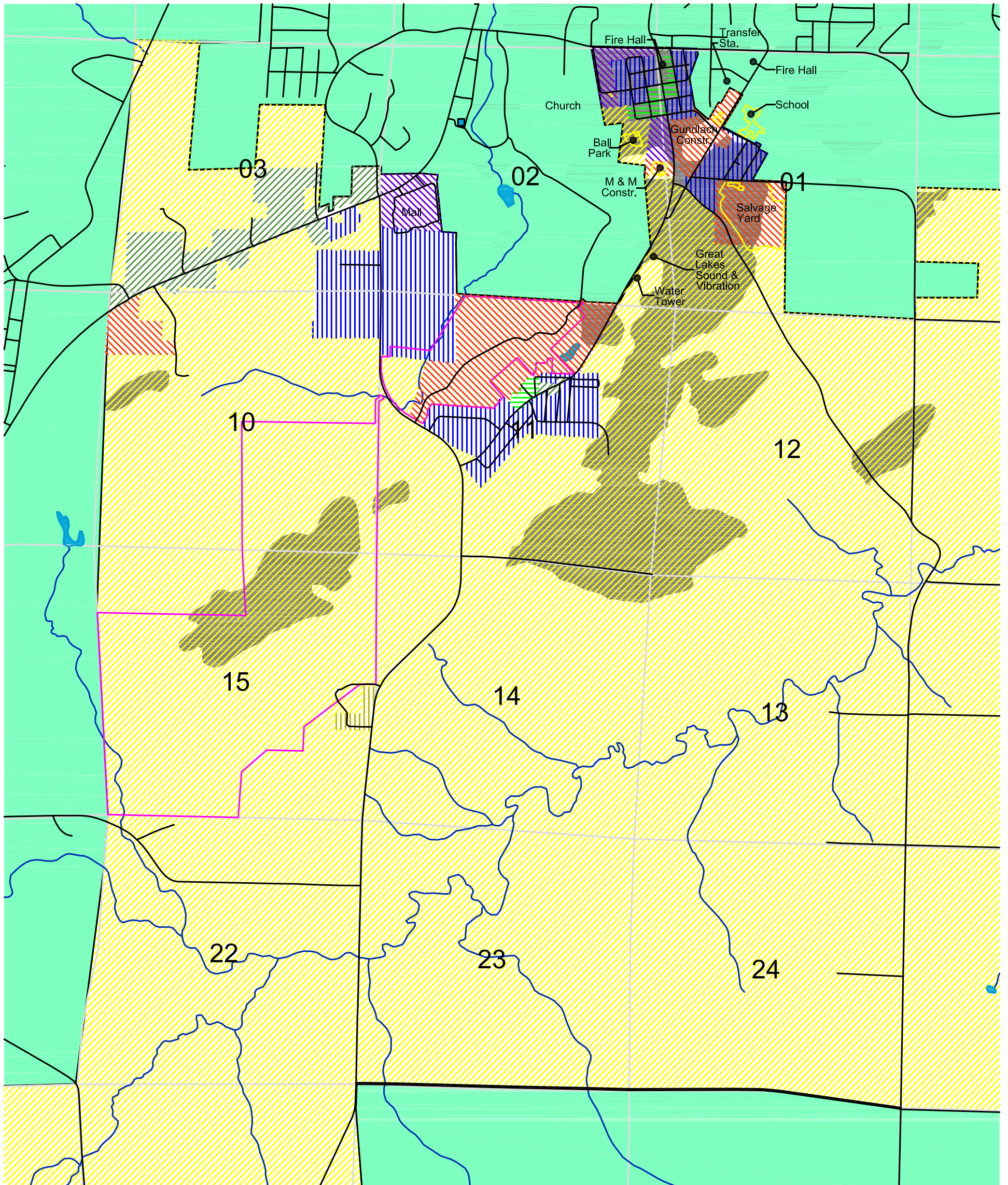
Subscribed and sworn to before me, a Notary Public, in and for said County and State, this 4 day of April, 2011.

Andy Moyle
Signature _____
Printed Andy Moyle Notary Public

My Commission Expires: 5-24-2015
County of Residence: _____



Exhibit 2



Zoning Map Part of Portage Township Houghton County, Michigan

Prepared by:
Steven J. LeClaire, PS
Licensed Surveyor,
Division1Design
Houghton, Michigan
3/10/2011

Soil mapping based on information provided by:
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture.
Soil Survey Geographic (SSURGO) Database for Houghton County, MI.
Available online at <http://soildatamart.nrcs.usda.gov>, Accessed 3/02/2011.

Legend










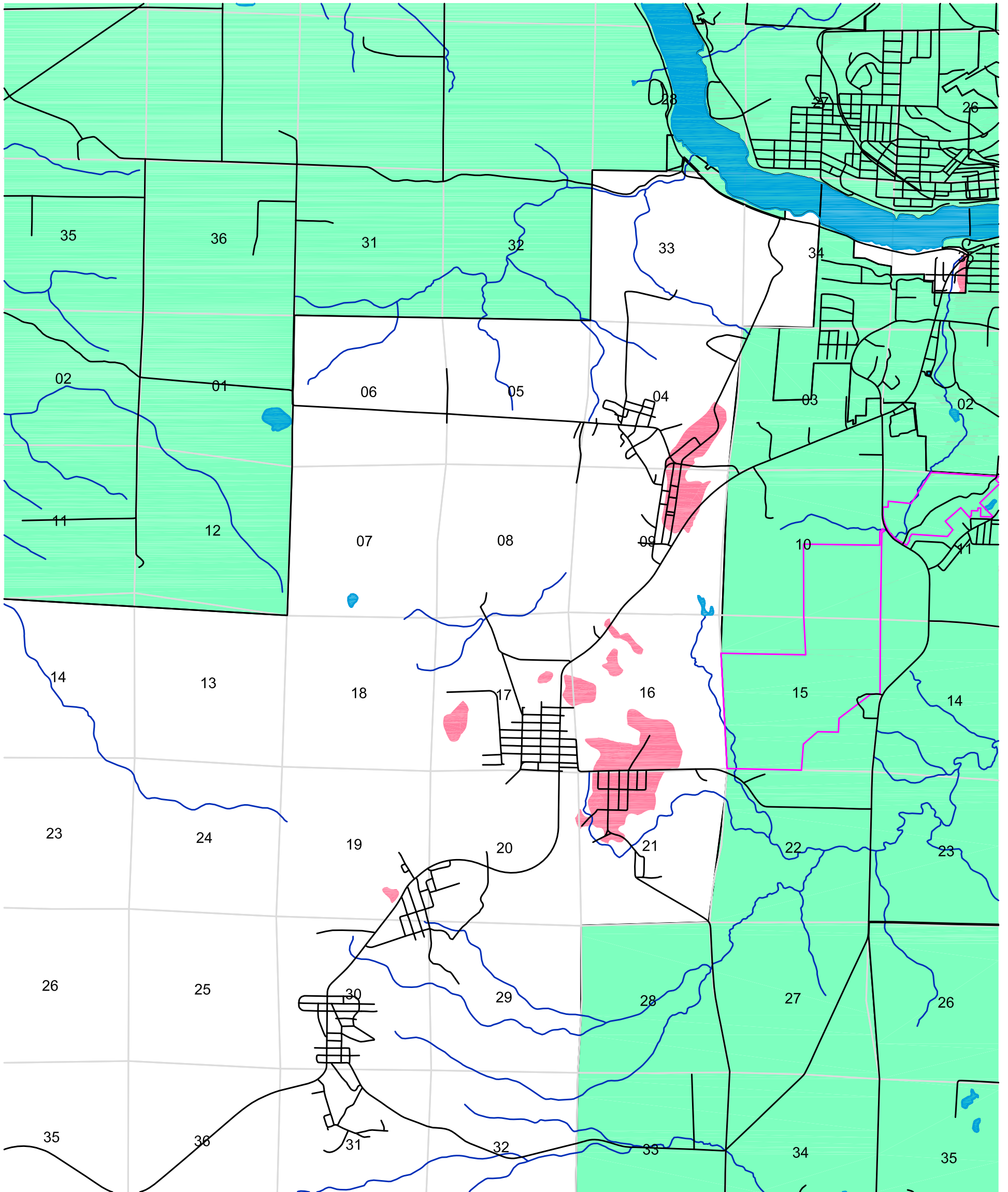
-  Shallow to Igneous Bedrock Soil Map Units
-  Valley view Quarry Property
-  Zoned B-1
-  Zoned B-2
-  Zoned M-1
-  Zoned R-2
-  Zoned R-3
-  Zoned R-4
-  Zoned RUR

Exhibit 3



Legend

- Portage soils selection
- Adams Township
- Valley View Quarry Property

Prepared by:
 Steven J. LeClaire, PS
 Licensed Surveyor,
 Division1Design
 Houghton, Michigan
 3/15/2011

Shallow to Igneous Bedrock Soil Map Units Part of Adams Township - Houghton County, Michigan

Soil mapping based on information provided by:
 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture.
 Soil Survey Geographic (SSURGO) Database for Houghton County, MI.
 Available online at <http://soildatamart.nrcs.usda.gov>. Accessed 3/02/2011.

Exhibit 4

<p>STATE OF MICHIGAN IN THE CIRCUIT COURT FOR THE COUNTY OF HOUGHTON</p> <p>-----</p> <p>KEVIN GRZELAK, EMILY BETTERLY, AND VICTOR BETTERLY Plaintiffs,</p> <p>File No: 10-14635-CE V. Honorable Roy Gotham</p> <p>VVQ LAND HOLDINGS, LLC, A Michigan limited liability company and THOMAS J. MOYLE, JR. INCORPORATED, D/B/A VALLEY VIEW QUARRY a Michigan Corporation, Defendants.</p> <p>-----</p> <p>Bruce Petersen</p> <p>-----</p> <p>DATE: 3-19-2011 TIME: 8:28-10:26</p> <p>Reported by Mariann Merkel</p>	<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p>3</p> <p>APPEARANCES: Attorney Steven L. Pence (P27172) Pence & Numinen, P.C. Attorneys for Grzelak and Betterly 102 West Washington Street Ste. 106 Marquette, MI 49855</p> <p>Attorney Nicholas J. Daavettila (P64556) Attorney at Law, PLC Attorneys for Plaintiff Portage Township 417 Sheldon Avenue Houghton, MI 49931</p> <p>Via Teleconference Attorney Joseph S. Kopietz (P68630) Clark Hill, PLC Attorney for Defendants 500 Woodward Ave, Suite 3500 Detroit, MI 48226</p> <p>Also present: Mr. Andy Moyle Mr. Victor Betterly Professor Vitton</p>																						
<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p>STATE OF MICHIGAN IN THE CIRCUIT COURT FOR THE COUNTY OF HOUGHTON</p> <p>-----</p> <p>KEVIN GRZELAK, EMILY BETTERLY, AND VICTOR BETTERLY Plaintiffs,</p> <p>File No: 10-14635-CE V. Honorable Roy Gotham</p> <p>VVQ LAND HOLDINGS, LLC, A Michigan limited liability company and THOMAS J. MOYLE, JR. INCORPORATED, D/B/A VALLEY VIEW QUARRY a Michigan Corporation, Defendants.</p> <p>-----</p> <p>Bruce Petersen</p> <p>Deposition examination of Bruce Petersen taken by notice of the parties and pursuant to applicable statutes on the 19th day of March 2011 at Smartzone, Suite 201, Lakeshore Drive, Houghton, Michigan, before Mariann Merkel, Freelance Reporter and Notary Public in and for the State of Wisconsin.</p>	<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p>4</p> <p>INDEX</p> <table border="0"> <tr> <td>Witness</td> <td>Page</td> </tr> <tr> <td>Bruce Petersen</td> <td></td> </tr> <tr> <td>QUESTIONS BY MR. DAAVETTIL.....</td> <td>5,80,86</td> </tr> <tr> <td>QUESTIONS BY MR. PENCE.....</td> <td>46,81,84</td> </tr> <tr> <td>QUESTIONS BY MR. KOPIETZ.....</td> <td>55,83,90,97</td> </tr> <tr> <td>Exhibit marked</td> <td>Page</td> </tr> <tr> <td>13-Large map.....</td> <td>29</td> </tr> <tr> <td>14-Handwritten paper.....</td> <td>38</td> </tr> <tr> <td>15-Map.....</td> <td>41</td> </tr> <tr> <td>16-Map.....</td> <td>46</td> </tr> <tr> <td>17-Map.....</td> <td>80</td> </tr> </table>	Witness	Page	Bruce Petersen		QUESTIONS BY MR. DAAVETTIL.....	5,80,86	QUESTIONS BY MR. PENCE.....	46,81,84	QUESTIONS BY MR. KOPIETZ.....	55,83,90,97	Exhibit marked	Page	13-Large map.....	29	14-Handwritten paper.....	38	15-Map.....	41	16-Map.....	46	17-Map.....	80
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5

1 BRUCE PETERSEN,
 2 After having been first duly sworn
 3 to tell the truth, the whole truth,
 4 and nothing but the truth,
 5 testified as follows:
 6 QUESTIONS BY MR. DAAVETILA:
 7 Q. Would you please state your name
 8 for the record?
 9 A. My name is Bruce Petersen.
 10 Q. And your current address, Mr.
 11 Petersen?
 12 A. I live at 21964 Woodland Road in
 13 Houghton, Michigan.
 14 Q. Are you a resident of Houghton
 15 Township?
 16 A. I hope so, yes.
 17 Q. You are also the Portage Township
 18 supervisor; is that right?
 19 A. Yes.
 20 Q. How long have you held that
 21 position?
 22 A. Going on eight months.
 23 Q. And have you previously given a
 24 deposition in this case is that not true?
 25 A. Yes.

6

1 Q. And that was back in December of
 2 this year?
 3 A. I believe so.
 4 Q. And that was more as to the fact
 5 situation that had developed after the
 6 litigation had been filed or the decision
 7 had been made by the Portage Township to
 8 proceed towards an injunction; correct?
 9 A. Yes.
 10 MR. KOPIETZ: Stop for a second
 11 here. For the benefit of the record, can we
 12 identify all the parties at the table I have
 13 seen another gentleman arrived.
 14 MR. PENCE: That is Mr. Vitton.
 15 MR. KOPIETZ: Sorry. I couldn't
 16 quite make him out. Is it the intention
 17 here that we are going to have both
 18 Betterlys and Mr. Petersen?
 19 MR. PENCE: Yes.
 20 MR. KOPIETZ: Just for the record,
 21 I would note that we were asked yesterday to
 22 only have one party representative present.
 23 MR. PENCE: They are named parties,
 24 you have a corporate named party so you get
 25 one rep.

7

1 MR. KOPIETZ: We have two corporate
 2 named parties, we are were asked to have one
 3 of our parties not represented then.
 4 MR. PENCE: I don't know about that
 5 I think they are interlock corporations, you
 6 get one representative, but the Betterlys
 7 are individually named, Mr. Grzelak is not
 8 here, and there is only one person from the
 9 township here the witness so I don't know
 10 what to tell you.
 11 MR. KOPIETZ: Okay. Thank you.
 12 Q. (By Mr. Daavettilla) Any way you
 13 are here today to testify a little bit about
 14 your expertise relevant to soils is that not
 15 true?
 16 A. The making of the soil surveys and
 17 the soils, yes.
 18 Q. Let's talk a little bit about your
 19 educational background where did you go to
 20 the school?
 21 A. Well, I went to the University of
 22 Wisconsin and graduated in 1974 with a
 23 double major one in wildlife biology and one
 24 in soil science.
 25 Q. And do you have any degrees beyond

8

1 that?
 2 A. I have a masters in public
 3 administration too.
 4 Q. And where did you receive that
 5 degree?
 6 A. From a small university in
 7 Portland, Oregon, Lewis and Clark University
 8 in Portland, Oregon.
 9 Q. Prior to your tenure as a
 10 supervisor for Portage Township, did you
 11 have any opportunity to exercise that degree
 12 in public administration, have you ever
 13 served in a public administrative capacity?
 14 A. Public administration degree is
 15 largely aimed at I worked for the government
 16 and for two DNRs so it gives you a pretty
 17 good foundation for that kind of employment
 18 also.
 19 Q. After you left the University of
 20 Wisconsin, where did you go to work?
 21 A. My first job was in the State of
 22 Indiana in northern Indian, I was a soil
 23 scientist working on Marshal County,
 24 Indiana.
 25 Q. And do you recall what year that

<p style="text-align: right;">9</p> <p>1 you started that position? 2 A. '75. 3 Q. And what were your duties there? 4 A. I was an active soil scientist that 5 went out in the field and mapped about 160 6 acres a day, drilled a lot of holes, did a 7 lot of walking, avoided as many bulls as I 8 could possibly avoid. 9 Q. What was involved in the surveying 10 that you were doing? 11 A. Basically soil mapping. It was a 12 mapping of Marshal County, Indiana. 13 Q. And describe for me if you would 14 the process that goes into the preparation 15 of survey data? 16 A. Of making the soil survey? 17 Q. Right? 18 A. You know we can look at Houghton 19 County soil survey and it took seven guys 20 about four and a half years to map the 21 county. There is a lot of transect run for 22 Houghton County, there is also a great deal 23 of physical properties that are analyzed so 24 all of the soils have, you know, they are 25 all sieved, they are all so, you know, what</p>	<p style="text-align: right;">11</p> <p>1 feet. So you went through all the way up to 2 the cryic, mesic, and frigid zones, you 3 know, that is totally different kind of 4 things than flat, planer surfaces than 5 northern Indiana. 6 Q. The court reporter will want you to 7 spell those two terms? 8 A. Cryic, C-R-Y-I-C, frigid just like 9 it sounds, and mesic zone those are just 10 zones of, you know, for differentiations of 11 soil. 12 Q. How long were you employed in the 13 State of Washington? 14 A. Two years. 15 Q. And then what happened? 16 A. I got a job with the USDA the 17 Natural Resource Conservation Service and 18 became what was called a soil 19 conservationist in Vancouver, Washington. 20 Q. And what are the duties of a soil 21 conservationist? 22 A. Working with best management 23 practices, forestry, dealing with land 24 owners on all sorts of environmental issues. 25 Q. And how long did you hold that</p>
<p style="text-align: right;">10</p> <p>1 size particles are, the sand silts and clays 2 and rock fractions and all this kind of 3 stuff. There are pedons that are taken so 4 when you identify a certain specific soil 5 and you have a boxed profile and those are 6 all taken with pits, dug out in the 7 landscape, and pretty soon you start 8 corulating soil series, soil names to 9 landforms. 10 Q. You mention the word pedon, can you 11 spell that for us? 12 A. P-E-D-O-N. 13 Q. What does that mean exactly? 14 A. It is basically a soil profile. 15 Q. Now in the State of Indiana how 16 long were you there as a soil scientist? 17 A. Two years. 18 Q. And then what did you do? 19 A. I moved from there to Washington 20 State and became a forest soil specialists 21 so I mapped soils in higher elevations. 22 Q. Similar type of work? 23 A. Yeah, similar kinds of work but for 24 different kinds of soil. Because we started 25 mapping at 1500 feet and went up to 6000</p>	<p style="text-align: right;">12</p> <p>1 position? 2 A. I was there for two years there and 3 then I became a district conversationist in 4 Cathlamet, Washington, which is right on the 5 Columbia River and I was there for four 6 years. 7 Q. Can you spell the city? 8 A. C-A-T-H-L-A-M-E-T. It was a small 9 community. 10 Q. You were there for how long? 11 A. Four years. 12 Q. And what is the difference between 13 a soil conservationist and district 14 conservationist? 15 A. A soil conservationist is an entry 16 level in the agency and a district 17 conservationist is somebody who is given 18 responsibilities and oversight over a field 19 office operations. So I had two technicians 20 that were underneath me that I supervised 21 and they went out and did the surveying and 22 I did a lot of the grant writing and a 23 little bit more of the administrative end 24 that is the progression. 25 Q. I see. Were you essentially</p>

<p style="text-align: right;">13</p> <p>1 supervising individuals that held the job 2 that you had prior? 3 A. Basically, yes. 4 Q. And you had that position for four 5 years? 6 A. Four years. 7 Q. And then where did you go? 8 A. I moved in 1985 to the copper 9 country, and I became a district 10 conservationist here and had a four county 11 area here. 12 Q. Which counties? 13 A. It would be Houghton, Keweenaw, 14 Baraga, and Ontonagon counties. 15 Q. What was your duties as the 16 district conservationist there? 17 A. Just about any kind of 18 environmental issue plus what is called a 19 resource conservation and development. We 20 had a program here that allowed us to do a 21 whole litany of things like merit time 22 museums, we were involved in the Torch Lake 23 project here, the super fund project, I 24 wrote a grant for that and get that going 25 and received \$18 million for that, we had</p>	<p style="text-align: right;">15</p> <p>1 those samples? 2 A. I would say the usage of soil 3 survey is my forte because I have had to use 4 it for 32 years of my career and I was 5 involved in making it and creating, you 6 know, making the soil surveys in two very 7 diverse areas for the first few years of my 8 career. 9 Q. Did you also have some insight into 10 the uses for those various types of soils 11 that you have been working with over the 12 last 30 years? 13 A. Yeah, that's the whole premise you 14 go find out what the soil is and if it has 15 certain limitations you try to overcome 16 those limitations for whatever project you 17 are involved in. 18 Q. Let's talk a little bit about the 19 soil survey itself. You did speak to it a 20 little bit but I'm interested in making a 21 record as to how it is that the information 22 is gathered and entered into the soil survey 23 can you speak to that a little bit? 24 A. You mean the actual process by with 25 the methodology?</p>
<p style="text-align: right;">14</p> <p>1 additional conservation activities with wild 2 life and forestry a lot of--well not a lot 3 but a fair amount of the ag waste 4 activities, large pits for dairy operations. 5 I worked with units of government, I spent 6 25 percent of my time with the Keweenaw 7 Indian Tribe Community working on walleye 8 rearing facilities, a whole smattering of 9 things and projects with the tribe so it was 10 a very, very diverse job. 11 Q. Were you still working with various 12 soil types? 13 A. About everything you do has 14 something to do with the soil survey. 15 Q. Is that where your expertise lies 16 primarily? 17 A. The first few years of my 18 professional career was spent actually 19 physically making the soil survey and it 20 involved physically doing that and about the 21 last 28 were spent interpreting and using it 22 as a tool to addressing environmental 23 issues. 24 Q. Do you consider yourself to an 25 expert on soil samples and the gathering of</p>	<p style="text-align: right;">16</p> <p>1 Q. Exactly? 2 A. Well, like I said, there is a party 3 leader that oversees the actual soil survey 4 itself and under that party leader that man 5 has the responsibilities, the oversight, 6 there is in this case there were six other 7 individuals of which some were employed by 8 the USDA and some were employed by the State 9 of Michigan. 10 Q. Are you speaking of Houghton 11 County? 12 A. Yes. 13 Q. Okay? 14 A. They spend initially in the morning 15 you look at the land forms, start off you 16 have flight lines, there is aerial imagery 17 and flight lines are assigned so you 18 overlap, you don't do three or four flight 19 line maps of areas, you want to abut your 20 neighbor your fellow soil scientist. So you 21 have you commensurate I guess over what 22 soils you find so you join and you 23 effectively then communicate among everyone 24 what soils you see. So in the morning you 25 come in and you pull your flight lines, your</p>

<p style="text-align: right;">17</p> <p>1 area imagery out and you look a stereoscope 2 and is assign land forms. On average a guy 3 might go out and look at about 160 acres a 4 day would be a benchmark and you would 5 either go out and do some transects or you 6 would go out and individually drill holes in 7 those lands forms and come up with an 8 assemblance of what kind of soils you are 9 looking at based on those landforms and then 10 over time as the survey progresses you start 11 to come up with a pretty good predictive 12 methodology after you have spent this amount 13 of the time looking at soils and pits and 14 talking with your foresters and other kinds 15 of people you come up with a pretty good 16 idea of sort of a predictive model as you 17 proceed through the county. It is a rather 18 arduous task to walk over. There is 660,000 19 acres in Houghton County of which about 20 490,000 were actually mapped and the rest is 21 the federal land. It is a major undertaking 22 to go over and walk the entire area and look 23 at this. 24 Q. And is this a recognized 25 methodology nation wide in terms of</p>	<p style="text-align: right;">19</p> <p>1 advantage of land forms and anything you 2 can. 3 Q. What is a road crop? 4 A. When you have a steep slope and you 5 have out casting from a cat going through 6 you will have a sheer face on the edge of 7 the road so you can drive in your vehicle 8 and look at the undisturbed soil on the 9 inside, the uphill face of the road. So you 10 might get half a mile worth of undisturbed 11 soil and you can get a pretty good idea of 12 what is out there. 13 Q. So rather than having to drill a 14 hole in those spots-- 15 A. --yeah, take advantage of that. 16 Q. If you would allow me to finish my 17 question before you answer so that the 18 answers and questions are not on top of each 19 other? 20 A. Okay. 21 Q. I will ask that again. So 22 essentially rather than having to go through 23 and drill holes you can simply view what is 24 available to you and then do your analysis 25 on that and end of the data based on what</p>
<p style="text-align: right;">18</p> <p>1 determining where-- 2 A. --yes, so if you find a soil that 3 was Johnston in Maine it has certain 4 criteria, color, profile, horization, you 5 name it, and you will find if you find that 6 same soil here it would be a Johnston series 7 here too or in Texas, whatever. So that 8 these soil series that are described and go 9 across political boundaries for the whole 10 United States. 11 Q. How far apart are the holes being 12 drilled? 13 A. For sake of argument, if you said 14 you drilled a hole every six to eight acres 15 that might be up to maybe ten acres that 16 might be an average. 17 Q. And how far down are the holes 18 drilled? 19 A. A 60 inches, 5 feet. Now you are 20 also taking advantage of road cuts, backhoe 21 holes, about any kind of thing you can peer 22 down into that you are not out drilling the 23 holes. So if you are out someplace and 24 somebody is building a basement you walk 25 over and take a look at that so it is taken</p>	<p style="text-align: right;">20</p> <p>1 you see? 2 A. Yes. 3 Q. Is there any area of Houghton 4 County which has not been mapped and entered 5 into the soil survey? 6 A. Well, the published soil survey 7 that the USDA and NRCS has put out addresses 8 all the land area except for the federal 9 land in the Ottawa. 10 Q. Where is the Ottawa? 11 A. It is in the southern part Houghton 12 County. 13 Q. When you are speaking of the Ottawa 14 you are speaking of the Ottawa National 15 Forest? 16 A. Ottawa Natural Forest. Now they 17 have they are own soil survey crews and they 18 map in a different level than what the NRCA 19 does a different methodology that suits more 20 for the forestry aspects than the broad 21 brushed methodology that we would have to 22 look at for wildlife and flood prevention 23 and construction and you name it. So they 24 have a little bit different methodology but 25 they are mapping their area also based on</p>

<p style="text-align: right;">21</p> <p>1 their methodology.</p> <p>2 Q. Are they also going down about 60</p> <p>3 inches?</p> <p>4 A. To be honest with you I don't know.</p> <p>5 I don't know how they handle that.</p> <p>6 Q. Is Portage Township also obviously</p> <p>7 is a portion of Houghton County has that</p> <p>8 area been mapped, been soil surveyed?</p> <p>9 A. Yes.</p> <p>10 Q. Any areas of Portage Township that</p> <p>11 hasn't been surveyed?</p> <p>12 A. No.</p> <p>13 Q. The survey itself what are its</p> <p>14 limitations in terms of identifying what is</p> <p>15 under the surface?</p> <p>16 A. Well, everybody has to remember</p> <p>17 that it goes down to 5 feet, 60 inches. It</p> <p>18 is largely aimed at the upper portions of</p> <p>19 the earth, you know, 5 feet that is where</p> <p>20 most of the biologic activity occurs, that</p> <p>21 is where most of our interpretations that we</p> <p>22 need at as an agency and most people need</p> <p>23 occur. The limitations you have to remember</p> <p>24 as a scale when you draw a line on a map and</p> <p>25 you print it in a soil survey book that line</p>	<p style="text-align: right;">23</p> <p>1 rock outcrop, whatever, that is too small to</p> <p>2 cut out it is only an acre and a half or an</p> <p>3 acre and you couldn't physically cut it out</p> <p>4 and draw on line around it on the soil</p> <p>5 survey so you put a spot somewhere. So</p> <p>6 these are the kinds of limitations that you</p> <p>7 are faced with that are just, you know, you</p> <p>8 have to use paper copies and you do that.</p> <p>9 It has now gone a little bit more towards</p> <p>10 the digital usage but you have those kind of</p> <p>11 scale limitations and small unit limitations</p> <p>12 and commingled unit limitations that you as</p> <p>13 a soil scientist can address.</p> <p>14 Q. I guess the relevant portion for us</p> <p>15 and maybe it is all relevant that the soil</p> <p>16 survey really only goes down 60 inches?</p> <p>17 A. That's correct.</p> <p>18 Q. And there may be additional</p> <p>19 materials or soil types that exist below the</p> <p>20 60 inches which we simply don't have the</p> <p>21 information about; correct?</p> <p>22 A. Well, there is, and this is one of</p> <p>23 first few soil surveys that I have seen in</p> <p>24 Houghton County incorporated some geology so</p> <p>25 there was some effort to at least address a</p>
<p style="text-align: right;">22</p> <p>1 can be printed in a soil survey book that</p> <p>2 line but be 50, 60 feet wide to scale and so</p> <p>3 grade they don't just stop, they don't abut</p> <p>4 one another directly there is always a</p> <p>5 grading area and that is where the line is</p> <p>6 found. So you have those lines would be a</p> <p>7 limitation, you know, the width of the line</p> <p>8 to scale. You have certain soils that are</p> <p>9 intermingled that cannot be scribed out as a</p> <p>10 soil scientist those are called soil</p> <p>11 associations and soil complexes and mostly</p> <p>12 complexes that you have to name two or three</p> <p>13 soil series of which the preponderance soil</p> <p>14 that you find on site is the first named all</p> <p>15 the way to the least name. So as a soil</p> <p>16 scientist you may have to do that because</p> <p>17 you are just not physically able to cut out</p> <p>18 the soil differentiations. You may have</p> <p>19 soil areas that are too small to scribe out</p> <p>20 to scale, that might be an acre and a half</p> <p>21 or two acres and that is where you use spot</p> <p>22 symbols. So you have identified an area</p> <p>23 that might be different that you want to</p> <p>24 identify a mine opening, a small wetland</p> <p>25 area, a cobbly surface, a rock surface, a</p>	<p style="text-align: right;">24</p> <p>1 monicum of geology in the soil survey. It</p> <p>2 was very general geologic maps were put in</p> <p>3 this soil survey.</p> <p>4 Q. That is not common amongst--</p> <p>5 A. --not generally. This was done in</p> <p>6 '91 I believe but up until then they</p> <p>7 basically just put land form descriptions in</p> <p>8 and really didn't discuss geology in any</p> <p>9 great length other than making a causal</p> <p>10 reference to what soils were weathered out</p> <p>11 from apparent material or bedrock. So this</p> <p>12 is one of the first soil surveys that was</p> <p>13 put in a geology map.</p> <p>14 Q. Is there any reason that you are</p> <p>15 aware why it is unique or at least</p> <p>16 progressive?</p> <p>17 A. Well, I think it was one of first</p> <p>18 few because up until that point in fact of</p> <p>19 the interpretations and limitations of the</p> <p>20 soil surveys were used for were more towards</p> <p>21 the surface, forestry pursuits, how</p> <p>22 productive kinds of soils for agronomic</p> <p>23 uses, recreational uses, paths and trails,</p> <p>24 house building, basement, all these occurred</p> <p>25 you know, within 5, 6 feet of the surface so</p>

25

1 that is what most of the soil survey was
 2 used for and as time went on people started
 3 thinking a little bit deeper than that and
 4 maybe there was certain activities that in a
 5 general sense that people wanted to know a
 6 little bit more about geology. It was one
 7 of the first soil surveys that I have seen
 8 that this geology in.
 9 Q. Is there data available regarding
 10 what exists below 60 inches?
 11 A. Oh, yeah, there are geology maps.
 12 There are a number of studies people have
 13 drilled many holes and made geology maps,
 14 which are much more exact and much more
 15 definitive I'm sure than what is contained
 16 within the soil survey which is a very
 17 general text.
 18 Q. Is there a definitive source by
 19 which it can be identified everything which
 20 exists below 60 inches in a particular area?
 21 A. Well, when we used to go out and we
 22 had projects and we were asked to look at
 23 geology because we had like a pipe light
 24 going in, if we drilled a hole every 100
 25 feet with only knew one one hundredth of what

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1 was out there. So you know to say there is
 2 a definite map that you can go and have a
 3 descriptive point in the landscape and say
 4 at this point in the geology unless you
 5 drill a hole there I don't know of any that
 6 are that definitive. You have some really
 7 good maps and some very excellent research
 8 that has gone on I'm sure geologically
 9 speaking to up come up with a pretty good
 10 idea what is there but to go out and stand
 11 in a landscape with some holes that have
 12 been drilled and you have no idea definitely
 13 to say this is what is going to occur right
 14 at this point I think would be a hard thing
 15 to do and again I'm not a geologist but that
 16 is what I would believe.
 17 Q. So we are still kind of in a
 18 position as a society that in order to
 19 determine what is below you at where you
 20 stand you actually have to dig there to find
 21 out?
 22 A. That's what it amounts to.
 23 Q. Otherwise we are kind of as you
 24 indicate evaluating data and trying to
 25 predict based on the data that we have?

27

1 A. That is what the soil survey was
 2 all about. After working many years in the
 3 field, you start looking at land forms and
 4 drilling all these holes and seeing all the
 5 soil data you can make a pretty good
 6 prediction of what is there.
 7 Q. We heard testimony yesterday from
 8 Paul Tomasi of Pebbles, Inc., who testified
 9 that he has found viable materials in terms
 10 of gravel where it has been below 6 feet and
 11 then there is a clay level at another
 12 15 feet down he has found gravel again, that
 13 is not something that would be found on the
 14 soil survey?
 15 A. Not really not that I know of.
 16 Q. Is it a possibility in Portage
 17 Township that those kinds of materials,
 18 exist, gravel materials exist, underneath
 19 the 60 inch level at which the soil survey
 20 cuts off?
 21 A. Again, I would assume so. Again
 22 I'm not a geologist and I haven't spent the
 23 time to go drill holes but I think that
 24 would be a logical assumption.
 25 Q. As a layman and supervisor, has

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1 anyone come to you with information to the
 2 affect that they found gravel on their
 3 property below 60 inches?
 4 A. Yes.
 5 Q. Who?
 6 A. Sally Sandford.
 7 Q. And how long did Sally come to you?
 8 A. Just a couple days ago. She was
 9 looking at the maps that I supplied to the
 10 township when I was employed with the USDA
 11 NRCS and she was making reference on either
 12 on or adjacent to her property they had a
 13 barrow area that they removed gravel and
 14 used it for road fill and it didn't so
 15 indicate on our maps, you know, like I say
 16 60 inches is the magic depth, anything below
 17 that this soil survey other than just a
 18 general overview on the geology section
 19 would be hard to predict based on the soil
 20 survey but she had made reference that they
 21 had found gravel that had utilized those
 22 gravels even though the maps that I supplied
 23 the township didn't indicate such on her
 24 property.
 25 Q. Okay. You speak of maps that you

<p style="text-align: right;">29</p> <p>1 had provided the township again you have 2 given a deposition in this matter in 3 December and at which time you spoke of and 4 were entered as exhibits maps that you had 5 prepared at the request of Portage Township; 6 correct? 7 A. Yes. 8 Q. And those maps give information 9 about the gravelly soil that is available 10 within Portage Township according to the 11 soil survey; correct? 12 A. Right. 13 Q. Now on the basis of the soil survey 14 and the U.S. Geological Survey, you had 15 prepared or requested to be prepared a map 16 identifying the gravelly soils within 17 northern Houghton County and the shallow 18 bedrock in Houghton County? 19 A. This is the map. 20 Q. Let me have this marked as an 21 exhibit this document. 22 (Exhibit 13 marked) 23 Let me show you Exhibit 13 and what 24 are we looking at here? 25 A. This is a map that I had Mike</p>	<p style="text-align: right;">31</p> <p>1 on the east side and the west side of that 2 green corridor. 3 Q. Let's take it a little bit slower. 4 First of all, this map represents strictly 5 the northern Houghton County of Michigan; 6 correct? 7 A. Yes. 8 Q. And when you had this map prepared 9 you had it prepared with the political 10 boundaries of the various townships 11 superimposed on the map? 12 A. Not initially to be honest with 13 you. When I went and viewed the first 14 product he did not have the political 15 boundaries on there and I requested that he 16 put those on so we have some assemblance of 17 what they are in conjunction with the other 18 townships. 19 Q. And according to the key on the map 20 the political townships are identified or 21 separated by a dotted white line? 22 A. Yes. 23 Q. And Portage Township can tend to be 24 identified as an area within the center of 25 the map approximately?</p>
<p style="text-align: right;">30</p> <p>1 Hislop at Michigan Tech make. Mike Hislop 2 is a GIS instructor one of the few that I 3 know of in the area if not the only one and 4 he is a very, very gifted guy in the school 5 of forestry when it comes to making maps and 6 taking layers, GIS layers, and combining 7 them and putting them into really excellent 8 quality maps. 9 Q. What is GIS? 10 A. It is Geographical Information 11 Systems, it is a layer of data and he is 12 very good at this. 13 Q. For this map, we used maps I 14 supplied earlier to the township which was 15 based on the survey, we also brought in a 16 geologic feature map you will notice there 17 is a green corridor scribed in and that is 18 the basaltic corridor sort of the backbone 19 of the Keweenaw that runs in a north/south 20 fashion through the middle of the map. That 21 is where you would have a propensity to find 22 basalt bedrock, obviously, on either side of 23 that will you have various kinds of 24 sedimentary rock as evidenced by the red 25 areas of shallow bedrock, soils, red areas</p>	<p style="text-align: right;">32</p> <p>1 A. Yes. 2 Q. Can you tell me which township is 3 to the right? 4 A. Chassel. 5 Q. And what township is to the left? 6 A. Adams. 7 Q. Now when I look at Adams Township 8 it appears to me that Adams Township is kind 9 of right along the center of that basalt 10 bedrock corridor? 11 A. Yes. 12 Q. In fact, to the south of the canal 13 it appears that most of the basalt bedrock 14 is located within Portage Township; is that 15 accurate, I'm sorry not Portage Township, 16 within Adams Township? 17 A. Yes. 18 Q. To the west of Adams what township 19 do we have here? 20 A. To the left of Adams. 21 Q. Right, to the west? 22 A. I don't honestly recall to be 23 honest with you. 24 Q. Would Stantin Township sound right 25 to you?</p>

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1 A. That might be as good a guess as
 2 any.
 3 Q. Have you done any inquiry into the
 4 various zoning of these surrounding
 5 townships?
 6 A. Well, I know Adams is not zoned
 7 that is to the west of Portage Township
 8 which is zoned, Calumet Township is zoned
 9 which is to the north of the canal in the
 10 middle of the basaltic corridor and Chassel
 11 Township in this is also zoned.
 12 Q. And is that to your knowledge the
 13 extent of the zoned townships?
 14 A. Those are the ones that I know in
 15 close proximity to Portage Township that are
 16 zoned.
 17 Q. And it appears again that the
 18 majority of the basalt corridor at least
 19 south of the canal is located in Adams;
 20 correct?
 21 A. Yes.
 22 Q. An unzoned township?
 23 A. Yes.
 24 Q. The key to the map indicates
 25 gravelly soils with sort of a beige

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1 coloration; is that right?
 2 A. Yes.
 3 Q. And that beige coloration appears
 4 to be associated with the basalt corridor
 5 does that seem right?
 6 A. Yes.
 7 Q. And that is further demarcated by
 8 the yellow coloration which indicates both
 9 gravelly and shallow soils; correct?
 10 A. Yes.
 11 Q. And it appears that that type of
 12 soil type exists in the south portion of
 13 Adams Township?
 14 A. Yes, now or there shallows soils
 15 again this gets back to differentiations
 16 from the soil survey. Any soil that has a
 17 40 inch depth or shallower is considered a
 18 shallow soil. A lot of our soils are
 19 60 inches of depth but if you go down to
 20 bedrock at 40 inches or less it is
 21 considered it is a shallow gravelly soil.
 22 Q. I see that the shallow bedrock on
 23 the map is identified by sort of a red
 24 coloration, pinkish?
 25 A. Yes.

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1 Q. And is there some of that shallow
 2 bedrock available in Adams Township as well
 3 as?
 4 A. Yes.
 5 Q. And where is it located in Adams
 6 Township?
 7 A. That would be near the Painesdale
 8 area.
 9 Q. When you speak of Painesdale you
 10 are referring to the--
 11 A. --community.
 12 Q. But on the map Painesdale is
 13 identified with some it looks like streets,
 14 it is kind of a whiter block?
 15 A. Yes.
 16 Q. Towards the north portion of Adams
 17 Township?
 18 A. Yes.
 19 Q. And where is the shallow bedrock in
 20 relation to Painesdale?
 21 A. It looks to me to be to the east.
 22 Q. All right. Is there additional
 23 shallow bedrock sources in Adams according
 24 to the map?
 25 A. Basaltic?

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1 Q. Yes?
 2 A. Yes, there might me some small
 3 areas down here down toward the middle to
 4 the southern part of Adams Township?
 5 Q. You are speaking of the area
 6 towards the southeast portion of the basalt
 7 corridor?
 8 A. Right, on this map.
 9 Q. On this map. And it appears from
 10 map that the basalt corridor for the most
 11 part just catches the northwestern edge of
 12 Portage Township; is that right?
 13 A. Yes.
 14 Q. And is the majority of that basalt
 15 shallow basalt located within populated
 16 areas?
 17 A. Close to it, yes.
 18 Q. And what populated areas are we
 19 speaking of?
 20 A. We are talking the City of Hancock
 21 here in town, you know.
 22 Q. City of Hancock?
 23 A. I'm sorry City of Houghton here in
 24 town and those kind of areas.
 25 Q. It looks according to the map that

<p style="text-align: right;">37</p> <p>1 the majority of this basalt bedrock is the 2 foundation on which the City of Houghton is 3 based does that seem right? 4 A. Sure. You can sit at Houghton 5 elementary and look across the parking lot 6 and see a heck of a lot of rock outcrop 7 right there. 8 Q. There is some downtown from this 9 from where we are taking this deposition; 10 correct? 11 A. Sure, and then it largely extends 12 north you have a fair amount north too. 13 Q. Now as a part of your analysis of 14 Portage Township you had done some 15 investigation as to the various soil types 16 which exist in Portage Township and their 17 possibility for viable gravel; correct? 18 A. Yes. 19 Q. And on what basis did you do that 20 investigation? 21 A. Well, to be honest with you, I 22 wasn't asked to do it I just sat down one 23 afternoon and pulled out a soil survey and I 24 made two assumptions and if you are 25 referring to these.</p>	<p style="text-align: right;">39</p> <p>1 and wrote down the soil name and then in the 2 front of the book, the front of the soil 3 survey, you can look at the map units which 4 there is about 150 to 152 in the soil survey 5 you can look at the number of acres and the 6 relative percent of the mapped area that 7 those comprise. So I went through and I 8 wrote down the acres of each one of these 9 soil series, these map symbols, how many 10 acres and then it also came commensurate 11 with percentage of the overall mapped area 12 which is about 497,000 acres, added up the 13 acreage and the percentage and I came up 14 with around 14.3 percent based on my two 15 criteria you could expect to find gravel 16 within Houghton County. 17 Q. So this represents the entirety of 18 Houghton County? 19 A. That's correct. 20 Q. So according to your analysis of 21 the situation and again based on the 22 assumptions that you made 14.3 percent of 23 Houghton County has soil that is 24 potentially-- 25 A. --has a high probability of having</p>
<p style="text-align: right;">38</p> <p>1 Q. Why don't we have it marked as an 2 exhibit. 3 (Exhibit 14 marked) 4 I show you Exhibit 14 tell me a 5 little bit about it? 6 A. This was a table, Table Number 14 7 on the soil survey is a construction 8 materials table and the soil scientist who 9 looked at the soils in Houghton County put 10 these tables together and explicitly this 11 table, Table 14 construction materials, to 12 evidence where gravel, sands, various other 13 kinds of construction materials could be 14 thought to be found and so I went through 15 that table and I made sure that the soils 16 that were indicated there had at least one 17 probable soil that would have a good chance 18 of having gravel in it if it was a complex 19 and secondarily that it was a well drained 20 soil so we are not digging a pit and 21 creating a pool or a pond and exposing a 22 water table to make it sort of less viable. 23 So those are the two things that I put down 24 as sort of criteria for my list and then I 25 went down through that chart, that table,</p>	<p style="text-align: right;">40</p> <p>1 gravels in it in the upper 5 feet of that 2 soil. 3 Q. And let's speak a little more 4 particular of Portage Township and I'm going 5 to go back to the maps that you had provided 6 the township in I believe it was 7 January 2010 does that sound right? 8 A. Yes. 9 Q. And we are speaking of Plaintiff's 10 Deposition Exhibit Number 50 from the 11 deposition taken on December 22, 2010, you 12 had provided maps to Portage Township 13 identifying gravelly soil maps; correct? 14 A. Yes. 15 Q. And down in Sections 22 and 27 of 16 Portage Township it appears that there are 17 soils that have a good probability for 18 gravel; is that accurate? 19 A. Yes. 20 Q. Have you had an opportunity to take 21 a look at a platbook relative to those two 22 sections? 23 A. Yes. 24 Q. And are either of those sections, 25 22 or 27 located within the Copper County</p>

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1 State Forest?
 2 A. No.
 3 Q. These properties are somewhat close
 4 to what is known as the Challenge Mine Road;
 5 is that right?
 6 A. I thought was it the Globe Mine or
 7 the Challenge Mine I'm not sure to be honest
 8 with you about that.
 9 Q. I don't know that we have a--I
 10 don't think we ever entered as an exhibit
 11 the actual page.
 12 (Exhibit 15 marked)
 13 I show you what has been marked as
 14 Exhibit 15 can you tell me what we are
 15 looking at there?
 16 A. Well, we are looking at Page 48 of
 17 this is the Keweenaw Houghton County plat
 18 book.
 19 Q. And is a portion of the land that
 20 is identified on that page within Portage
 21 Township?
 22 A. Yes.
 23 Q. And in fact there are Sections 22
 24 and 27 identified on that map?
 25 A. Yes.

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1 Q. And can you show me or tell me the
 2 name of the road which comes close?
 3 A. It looks like it says Challenge
 4 Mine Road so it must be that. Now there is
 5 a mine that's indicated in looking at looked
 6 at under this HF10 right next to Three Mile
 7 Creek that is actual shaft opening right
 8 there so.
 9 Q. Okay. Where did you find that
 10 information?
 11 A. I believe it was off the soil
 12 survey because there is a spot for shaft
 13 openings in the soil survey.
 14 Q. You also had an opportunity I
 15 imagine to determined where Sections 22 and
 16 27 are on the Portage Township zoning map;
 17 correct?
 18 A. Yes.
 19 Q. And how are these two sections
 20 zoned?
 21 A. They are zoned forestry.
 22 Q. Farm and forest?
 23 A. Farm and forest.
 24 Q. And to your recollection is gravel
 25 extraction available with the farm and

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1 forest?
 2 A. That's one of the land uses allowed
 3 on our zoning plan.
 4 Q. As a special use?
 5 A. Yes.
 6 Q. Thank you. Have you had any
 7 opportunity to look into the type of soil
 8 which exists within 22 and 27?
 9 A. There is a lot of like you say you
 10 say earlier there is a lot of gravel soils,
 11 outwash soils that are located there.
 12 Q. And do these soils are they
 13 commercially, I mean, have you looked into
 14 whether or not these are usable materials
 15 for construction purposes?
 16 A. Personally, no, I haven't. But
 17 there is a high probability that there is
 18 gravels available there.
 19 Q. Okay. Are there any other
 20 locations within Portage Township where
 21 gravelly soils exist?
 22 A. On the map you are looking in this
 23 area right here.
 24 Q. You are referring to Sections 22
 25 and 27?

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1 A. Yes, in the very corner of Portage
 2 Township right here you can look at some of
 3 the outwashed soils up in this here right
 4 here.
 5 MR. PENCE: When you say up in this
 6 area you have to help us.
 7 Q. Why don't you review both the
 8 gravel soil maps that you had prepared
 9 prior?
 10 A. You are looking in Section 5,
 11 Section 12 and 8 which is basically in the
 12 middle of the Portage Township.
 13 Q. Are all of those areas located
 14 within farm and forest districts?
 15 A. As far as I know, yes.
 16 Q. Yesterday we also heard testimony
 17 from Dennis Jouppe from Peckhem Engineering
 18 regarding his knowledge of a potential
 19 quarry site north of the airport. I wonder
 20 if you can identify for me on the map where
 21 the airport is approximately located?
 22 A. Well, the airport road comes
 23 outside of the Lake Linden runs right up
 24 here so it comes out of Lake Linden, oh,
 25 I'm sorry it is right down it is right down

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1 there. I was up one. It is roughly right
 2 in this area right here. I don't know how
 3 to best describe it is up Airport Road.
 4 Q. So Airport Road leaves out of
 5 Dollar Bay?
 6 A. Yes.
 7 Q. And it meets up eventually with US
 8 41 north of Hancock; is that right?
 9 A. Yes.
 10 Q. Okay. And looking on the map
 11 Exhibit 13 in the approximate area of the
 12 airport, are there any shallow bedrock
 13 locations identified by the soil survey?
 14 A. Well, there is all sorts of bedrock
 15 along the edge of Torch Lake but largely
 16 most of that is sedimentary. Farther up
 17 there are some bedrock soils that are
 18 indicated just in that basaltic corridor
 19 that I would assume would be shallow bedrock
 20 soils that would be basaltic in nature.
 21 Q. If there is bedrock within the
 22 green lines, your assumption would be that
 23 is a basalt in nature?
 24 A. That's correct.
 25 Q. Now Mr. Juppe testified that there

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1 was a removal of overburden from the site in
 2 order to expose this rock and does that meet
 3 with your analysis in that there is bedrock
 4 available underneath 60 inches in certain
 5 spots?
 6 A. Sure. Again you know these units
 7 that were put on this map were based on a 60
 8 inch depth from our soil survey so there
 9 might well be bedrock underneath this
 10 outwash material, this gravel, coarse
 11 materials.
 12 Q. And again this map is not it is
 13 definitive only up to 60 inches so there
 14 certainly could be--would you expect there
 15 to be basaltic bedrock below 60 inches
 16 throughout that corridor?
 17 A. Yes.
 18 Q. And that stretches the entirety of
 19 Houghton County; correct?
 20 A. Correct.
 21 Q. I think that is all I have at this
 22 time.
 23 QUESTIONS BY MR. PENCE:
 24 (Exhibit 16 marked)
 25 Q. Exhibit 16 was an exhibit attached

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1 by defendants to their brief in support of
 2 their motion for summary disposition. It
 3 purports to be a zoning map of much of
 4 Houghton County if not all and it looks like
 5 it extends to Keweenaw and Ontonagaon. Is
 6 what is shown by that map in terms of where
 7 there is either local zoning, no zoning, or
 8 township zoning, is that consistent with
 9 your testimony was earlier regarding zoning?
 10 A. Yeah, I indicated that Portage
 11 Township has zoning and Chassel Township has
 12 zoning. Adams does not and that is what is
 13 evidenced on this map and Calumet has zoning
 14 also.
 15 Q. As we cross the Portage canal and
 16 we have on your colored map here if we look
 17 at this map if we cross the canal and we
 18 look at that large strip of red which is
 19 designated as shallow bedrock less than 40
 20 inches, what township is that in?
 21 A. I would assume that some of it is
 22 in Calumet Township. It could be Torch Lake
 23 Township.
 24 Q. A lot of it is a township that is
 25 not zoned; correct?

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1 A. Yes.
 2 Q. And a lot of it is in it an area
 3 where there is not dense population too;
 4 correct?
 5 A. The red area you are referring to?
 6 Q. Yes?
 7 A. Yes.
 8 Q. And looking again at Exhibit 13
 9 when we go south of the Portage canal most
 10 of the shallow bedrock is in or near the
 11 City of Houghton; correct?
 12 A. Yes.
 13 Q. And the site of the Valley View
 14 quarry is that near a population center or
 15 the population center of Portage Township?
 16 A. Well, basically it is near Green
 17 Acres Road where we do have a population of
 18 people, yes.
 19 Q. Are there population centers in
 20 your township or is it all diffuse and
 21 scattered?
 22 A. The preponderance of the township
 23 is diffuse and scattered but we abut the
 24 City of Houghton and we have it right in
 25 Painesdale and those communities

<p style="text-align: right;">49</p> <p>1 Trimountain, Painesdale, and all of those 2 are just in Adams Township just to our west. 3 Q. So the Valley View quarry is 4 presently located near the main population 5 center of your township; correct? 6 A. Basically, yes. 7 Q. And you understand that the Valley 8 View quarry is in an area where it is zoned 9 rural residential? 10 A. Yes. 11 Q. And how does allowing an industrial 12 use in that area interfere if it does with 13 the town's master plan and your zoning 14 ordinance? 15 A. Well, I as a supervisor I field 16 people's concerns and the residents that are 17 immediately around Valley View have voiced 18 concerns to me, you know, they have concerns 19 over noise, they have concerns over working 20 hours, they have concerns over dust, and 21 those have all been articulated to me and 22 those are concerns that hopefully in a rural 23 residential area you would not have to be 24 met with. 25 Q. When you mapped a percentage for</p>	<p style="text-align: right;">51</p> <p>1 A. Well, you can see that whole 2 central corridor in Adams Township there is 3 all sorts of opportunities there. 4 Q. And Adams being also not zoned? 5 A. That's correct. They are working 6 towards zoning but as far as I know they are 7 not zoned. 8 Q. Did you do any survey of the nearby 9 poor rock piles? 10 A. No, what you saw was a gravel 11 synopsis that I quickly put together in 12 about a half hour that's based on a soil 13 survey. On the soil survey you will notice 14 that we have spot symbols for gravel and for 15 poor rock deposits throughout the county and 16 there is a I believe it is Number 55, don't 17 quote me but I believe it is 55, it is 18 called DUMPS and that is mine gravel 19 depositions of poor rock piles that is cut 20 over meaning differentiate so those areas if 21 you wanted to you could look throughout the 22 soil survey and identify those areas. 23 Q. Do you have any data or any opinion 24 on the needs of Portage Township itself for 25 aggregates on an annual basis?</p>
<p style="text-align: right;">50</p> <p>1 the county of potential gravel sites and 2 came up with 14 percent you didn't attempt 3 to do something similar to that with shallow 4 bedrock less than 40 inches in terms of 5 percentage of the north central portion of 6 the county? 7 A. No, I did not. 8 Q. The map speaks for itself in terms 9 of the many areas where it is available; 10 correct? 11 A. Yes. 12 Q. And is it your testimony then that 13 to the best of your knowledge, experience, 14 and training there are places in your 15 township where there should be viable places 16 to gather commercially gravel? 17 A. Yes. 18 Q. And to the extent that for some 19 reason the judge or somebody else might 20 dispute that, are there places to either 21 mine gravel commercially in an appropriately 22 zoned area or exploit shallow bedrock near 23 Portage Township? 24 A. Most definitely. 25 Q. What areas are we taking about?</p>	<p style="text-align: right;">52</p> <p>1 A. Volumetrically or just a general 2 need? 3 Q. Let's start with general? 4 A. We use gravel in back fillings, for 5 instance, this time of year when we have 6 water line breaks we go in and we fix the 7 break and then backfill with a course loamy 8 sand or a sand and so we do use sand and 9 gravel in our back filling of, for instance, 10 that endeavor for this time of year. So we 11 use gravel and sands for road building and 12 road maintenance within the township. 13 Q. And through the years has that need 14 for sand and gravel in the township always 15 been easily met? 16 A. Yes. 17 Q. Are there any pits presently in the 18 township where gravel is being mined either 19 legally or illegal? 20 A. I would assume so, yes. 21 Q. And how long have you been in your 22 position? 23 A. About seven, eight months. 24 Q. Is it your intention to enforce 25 your ordinances?</p>

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1 A. We have a new zoning administrator,
 2 we have met with this individual once it
 3 will be after the snow goes he's going to be
 4 going out throughout the landscape and we
 5 are going to be making sure that our zoning
 6 is--he's been primed already that our zoning
 7 will be enforced.
 8 Q. I have heard the names Palisary or
 9 DP as having a pit in the township or a man
 10 named Harris, do you have any knowledge of
 11 either of those?
 12 A. Just a vague knowledge that their
 13 names have been used as having pits, yes.
 14 Q. You don't know where they are
 15 located if they are in the township?
 16 A. I don't know where DPs are. Larry
 17 Harris has a small pit that I been shown on
 18 a map of where it is located.
 19 Q. And you were the man that was
 20 retained when this controversy first came to
 21 the floor by the township to do this
 22 analysis regarding the availability of
 23 gravel or bedrock either in the township or
 24 nearby a year or two ago; correct?
 25 A. Correct.

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1 Q. And am I correct you did that as a
 2 community service you were not paid for?
 3 A. I didn't get a cent, you are
 4 exactly right.
 5 Q. And you here today because the
 6 township's attorneys asked you to be here?
 7 A. That's correct.
 8 Q. And you aren't getting paid any
 9 extra?
 10 A. No.
 11 Q. In the course of your duties?
 12 A. I don't get paid. I'm getting paid
 13 \$20,300 as a part-time public servant and,
 14 no.
 15 Q. Would it be a fair statement that
 16 your opinions here today are the same as
 17 they were when you were first asked to
 18 research this issue by the township?
 19 A. Yes.
 20 Q. But you have put substantially more
 21 time into the project?
 22 A. Well, as the project meaning the
 23 Valley View quarry court case?
 24 Q. No, what I mean is analyzing the
 25 question of the sources and the availability

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1 of aggregates in or about Portage township?
 2 A. Well, what I have done is like I
 3 have say gone over and approached a fellow
 4 that I have known for years Mike Hislop who
 5 is able to put together these nice maps and
 6 I spent some time and put together this
 7 chart just to that was just under my own
 8 volition.
 9 MR. PENCE: Go ahead, counsel, I
 10 know our plan is to allow a little back and
 11 forth today so I'll let it rest for now and
 12 let you exam.
 13 QUESTIONS BY MR. KOPIETZ:
 14 Q. Start up with a few clarifications,
 15 Mr. Petersen. This is Joe Kopietz on behalf
 16 of the Moyle companies. You stated your
 17 expertise is in the area of actually as you
 18 I believe phrased it utilization of the soil
 19 maps or soil surveys, can you expand on that
 20 a little bit in terms as to whether or not
 21 that would apply to the formation of
 22 geological formations below the depth of the
 23 soil survey?
 24 A. Well, like I said earlier I have
 25 been involved in the making and

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1 interpretations from the soil survey
 2 Houghton County, the ones that I the places
 3 that I have worked in throughout my career
 4 so I know a little bit about how the soil
 5 surveys are made, the methodology, how
 6 interpretations and limitations are decided
 7 within the soil survey, that is I guess I
 8 would be loosely defined as that is my
 9 expertise. Secondly as to the geology,
 10 the geology of the area has a great deal to
 11 do with the intrinsic properties of the
 12 soils that are made and defined, well not
 13 made, better defined, and identified in the
 14 soil survey. So the geology slate versus
 15 basalt would have a lot to do with the
 16 coloration and the pH and the various
 17 physical properties of soils what they are
 18 derived from.
 19 Q. Okay. You would not claim to be an
 20 expert in geology or quarries; correct?
 21 A. Exactly.
 22 Q. I believe you actually prepared
 23 some maps and attended a meeting with the
 24 Township of Portage back in January 2nd
 25 February 3rd of 2010 do you recall attending

<p>1 that planning commission meeting? 2 A. A planning commission meeting or 3 just a monthly meeting of the township? 4 Q. This was actually a planning 5 commission meeting held on February 3, 2010? 6 A. I was on the planning commission at 7 that time but as to the question I was 8 probably in attendance. 9 Q. Do you recall preparing maps for 10 that meeting? 11 A. The maps that I prepared for 12 presented to a township meeting, Portage 13 Township meeting, for gravel and sandy soil 14 within Portage Township and it wasn't a 15 planning commission meeting as far as I can 16 recall. 17 Q. I didn't actually have to expect to 18 utilize this and I have this as an exhibit 19 from earlier briefs we will mark this 20 appropriately but it is the planning 21 commission meeting minutes of January 21, 22 2010, and you had present at that meeting as 23 a guest you were listed on that. 24 MR. PENCE: Joe, do you have a 25 number?</p>	57	<p>1 A. Well, it was past investigation 2 actually they removed material and I think 3 it was used for a road building project. 4 Q. Did you happen to visit the 5 location and see these gravelly soils? 6 A. No, I did not. 7 Q. So the resident's name was Sally 8 Sandford? 9 A. That's correct. 10 Q. So other than Ms. Sandford's claim 11 you have no knowledge that these were 12 actually found; correct? 13 A. That's correct. 14 Q. Let's talk for a minute about what 15 was marked as Exhibit 14. You noted, and if 16 I have this figure correct, 14.3 percent of 17 Houghton County you determined to have a 18 probable chance of having gravelly soils? 19 A. That's what I said, yes. 20 Q. Any idea of that 14.3 percent how 21 much of those gravelly soils would also 22 contained clays, other types of fine 23 materials? 24 A. The chart that I went off of took 25 that into consideration based on the sieve</p>	59
<p>1 MR. KOPIETZ: I going to have to--I 2 didn't think that I would have to refresh 3 his memory regarding a meeting that was 4 previously brought up. We had it in as an 5 exhibit in his--let's forego the exhibit for 6 now we will bargain later. 7 Q. (By Mr. Kopietz) Mr. Petersen, the 8 crux of the discussion of the meeting that I 9 believe you attended was bedrock being found 10 in areas of the township do you recall 11 having a discussion with planning commission 12 regarding that? 13 A. I don't recall that, no. Not as to 14 a planning commission meeting. 15 Q. That being the case moving on from 16 that you stated in your questioning from Mr. 17 Daavettilla that you were recently approached 18 by local resident who claimed to have found 19 gravelly soils in an area not marked on your 20 map? 21 A. That's correct. 22 Q. And you further stated that this 23 resident determined locations of those 24 gravelly soils through investigation; 25 correct?</p>	58	<p>1 analysis of the soil map unit on the soil 2 survey so those kinds of soils, those 3 individual soil series that were looked at 4 had sieve analysis and they were either done 5 at Lincoln, Nebraska, or at the Michigan 6 Tech Soils Department and those kinds of 7 soils with the fines in them that you 8 referred to were removed from the gravel 9 potentials from this chart. So only the 10 soils that would have a high probability, 11 those mapping unit symbols would have a high 12 probability of having gravels, course 13 material in them, were listed on this chart 14 and the ones with the fines and all the way 15 up to probably even the loamy sand material 16 included within them high percentages of 17 those were not included in this gravel 18 differentiation. 19 Q. Was there any analysis conducted as 20 to of that 14.3 percent what types of 21 gravels would be found? 22 A. Well, our gravel differentiation is 23 about I believe it is 2 millimeters is the 24 upper end of sands to a 3 inch diameter 25 fragment is considered gravel by the soil</p>	60

<p style="text-align: right;">61</p> <p>1 surveys definition and the soil scientist 2 definition. Within that criteria, you will 3 find that one of the these map units symbols 4 within that there will be a soil survey 5 would have a high probability of having 6 gravel like that in is is what I can speak 7 to. 8 Q. So there was no testing done as to 9 the exact nature of the gravel found? 10 A. So the testing was done or a sieve 11 analysis and the particle distribution, the 12 fragment distribution on the original soil 13 survey. There are what is called there are 14 pedons that are taken from the soil survey 15 and the typical pedons for each map unit as 16 sieve analysis done on it and so you can 17 make predictive, when you are out mapping 18 and you come across a Michigamme or whatever 19 soil name you have, you can make a 20 prediction that if that is indeed a 21 Michigamme and it is located outside of 22 Houghton Hancock and there is another one 23 outside of Calumet that this sieve analysis 24 would be the same, would be very similar. 25 Q. So of that 14.3 percent a probable</p>	<p style="text-align: right;">63</p> <p>1 the percentage that would contain 2 commercially viable gravel deposits? 3 A. No there is no way I can go out 4 there and definitive state that. There is a 5 probability of encountering it in these map 6 units. 7 Q. You have also not determined what, 8 if any, of that percentage contains the 9 types of gravel required for various types 10 of construction activities; correct? 11 A. Yeah, I would say you could say 12 that. 13 Q. Mr. Pence asked you a few questions 14 regarding the proximity of Valley View 15 quarry as he termed it to population centers 16 of Portage Township, I want to get some 17 clarification on that because the term near 18 a population center could be misleading. 19 Can you describe for me the distance of the 20 Valley View quarry to the nearest resident? 21 A. I would say it was within half to a 22 quarter of a mile. 23 Q. You are not sure? 24 A. I'm not terribly positive. I say 25 it is in that kind of distance.</p>
<p style="text-align: right;">62</p> <p>1 figure, what percentage was determined to be 2 Michigamme, for example? 3 A. Well, we can look down through here 4 and a lot of these soils that would have 5 high gravel contents and this is gravel 6 content Michigamme has a high rock it is a 7 shallow bedrock soil, and I'm speaking of 8 gravel time we have Trimountain soils, 9 waiska soils, that have high concentrations 10 of gravel with few fines in this. So when 11 you start looking down through my 14 percent 12 that I quickly put together I used 13 Trimountain, waiska those kinds of soils 14 within complexes to look at and a good 15 percentage about all of the soils that I 16 looked at had one of these soils, 17 Trimountain, waiska soils contained within 18 it in so I would say a good percentage of 19 the soils of the 14.3 percent would have a 20 high potential for gravel based upon those 21 soil series that are contained within those 22 map units. 23 Q. But again that goes back to this is 24 a determination of a high probability of 25 containing gravel you have not determined</p>	<p style="text-align: right;">64</p> <p>1 Q. Would you say that less than five 2 people live within a half mile of the Valley 3 View quarry? 4 A. Less than five people, no, I would 5 not say that. I would say there is more. 6 Q. What would your estimate be? 7 A. Of numbers of people that live 8 within a half mile of the quarry? 9 Q. I'm speaking of the quarry not the 10 Section 15? 11 A. Again, it is an estimate just a 12 guesstimate I would guess ten or 15. 13 Q. Of those how many residents have 14 you spoken to about this case? 15 A. Well, obviously, the Betterlys I've 16 talked to the Sandfords and I'm not terribly 17 positive if they are within a half a mile, 18 probably four or five people. 19 Q. And you have been the township 20 supervisor for seven months? 21 A. That's correct. 22 Q. So in seven months with all of the 23 activities going on regarding this case, you 24 have actually only had contact with maybe 25 five residents of the ten to 15 you would</p>

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1 think live within a half mile of this site?
 2 A. Well, you asked me what my
 3 guesstimate was within a half mile and
 4 that's what my guesstimate was. I have had
 5 lots of contacts with various people over
 6 time concerning the Valley View quarry but
 7 as to my question within that numbers of
 8 that half mile that would probably be a good
 9 guess.
 10 Q. So assuming the Sandfords, which
 11 you are not sure whether they live within a
 12 half mile or not, assuming they did, that
 13 would put it at approximately one-third of
 14 the residents in closest proximity that
 15 actually contacted you regarding this?
 16 A. Yeah, I guess so, yes.
 17 Q. What is the population of Portage
 18 township?
 19 A. I think it is 1700, 1800 people, I
 20 believe.
 21 Q. So where are the majority of those
 22 individuals located?
 23 A. Probably the northern one half of
 24 the township.
 25 Q. So utilizing the term or phrase,

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1 near the main population center, within how
 2 many miles was that?
 3 A. Again, I don't understand your
 4 question I'm sorry.
 5 Q. Well, earlier on the record you
 6 were asked Valley View quarry near a main
 7 population center and you said, yes?
 8 A. Well, when I refer to a population
 9 center we have largely residential
 10 residences within our county and they are at
 11 various densities and I would say the
 12 preponderance of our density would have to
 13 be along Green Acres Road and adjacent to
 14 the City of Houghton that is where I guess
 15 the majority of our density of our
 16 residences occur and that's what I would
 17 define in the township as population
 18 centers.
 19 Q. So near there was used as a
 20 relative term and still met the distance of
 21 over a half mile; correct?
 22 A. I guess so, sure.
 23 Q. You say the majority of the
 24 population of the township lives more than a
 25 mile and a half from Valley View quarry?

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1 A. I couldn't answer that. I don't
 2 honestly know, I wouldn't know that.
 3 Q. So you are not sure of the
 4 population distribution as it relates to the
 5 proximity of the Valley View quarry?
 6 A. What I answered was your question
 7 of a mile half and the population throughout
 8 the county is largely again a residential
 9 various density residential area.
 10 Q. But again I'm asking solely about
 11 Portage Township?
 12 A. As to a population center within a
 13 mile and a half. Rephrase your question.
 14 Ask me that again.
 15 Q. I'll move on from there. Are you
 16 familiar with the location of the Valley
 17 View quarry?
 18 A. Yes.
 19 Q. Have you visited it?
 20 A. Yes.
 21 Q. Are you familiar with the adjacent
 22 property uses to Valley View quarry?
 23 A. Somewhat, yes.
 24 Q. Is there a trucking operation
 25 adjacent to Valley View quarry?

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1 A. Yes. I take that back a trucking
 2 operation there is an individual that is
 3 going through a zoning situation right now
 4 with the township who parks vehicles near
 5 Valley View quarry.
 6 Q. Is there a fuel depot near Valley
 7 View quarry?
 8 A. Near?
 9 Q. Adjacent to?
 10 A. Adjacent to it I don't know of one
 11 adjacent to it, no.
 12 Q. Would you say its near Valley View?
 13 A. Near, yes.
 14 Q. You spoke a little bit in answer to
 15 Mr. Pence's questions the need in Portage
 16 Township for gravel. Were your responses
 17 based on the need for all uses within the
 18 township or solely the needs of the township
 19 as a municipality?
 20 A. That's my experience as far as the
 21 township as a municipality.
 22 Q. Are you aware of other uses for
 23 gravel and aggregates and other products
 24 within the township for construction
 25 activities?

<p style="text-align: right;">69</p> <p>1 A. I'm aware just that you need 2 certain kinds of materials to build roads 3 and backfill pipelines and put in septic 4 tanks, sure, there are various kinds of 5 needs for sand and gravel, yes. 6 Q. You not aware of the specific 7 demand for those other needs? 8 A. Not specific demands, no. 9 Q. Is your opinion that igneous 10 bedrock is located in multiple areas of 11 Portage Township? 12 A. That would be a fair statement. 13 Q. You spoke about one of the other 14 what I believe we either referred to as 15 primary or larger areas and that happened to 16 be right near the City of Houghton; correct? 17 A. There is a fair amount of basaltic 18 there and a fair amount of the basalt 19 bedrock that is on the surface of the ground 20 you know in and just south of Houghton, yes. 21 Q. What is the population density like 22 in that area relative to the population 23 density surrounding Valley View quarry, is 24 higher, lower? 25 A. I would have to assume it would be</p>	<p style="text-align: right;">71</p> <p>1 expressing here as an expert witness you 2 consulted any governmental agency 3 representatives regarding your formulations 4 of those opinions? 5 A. What I did was I got a hold of 6 my--I used to work with the USDA the Natural 7 Resource Conservation Service and I 8 discussed these maps and the interpretations 9 of these maps with a fellow named Dwight 10 Jerome, he's our soil scientist, and I 11 conferred with him as to these maps and he 12 prepared in giving me these maps that were 13 generated through the Natural Resource 14 Conservation Service. 15 Q. And previously you stated that soil 16 scientist has entry level programs with USDA 17 Natural Resource Conservation Service; 18 correct? 19 A. Yeah, you start off mapping soils 20 and as you get more proficient and more 21 experienced and have more areas that you 22 have seen under your belt you more onto what 23 is called a party leader which is also a 24 soil scientist and then those people are 25 then put in charge of these soil survey.</p>
<p style="text-align: right;">70</p> <p>1 higher. 2 Q. Would you say significantly higher? 3 A. Well, you know, when you look at a 4 rock outcrop complex you are looking at 5 Houghton Elementary School, there is a rock 6 outcrop complex just behind that that you 7 drive by every day, there are all kinds of 8 outcrop rocks that occur in pretty dense 9 populated areas. 10 Q. Have you prepared any reports other 11 than the exhibits that have been entered 12 today, the maps regarding your analysis in 13 this case? 14 A. No. I guess, no is, no, I have not 15 prepared any, you are right I have not 16 prepared made any other reports. 17 Q. Have you spoken to any other 18 representatives of governmental agencies 19 regarding this case? 20 A. I would say I would that is a 21 pretty broad question I just say that I 22 haven't I would in passing I wouldn't know 23 what other people's employment are, no. 24 Q. And let me narrow it down for you a 25 little bit. In your opinion that is you are</p>	<p style="text-align: right;">72</p> <p>1 Q. Mr. Jerome is still at the level of 2 soil scientist? 3 A. Oh, yes, he's been involved in a 4 number of soil survey throughout the Upper 5 Peninsula. 6 Q. To your knowledge Mr. Jerome as no 7 expertise in geology? 8 A. I can't address that. I don't know 9 what his background is. All I know is he is 10 very well credentials bone fide soil 11 scientist. 12 Q. Anyone else that you would consider 13 an expert in any field that you consulted 14 regarding your opinions in this case? 15 A. No. 16 Q. You relied on any industry 17 standards or procedures in support of your 18 opinion? 19 A. Well, my opinion again is all 20 impinged on the construction and methodology 21 of the soil survey. There are certain 22 standards in there especially in the 23 engineering charts that are found that show 24 standards that are within the engineering 25 tables a lot of that is premised under the</p>

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1 sieve analysis of the soil map units. So
 2 that when the soil surveys are made we have
 3 engineering staff that address those issues
 4 explicitly. So there is, you know, we have
 5 foresters that work at those soil survey, we
 6 have engineers that work on those soil
 7 surveys, we have soil scientists that work
 8 on these soil surveys and they all bring
 9 expertise to the manuscript in totality.
 10 Q. Apart from those standards
 11 underlying the soil survey, any other
 12 standards that you have relied on?
 13 A. No.
 14 Q. Have you followed any procedures or
 15 other accepted practices apart from the soil
 16 survey?
 17 A. To do what?
 18 Q. Formulate your opinion in this
 19 case?
 20 A. I used the soil survey.
 21 Q. All right. You aware of any facts
 22 inconsistent with your opinions in this
 23 case?
 24 A. Not so far.
 25 Q. You familiar with the Michigan

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1 Department of Transportation?
 2 A. MDOT?
 3 Q. Yes?
 4 A. Yes.
 5 Q. That would be a yes?
 6 A. Yes, I know of the Michigan
 7 Department of Transportation.
 8 Q. To your knowledge is the Michigan
 9 Department of Transportation utilizes
 10 aggregate in filling it responsibilities to
 11 Houghton County Township?
 12 A. Most definitely I'm sure.
 13 Q. To your knowledge do they have
 14 standards regarding the type of aggregates
 15 that can be used for particular jobs?
 16 A. I'm sure they do.
 17 Q. Are you familiar with any of those?
 18 A. Not explicit parameters I'm sure
 19 they have criteria that define the
 20 structural strength of the aggregate and the
 21 porosity and the abrasiveness and I'm sure
 22 they have all sorts of standards that they
 23 have to meet.
 24 Q. So going back to your estimation of
 25 14.3 percent of the soils in Houghton County

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1 having a probable content of gravel, would
 2 you have any idea of what percentage of that
 3 would meet MDOT specifications for various
 4 uses?
 5 A. As to a percentage, no.
 6 Q. Since the Michigan Department of
 7 Transportation requires standards, is it
 8 your opinion that not all forms and types of
 9 aggregates would necessarily satisfies every
 10 standard required by MDOT?
 11 MR. PENCE: Object to the form. I
 12 don't think he said he's qualified in this
 13 area. You may answer if you are able.
 14 THE WITNESS: When you look at the
 15 aggregate that is available in the county it
 16 is deposited through glacial movement and
 17 outwash movement. A lot of these soils a
 18 lot of these bedrock materials that are in
 19 our outwash materials in my opinion are very
 20 structurally sound gravel. Other used
 21 historically for road building for aggregate
 22 for concrete the outwashed soils that we see
 23 generally are very structurally sound gravel
 24 aggregate.
 25 Q. You would not have an idea of

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1 whether or not those met current MDOT
 2 standards?
 3 A. That would have to be on a case by
 4 case basis and I'm sure the pits that are
 5 operating and supplying concrete aggregate
 6 have extensive tests through MDOT to satisfy
 7 that scenario.
 8 Q. Generally what is your knowledge of
 9 the quality of aggregates that can be
 10 obtained from Valley View quarry?
 11 A. My general knowledge is that the
 12 aggregate is very structurally sound and is
 13 probably very good.
 14 Q. Mr. Pence asked you a couple of
 15 questions about other aggregates supplied in
 16 Portage Township I think we mentioned DP and
 17 Harris other than the DP and Harris pits,
 18 what other locations in Portage Township
 19 supply aggregate?
 20 A. Does Portage Township supply
 21 aggregate?
 22 Q. What other locations in Portage
 23 Township apart from the DP and Harris pits
 24 and Valley View quarry supply aggregate?
 25 A. You know I honestly don't know. I

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1 couldn't answer that.
 2 Q. Can you define for me what Arcadian
 3 Michigamme rock is?
 4 A. It is both those if you are
 5 referring to soil surveys both those are
 6 shallow bedrock surveys soils that have the
 7 basaltic bedrock underneath them. One I
 8 think is within 200 to 40 inches and one is
 9 at 40 inches that you will encounter bedrock
 10 of a basaltic nature.
 11 Q. You are familiar with the term poor
 12 rock; correct?
 13 A. Sure.
 14 Q. Are all poor rock piles in Houghton
 15 County Portage Lake basalt flow?
 16 A. You know as a non-geologist I
 17 couldn't definitively answer that. I would
 18 tell you just in my limited experience being
 19 around a lot of poor rock piles I can just
 20 identify them as to basalt, as to Portage
 21 Lake basalt or another forth of basalt I
 22 couldn't tell you that. I could tell you
 23 they are largely basalt in nature.
 24 Q. Are you familiar with the term
 25 aggregate gradation?

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1 A. Yeah, I guess I'm familiar with it.
 2 Q. Can you define that for us?
 3 A. Well, aggregate is nothing more
 4 than, you know, a gravel or a cobble sized
 5 rock and the gradation is the relative size
 6 of that material.
 7 Q. How about the freeze thaw dilation?
 8 A. I just know a little bit about
 9 freeze thaw but I don't know what the word
 10 dilation means.
 11 Q. Okay. Do you know what chip seal
 12 is?
 13 A. No.
 14 Q. Generally do you know the size of
 15 gravel that can be found in Portage
 16 Township?
 17 A. Well, all I can address is gravel
 18 is the upper end of our sand fraction which
 19 is about it is about 2 millimeters to 3
 20 inches that's basically the soil surveys
 21 definition of gravel. You will find all
 22 sorts of gradations between there.
 23 Q. Do you know where in Portage
 24 Township you can find aggregates greater
 25 than 3 inches?

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1 A. Just offhand, no, just to
 2 definitively state that, obviously, you can
 3 go to Valley View and they are blasting
 4 basalt out there. I'm sure they would have
 5 rock material that would be greater than
 6 that anywhere where you would have the
 7 basalt bedrock access you can grade out any
 8 size you want.
 9 Q. If Valley View quarry were not
 10 supplying quarried basalt, are you aware of
 11 any other location in Portage Township that
 12 would be able to supply that?
 13 A. Supply basalt aggregate?
 14 Q. Quarry basalt?
 15 A. Well, you have poor rock piles
 16 around Painesdale that would be near by, you
 17 have other quarries that have historically
 18 closed and opened and provided basalt
 19 bedrock, the Painesdale sources are right
 20 nearby they're from a mine, they're basalt.
 21 Q. Correct, me if I'm wrong but
 22 Painesdale is not in Portage Township;
 23 correct?
 24 A. Probably isn't where those pits
 25 are.

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1 Q. So to your knowledge any other
 2 source in Portage Township?
 3 A. Of quarried basalt to my knowledge
 4 I guess not.
 5 Q. No further questions at this time.
 6 FURTHER QUESTIONS BY MR. DAAVETTILA:
 7 (Exhibit 17 marked)
 8 Q. Mr. Petersen, I'm going to show you
 9 what has been marked as Exhibit 17 and it is
 10 a map that we have been utilizing to have
 11 various deponents identify where their
 12 gravel pits are. I wonder if you can tell
 13 me what the source of that map is?
 14 A. This is through my agency, my old
 15 agency, the Natural Resource Conservation
 16 Service and this layer was also utilized in
 17 this larger Exhibit 13.
 18 Q. Did you make arrangements for the
 19 obtaining of this map?
 20 A. Yes.
 21 Q. And where did it come from?
 22 A. It came through my area office in
 23 Marquette, Michigan, and Dwight Jerome
 24 assisted me in making this map.
 25 Q. This is the gentleman that you

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1 spoke of during Mr. Kapietz's questioning of
 2 you?
 3 A. That's correct.
 4 Q. And what essentially does this map
 5 represent?
 6 A. That map represents the potential
 7 gravel deposit based on our soil survey.
 8 Q. And it is based on the soil survey
 9 that you have been testifying about?
 10 A. Yes, the soil survey.
 11 Q. Thank you. That's all.
 12 FURTHER QUESTIONS BY MR. PENCE:
 13 Q. Have you been to Vic and Emily
 14 Betterly's house?
 15 A. Yes.
 16 Q. And have you stood in their yard
 17 and looked at the quarry?
 18 A. Yes.
 19 Q. Tell us what you see?
 20 A. Well, what I see is an open pit
 21 type quarry on a hillside that is what is
 22 see, I see bedrock, I see a pit, I see you
 23 know, from immediately right around the
 24 corner when you stand next to the wetland
 25 area you see deposits the quarried material

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1 that has been crushed.
 2 Q. And can you in your own words
 3 without either me or anyone else suggesting
 4 define the enable what it looks like but for
 5 that quarry if you did a 360 around the
 6 Betterly's house if you spun in a circle
 7 what would the characteristics of the
 8 neighborhood?
 9 A. A low density neighborhood, a low
 10 density rural neighborhood.
 11 Q. Would it have any other industry
 12 features besides the quarry visible from the
 13 Betterly's yard?
 14 A. Not as far as I know, no.
 15 Q. And so we can try to clear this up
 16 if I created any confusion. As you went
 17 straight to the Betterly's home what is the
 18 road, you were talking about Green Acres
 19 earlier in what is the actual street?
 20 A. It would be Green Acres Road is
 21 what Green Acres Road extends down by the
 22 old school there and around the corner I'm
 23 assuming it is Green Acres Road.
 24 Q. As you leave the Betterly's house
 25 and go a half mile or a mile are there

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1 actual population centers as you get out on
 2 Green Acres Road and go a little further?
 3 A. It is just all rural residential
 4 type dwellings, individual homes on parcels
 5 of property.
 6 Q. And is it in any sense industrial
 7 other than the quarry?
 8 A. Not as far as I know.
 9 Q. Thanks.
 10 FURTHER QUESTIONS BY MR. KOPIETZ:
 11 Q. Just a couple things.
 12 Mr. Pence just mentioned the road
 13 running in front of the Betterly's house,
 14 could you describe that as a major road
 15 within the area?
 16 A. Yes, it is a county road.
 17 Q. Would you describe it as a highway?
 18 A. It is a county road.
 19 Q. Any industrial truck travel pass
 20 through that?
 21 A. I have seen trucks on it, yes.
 22 Q. If somebody were to be trucking any
 23 type of material to through Portage Township
 24 would it be likely that they would be
 25 utilizing that road?

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1 A. Well, within a given season, I
 2 think the seasonal road limits end at or
 3 just north of the Betterly's house. So if
 4 there are seasonal limits on that road, this
 5 is my recall, there are seasonal road limits
 6 north of the house. So all year around I
 7 don't know if seasonal if truck traffic
 8 legally can be on that road year round.
 9 Q. During the month of July or during
 10 the summer months, it would not be unusual
 11 to have heavy truck traffic on that road
 12 though?
 13 A. You are right, yes.
 14 Q. No further questions at this time.
 15 MR. DAAVETILA: No.
 16 FURTHER QUESTIONS BY MR. PENCE:
 17 Q. Does the question imply a lot of
 18 trucks or a few heavy trucks?
 19 A. That's the debate as unusual. You
 20 will see low boys, you will see equipment
 21 going by, you will see an occasional dump
 22 truck. It is used but it is not a
 23 preponderance of use. You know it gets back
 24 to semantics, what is usual.
 25 Q. When you came into your position,

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1 this controversy with the gravel pit had
 2 been going on for quite a while; correct?
 3 A. Yes.
 4 Q. With the quarry?
 5 A. Yes.
 6 Q. And counsel confined you to maybe
 7 the 15 closest residents but has there been
 8 a general feel in the township that about
 9 the violations of the zoning ordinance such
 10 that the township final took action?
 11 A. Very much so. What I harken back
 12 to and I have had a fair number of people
 13 tell me this is there are two sides to this,
 14 you know, the immediate residents that
 15 impacted from this endeavor but there is
 16 also the other side of it is that when
 17 people buy homes by residences, buy property
 18 in rural residential areas they come to
 19 expect a certain climate, a certain
 20 environment, that is what they pay their
 21 money for so people have come to me and told
 22 me on many occasions both just when I walk
 23 through Wal-Mart or out in the public forum
 24 that we as a township should be very
 25 supportive of our zoning to maintain

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1 property values and property climates,
 2 atmospheres, I don't know how best to say it
 3 in zoned areas they come to have certain
 4 expectations of zoning and that upholds
 5 property values throughout the township.
 6 Q. Nothing else.
 7 MR. KOPIETZ: Nothing else at this
 8 time.
 9 MR. DAAVETTILA: We're done.
 10 (Whereby the deposition adjourned)
 11 FURTHER QUESTIONS BY MR. DAAVETTILA:
 12 Q. You were here today in the room
 13 when Dr. Vitton was giving his testimony;
 14 correct?
 15 A. Yes.
 16 Q. And you were able to hear him
 17 clearly?
 18 A. Yes.
 19 Q. Were there a few things that you
 20 would like to comment on after having heard
 21 his testimony?
 22 A. Yes.
 23 Q. You took some notes?
 24 A. Yes.
 25 Q. Would you please share those?

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1 A. The one comment that I would like
 2 to make is when a soil survey is made there
 3 is what is called a typical pedon and there
 4 are all sorts of trade box samples that are
 5 taken. So when you look at a certain soil
 6 series the soil scientists collect the box
 7 samples of which each layer is run through
 8 the sieve, the shaker analysis, to find out
 9 the various particles sizes. These box sets
 10 there is usually eight or ten of these boxes
 11 of soil named soil and then one typical
 12 pedon that is found in the county that is
 13 right in the middle of that soil series
 14 range and if you look through your soil
 15 survey at the very end of all your soil
 16 series descriptions that will be located,
 17 township range, section, whatever of what
 18 typically in the middle of this soil range
 19 where it is found and so people can go back
 20 and identify it. Well, to make a long story
 21 short, each one of these boxes and all of
 22 these soil series go through a sieve
 23 analysis and the sieves are 4, 10, 40 and
 24 200 which help identify, which help identify
 25 the physical characteristics of those soils

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1 and the soil horization. So when I used
 2 when he was looking at the web soil survey
 3 all you can look at that down to 1000 to
 4 1100 acres. When I look at when I say it is
 5 a probability that gravels could be found in
 6 these various map units I went through and
 7 looked at the high end on Table 14 on the
 8 high probability and the construction
 9 materials Table 14 you have improbable and
 10 it goes through with various levels of
 11 probability I looked at the probable across
 12 the boards probable designations for sand
 13 and road fill and gravel. So it gets back
 14 to the physical characteristics that been
 15 looked at and the soil scientists have come
 16 up with a probability, a range, you know,
 17 improbable, too sandy, they make some
 18 differentiations poor, good, whatever but
 19 when I made this up I only looked at
 20 probable sites.
 21 MR. PENCE: When you say, this, you
 22 should tell what will you are looking at?
 23 A. Exhibit 14. And it is a little bit
 24 more than what he referenced.
 25 MR. PENCE: He is who?

<p style="text-align: right;">89</p> <p>1 A. Dr. Vitton. Only when you go on 2 the web soil survey you can narrow it down 3 to about 1100 acres because that is all it 4 digitally it can replicate on the website 5 but in this, the soil survey, you can look 6 at the totality of the work and so that is a 7 little bit easier to go and scrutinize 8 properties when you can look at it in 9 totality? 10 Q. Okay, so when you refer to the 14.3 11 percent of the county in which there is a 12 high probability of gravel what is it a high 13 probability mean at least in terms of soil 14 survey? 15 A. Again, it gets back to this is what 16 was done by the soil scientist, this was 17 their mapping down to 5 feet and they think 18 there is a high probability of finding 19 gravels in these certain map units. 20 Q. The analysis that you did, which 21 was Exhibit 14, does this include soils 22 which were located in Sections 22 and 27 of 23 Portage Township? 24 A. This includes soils found 25 throughout the county.</p>	<p style="text-align: right;">91</p> <p>1 the Copper Ridge subdivision? 2 A. Which is located where? 3 Q. I believe it is located directly 4 adjacent to Dodgeville? 5 A. I don't know. I might. I don't 6 know where Copper Ridge is offhand. 7 Q. Do you know where the former Moyle 8 pit location at Dodgeville was? 9 A. Basically, yeah, I know where that 10 is, yes. 11 Q. You familiar with homes being 12 located directly adjacent to that? 13 A. Vaguely I guess, yes. 14 Q. Are you familiar with homes that 15 are located directly adjacent to that that 16 have been constructed in the last couple of 17 years? 18 A. I couldn't attest to that. I'm not 19 aware of that. 20 Q. In your role as township 21 supervisor, I think you should have some 22 knowledge of who funds road activities, so I 23 want to ask you a couple of questions. We 24 have heard a lot about the function of cost 25 for aggregate materials being passed onto</p>
<p style="text-align: right;">90</p> <p>1 Q. Have you had an opportunity to 2 compare the gravel map that you had provided 3 to Portage Township with the soil survey? 4 A. I did a cursory look at it and 5 seems to agree pretty good. 6 Q. And are there identified locations 7 on the soil survey within Sections 22 and 27 8 of previous mining areas? 9 A. There is as I recall I believe 10 there is a shaft site, a spot symbol is 11 located, and there is a spot symbol for 12 gravel dumps. It wasn't big enough to 13 scribe it out on the map but they did put a 14 spot symbol indicating there was a dump 15 around a poor rock pile. 16 Q. And how was that identified in the 17 soil survey? 18 A. Again, it was using spot symbols, 19 little symbols that are indicated on the 20 legend for various sites. 21 Q. Okay. That's all. Thank you. 22 MR. PENCE: I don't have anything. 23 FURTHER QUESTIONS BY MR. KOPIETZ: 24 Q. Mr. Petersen, I have a couple 25 questions for you. Are you familiar with</p>	<p style="text-align: right;">92</p> <p>1 consumers, who are the consumers for roads? 2 A. Well, right now I can only speak to 3 Portage Township. We don't build roads. We 4 maintain roads and we get easements to 5 maintain those roads. If a road needs to be 6 constructed it would be like the City of 7 Houghton might have some kind of 8 infrastructure, MDOT might have some kind of 9 infrastructure to actually build the road 10 and they would go out and as far as I know 11 know subcontract, release bids, and 12 subcontract with a contractor to build a 13 road. So ultimately I guess your question 14 is the cost would be evidenced through that 15 bidding process and the cost to do that road 16 which would be paved by grants or other 17 kinds of avenues. 18 Q. Would it be a fair statement to say 19 that ultimately the source of funds for any 20 of those consumers would be tax dollars? 21 A. Some of that, yeah, but there are 22 certain roads I have seen that have received 23 grants to be built which may or may not have 24 been derived through tax dollars. 25 Q. Would you be referring to federal</p>

<p style="text-align: right;">93</p> <p>1 grants? 2 A. I would assume so. Again, I'm not 3 a county road engineer but I would guess so, 4 yes. 5 Q. Well, Mr. Pence referred to some 6 alleged violations of the DNR, as well as 7 EPA and potentially even some criminal 8 violations that supposedly have taken place 9 at or near Valley View quarry site are you 10 familiar with any of those? 11 A. Somewhat. 12 Q. Have you seen documentation of 13 anything pursuing those currently? 14 A. You know I have not seen anything 15 in writing, but I have heard second, third 16 hand information that that has occurred. I 17 was given a tour of the pit and I drove was 18 given a ride down the road where the alleged 19 violations occurred and I can attest to the 20 fact that there was some fill along the road 21 that's just me witnessing that. 22 Q. You broke up just a second the last 23 portion can you repeat that last statement? 24 A. Like I say, I was given a tour of 25 the pit and on the exiting of the pit we</p>	<p style="text-align: right;">95</p> <p>1 that where you are getting it from? Because 2 if you look on Table 14 I don't see that. 3 What I see under gravel and that is what I'm 4 really referencing they use improbable, too 5 sandy, they use varies nomenclature like 6 that. Now the poor and the fair and the 7 good are under top soil and road fill but 8 under the gravel section it is largely 9 probable or improbable. 10 Q. But on the web soil survey they use 11 a designation for a gravel source of being 12 poor, fair, and good; is that correct? 13 A. I'm not sure. I can't tell you 14 that on the web soil survey how they 15 differentiated it for gravel. 16 Q. I want to take you back I asked a 17 little bit earlier about planning commission 18 meeting that occurred on January 21, 2010, 19 do you recall attending that meeting? 20 A. I was involved with the planning 21 commission during that period, the Houghton 22 County Planning Commission is that what you 23 are referring to? 24 Q. No, Portage Township? 25 A. In 2010?</p>
<p style="text-align: right;">94</p> <p>1 went down the road where these alleged 2 violations occurred. I was driven out 3 across that, well, it is basically an old 4 railroad grid that is now serving as a road. 5 Q. To your knowledge though no current 6 violations are in existence or being pursued 7 by any agency? 8 A. I hear they are being pursued, yes, 9 but as to actually seeing a written document 10 to say that that is being pursued I have not 11 personally seen that. I have heard, I have 12 been told that that is the case. 13 Q. Back to the soil survey and 14 specifically the gravel source map is there 15 anywhere in Houghton County that is 16 designated as good for a source of gravel? 17 A. Well, they don't designate it as 18 good but they designate about eight or ten 19 various different types of soil where you 20 would have a high probability of finding 21 gravel. 22 Q. I'm specifically referring to the 23 soil ratings of poor, fair, and good? 24 A. Well, see those ratings are used 25 probably on the web soil survey; correct, is</p>	<p style="text-align: right;">96</p> <p>1 Q. Yes? 2 A. I honestly say I can't remember 3 that. 4 Q. Do you recall being consulted by 5 the Portage Township Planning Commission 6 regarding potential for special permitting 7 of gravel operations in rural residential 8 areas? 9 A. Oh, yes, I have been approached 10 about that, yes, that has to the attendance 11 to that explicit meeting I don't recall that 12 but, yes, I have. 13 Q. Specifically for quarry operations 14 has Portage Township considered allowing 15 those rural or residential areas of the 16 township? 17 A. Have they considered it? 18 Q. Yes? 19 A. It has been posed as a question but 20 it has been tabled as far as I can recall. 21 Q. Has the Portage Township Planning 22 Commission concluded that igneous bedrock is 23 found only in rural and residential areas 24 and not in farm and forest areas? 25 A. The planning commission?</p>

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1 Q. Yes?
 2 A. I don't know that.
 3 Q. Okay. You are familiar with the
 4 Isle Royal Estate on Copper Ridge Road?
 5 A. Where is that located in
 6 conjunction--
 7 Q. --behind the former Dodgeville pit?
 8 A. The new subdivision next to the REA
 9 building?
 10 Q. Yes?
 11 A. I've driven through it, sure.
 12 Q. Surprise you to find that new homes
 13 were being constructed and sold there while
 14 the pit was being operated?
 15 A. I honestly with my tenure there I
 16 don't know if new homes were constructed and
 17 being sold during that time I don't know.
 18 Like I said, I have driven through it a
 19 couple of times and that's just about my
 20 sole experience with it.
 21 Q. Okay. I have no further questions.
 22 MR. DAAVETILA: Nothing here.
 23 FURTHER QUESTIONS BY MR. PENCE:
 24 Q. Let me see if I can get a handle
 25 and maybe help clear the record. When you

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1 are talking about referred a couple of times
 2 to Table 14 what book are you referencing
 3 and what role did that book have in Exhibit
 4 Number 14?
 5 A. Again it gets back to the book.
 6 Q. What is the book?
 7 A. The Soil Survey of Houghton,
 8 Michigan, it was released in 1991.
 9 Q. And that was the source of your
 10 Exhibit 14; correct?
 11 A. That's correct.
 12 Q. And that book was the basis for a
 13 lot of your testimony; correct?
 14 A. Yes.
 15 Q. And you are respectfully
 16 disagreeing with the doctor that his
 17 nomenclature of poor, fair, and good off the
 18 website is using protocols and information
 19 that is not as well defined as you find in
 20 Table 14; correct?
 21 A. Well, what I'm trying to get across
 22 is that there were physical properties
 23 analyzed by soil scientists very rigorously
 24 to come up with to myth defying constituents
 25 of a lot of the gravel probabilities I guess

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1 in your map unit descriptions. So there
 2 were physical attributes ascertained for our
 3 map units that then would that I used for
 4 making a probable guess for gravel.
 5 Q. All right. Enough information
 6 provided to justifying a probability and
 7 some in places a high probability of
 8 significant gravel deposits in those areas?
 9 A. That would be the places I would
 10 like for gravel it would be a high
 11 probability that is what the soil survey
 12 indicates.
 13 Q. I don't have anything further.
 14 MR. KOPIETZ: Nothing further.
 15 (Whereby the deposition ended)
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 3 STATE OF WISCONSIN)
)SS.
 4 COUNTY OF WOOD)
 5 Be it known that I wrote the deposition
 6 of Bruce Peterson on the 19th day of March
 7 2011, at Houghton, Michigan;
 8 That I was then and there a Notary
 9 Public in and for the State of Wisconsin,
 10 and that by virtue thereof I was authorized
 11 to administer an oath;
 12 That the witness, before testifying,
 13 was by me first duly sworn to testify to the
 14 whole truth and nothing but the truth
 15 relative to said cause;
 16 That the testimony of said witness was
 17 recorded in stenotype by myself and reduced
 18 to print by means of Computer-Assisted
 19 Transcription under my direction, and that
 20 the deposition is a true record of the
 21 testimony given by the witness to the best
 22 of my ability;
 23 That I am not related to any of the
 24 parties hereto nor interested in the outcome
 25 of the action.
 Dated this 21st day of March 2011.

 MARIANN MERKEL
 Professional Reporter
 Notary Public
 State of Wisconsin