

# The Foundation for Aggregate Studies

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## SUMMARY OF STUDIES AND RECOMMENDATIONS

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THE FOUNDATION FOR AGGREGATE STUDIES

SUMMARY OF STUDIES AND RECOMMENDATIONS

I. INTRODUCTION

THE FOUNDATION FOR AGGREGATE STUDIES (FAS) was formed in 1976 to represent municipal, environmental and general public interests on the impact of the mineral aggregate industry in Ontario. In the past, regulation of the industry has been guided by the Aggregate Producers' Association of Ontario and the Division of Mines of the Ministry of Natural Resources, whose joint objective has been economic development of the aggregate resources.

The Ontario Mineral Aggregate Working Party was appointed in December, 1975 to examine the operations of the industry, resolve local concerns and provide provincial objectives. The Working Party was chaired by Mr. George A. Jewett, Executive Director, Division of Mines, a leading authority on the Ontario aggregate industry. The Secretary was Sherry Yundt, of the Division of Mines. Part-time members included two past-Presidents of the Aggregate Producers' Association, public servants from the Ministries of Housing, Treasury and Economics, Environment and Transportation. There were four public and municipal representatives on the thirteen member Working Party. What was ostensibly a "private" body was in fact heavily weighted in the opposite direction. While FAS congratulates the Working Party for its efforts in contributing to further public understanding of the aggregate industry and its problems - in particular, the public and municipal representatives who, without personal access to research, consultants and legal advice, did their best to represent the

aspirations of local communities and conservation-minded Ontarians - it finds the report, "A Policy for Mineral Aggregate Resource Management in Ontario" totally unacceptable. While it provides new insight and presents the problems, it fails to propose socially acceptable solutions. Like the "Mineral Aggregate Study, Central Ontario Planning Region" (published by the Division of Mines, Ministry of Natural Resources in March, 1974), it is an aggregate study, not a social, economic or land use analysis. It sets its priorities on the aggregate weigh scale, not on a social, economic or land use measurement. As a result most of the proposed solutions are intolerable. This inadequacy might have been expected, however, because the report is dominated by the perspective of its authors: The Division of Mines and the aggregate industry's outlook, and it is consistent with their previous position.

Despite the very narrow range of concerns examined and the dominance of the Mines Branch in formulating the recommendations, the Ontario Mineral Aggregate Working Party has made an effective contribution and has dispelled some previous biases manifested in the "Mineral Aggregate Study, Central Ontario Planning Region".

We are now assured there are huge reserves available, that the forecast consumption is unrealistic, that past rehabilitation is inadequate, that rail and boat haulage are viable alternatives, and that enforcement of previous legislation was ineffective. This diagnosis is essentially correct. But the Working Party's remedies are inadequate, impractical and unsatisfactory.

## II SUMMARY HIGHLIGHTS

The purpose of the Foundation for Aggregate Studies (FAS) is to provide a broader Ontario viewpoint for the public and their Government at Queen's Park.

### A. The Problem

The impact the aggregate industry could have on municipalities under policies recommended by the Working Party Report is menacing. Here is a picture in brief:

- . Open pit mining is to be further encouraged in the densely populated and already heavily mined areas of south central Ontario;
- . each municipality is to be forced to designate potential additional mining areas;
- . local, municipal control is to be eliminated;
- . road haulage is encouraged rather than rail or boat:

Road transport for moving 50 million tons an average distance of 50 miles to the Toronto area would use 34,000,000 gallons of diesel fuel per annum -- four times the fuel needed for rail transport.

- . the Division of Mines' bureaucracy, increased by 200% will make the vital decisions;
- . control through the Ministry of the Environment is rejected;
- . rehabilitation will continue to be a nominal activity due to lack of adequate incentives;
- . at present, there are approximately 1,400,000 truck trips per year, or 7,000 trips per working day, to and from the Toronto area;
- . to meet the forecast annual demand for the Toronto area would load Toronto feeder highways with 3,600,000 gravel truck trips per year or 18,000 trips per working day. The public are expected to accept the related costs, hazards and noise:

- . there are at least 20,000 acres of abandoned pits in Southern Ontario;
- . to supply the cumulative demand (Scenario 6) from Central Ontario would destroy an additional 50,000 acres;
- . the current rate of land destruction for aggregate mining in Ontario is approximately 2,200 acres per year, which is forecast to rise to 6,000 acres per year by the year 2,000;
- . there are 54,581 acres already licenced in the Central Ontario region;
- . competing land uses have not been considered; presumably Class I agricultural land will continue to disappear;
- . the industry is to be protected from normal market influences and the need to adapt to changing economic and social conditions.

## B. The Solution

The FAS offers the following solutions:

### 1. Control

- . Local Municipalities must have the right to accept or reject open pit mining in their community, under the authority of the Planning Act, the Municipal Act, and subject to appeal to the Ontario Municipal Board (OMB).
- . The Planning Act must define aggregate mining to be a "land use".
- . The Ministry of Environment should provide technical support and control over rehabilitation and pit licencing.
- . Pit applications should be subject to environmental assessment requirements similar to those under the Environmental Assessment Act, 1975.
- . The role of the Division of Mines, Ministry of Natural Resources should be limited to mining support services.

## 2. Environmental Protection

- . Licence approval should be based on environmental assessment and detailed rehabilitation plans formulated by the Ministry of Environment.
- . Rail and boat shipment should be encouraged.
- . Noise control legislation should be strengthened.

## 3. Land Use

- . An Ontario Land Use Policy is essential.
- . Class I, II or III foodland should not be used for aggregate extraction.
- . The Ministry of Agriculture should participate in the licence granting process.

## 4. Transportation

- . Energy policy should be considered in decisions to approve pit licences.
- . Licence fees and the per ton levy should cover all costs -- road building and maintenance, Highway Act enforcement and compensation for nuisance and/or injurious affection.
- . Road haulage should be phased down over a period of years in favour of rail and water.
- . A reduced licence and transport per ton levy should apply to pits using rail or water transportation.

## 5. Rehabilitation

- . The Ministry of the Environment should set standards, conduct surveys and estimate costs of rehabilitation.
- . The per ton levy should be set at twice the estimated rehabilitation costs, to guarantee performance and to cover other costs.



- . All abandoned pits should be rehabilitated, in less than a ten year period.
- . Licence fees and/or the per ton levy, should pay for all costs, direct and indirect, resulting from rehabilitation, including: enforcement, planning, research and actual rehabilitation direct costs.
- . A portion of the per ton levy should be granted to municipalities to compensate for social costs, loss of property values, noise, disturbance and nuisance and/or injurious affection.

#### 6. Social Issues

- . The community must be protected from the hardship and nuisance and/or injurious affection imposed by the industry.
- . Local autonomy and community rights must be protected.
- . The renewable land resource base must be conserved.
- . Rejection of a "least cost" philosophy as the only basis for decision making is essential.
- . Damage to the environment must be minimized.
- . The industry must provide benefits to offset the social and dollar costs which it causes.
- . Pre-emptive land use for gravel is unacceptable.
- . Policy initiative to phase out gravel extraction in South Central Ontario must be formulated.
- . Government by non-elected administrative bodies must be rejected as a solution.

### III. THE ISSUES AND THE ANSWERS

#### A. LOCAL MUNICIPAL CONTROL

##### 1. Present and Proposed Control

In the past, local control has been hampered by the complexities of the planning process, power of the industry lobby and weak assistance provided to municipalities by Provincial departments such as the Division of Mines of the Ministry of Natural Resources and the Ministry of the Environment. The court decision in the Uxbridge vs. Timbers case which reinforced an earlier judgement that gravel extraction was not a "use" of land added to the confusion surrounding the municipal land use controls. The intended veto power of the municipalities was frequently lost and control (licence granting) became the prerogative of the Ministry of Natural Resources. The Division of Mines often ignored the intent of local zoning by-laws and official plans affecting aggregate extraction.

The Ontario Mineral Aggregate Working Party now recommends that, once aggregate extraction areas have been designated in approved official plans, zoning control should be eliminated. It is further recommended that, when approving regional or county Official Plans, the Ministry of Housing be required to modify those plans to designate "sufficient" aggregate extraction areas. As a result, municipal control is supplanted by a new system of administrative authority exercised by the Division of Mines of the Ministry of Natural Resources.

Local municipalities are to be relegated to advisors or informees, and stripped of all regulatory powers. The regional municipalities would be required to designate aggregate lands in "sufficient" quantity to satisfy the Mines Branch. Not even the regional governments will have power to decide "how much gravel", but only "where" in their regions.

## 2. Weaknesses in Ministry of Natural Resources' Control

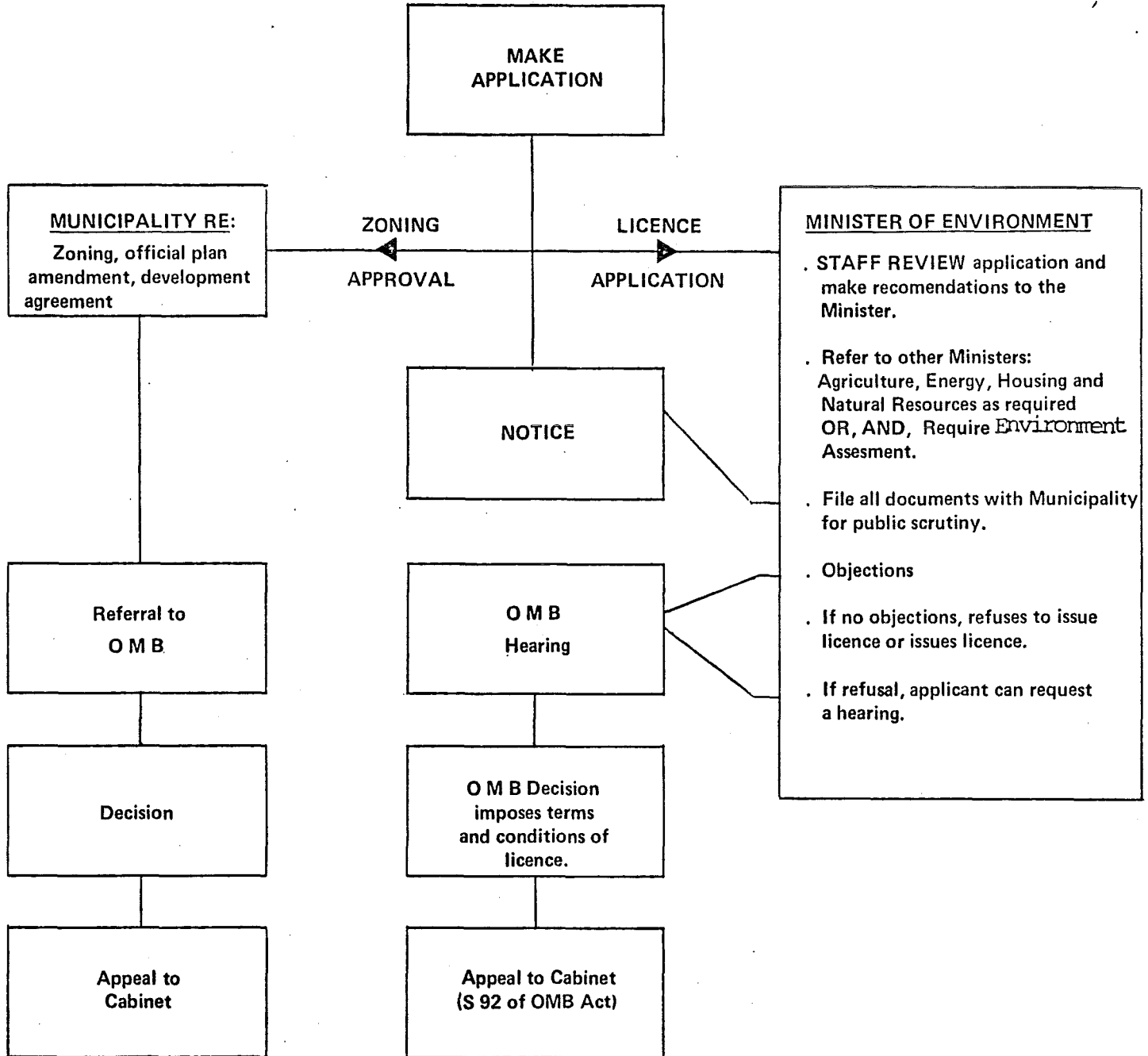
The control policy recommended by the Working Party is absolutely unacceptable.

- . Further power should not be given to the Division of Mines of the Ministry of Natural Resources. Land use planning and the activities of an obtrusive industry such as aggregates/gravel cannot be relegated to administrative decisions of one branch of government.
- . Control by the Minister of Natural Resources' Division of Mines, whose role in government is promotion of mining, does not provide accountability for other social/environment factors; land use, agriculture, energy, noise and personal nuisance and/or injurious affection. The impact of gravel on Ontario is far greater than the "tunnel vision" perception of one branch of one Ministry.
- . Concentration of powers under a proposed new Act administered by the Division of Mines, makes gravel a special case, separate from other municipal and land use controls. This further encroaches on the functions of municipal government, contrary to stated Ontario policies to enhance the role of the municipalities.
- . Municipalities should not be forced to take an annual quota of the private gravel industry's requirements as recommended by the Working Party, nor should Regional government be forced to provide pre-emptive land use for gravel.
- . Private property owners should not have their property rights confiscated without compensation, for the benefit of a private industry.
- . Municipalities should not lose the right to control the location of industries within their boundaries.

### 3. The Solution to Control

- . The local municipality must have the right of veto over open pit mining in private lands in Ontario.
- . Local municipalities must have the power to issue or refuse to issue all licences within their boundaries. No other body, with the exception of the OMB or Cabinet shall supersede this authority.
- . The Planning Act must be amended to clearly define aggregate mining as a "land use" under the Act. Municipal zoning powers must include aggregate extraction.
- . Pits and quarries development should be subject to environmental assessment requirements similar to those under the Environmental Assessment Act, 1975, of the Ministry of Environment.
- . The Ministry of Natural Resources' Division of Mines provide technical assistance, research, geological survey information and continue its traditional role of industry support.
- . The Pits and Quarries Control Act should be amended to delete functions under the Ministry of Natural Resources which could more appropriately be performed by the Ministry of Environment.
- . A revised Pits and Quarries Control Act should only apply to areas designated by a Provincial Land Use Policy.
- . Private prosecution without consent of the Minister should be allowed.
- . The Ontario Municipal Board should have decision-making powers upon referral of the applicant or the objector. Ontario Municipal Board approval power should include the duty to impose the terms and conditions of a licence. The process is illustrated on a system design overleaf:

**RECOMENDED CHANGES TO EXISTING APPROVAL PROCESS  
FOR PIT AND QUARRY LICENCES**



**Note:** The O M B could hear both zoning and licence applications at the same time.

This type of control, system of appeal and delegation of responsibility and authority is essential to maintain local democracy in Ontario, retain property rights and to guard against nuisance and/or injurious affection which would be imposed by a single vested private interest. It also safeguards against conflicts of interest within a Ministry.

Other priorities for land use and conservation and socially acceptable solutions must be found within a framework of enlightened legislation.

Onus must be placed on the aggregate industry to conduct itself, as do other industries, as a good corporate citizen of the community. Its benefits to the community should be clear, so that it will be welcome to operate within the municipality. Otherwise, it should be forced to operate in remote areas where it will not be unwelcome to the citizens of the Province. Natural market forces working within the laws of the Province should prevail. Prices should be allowed to adjust to make socially acceptable development possible.

## B. Environmental Protection

Open pit mining does irreversible, irreparable damage to the environment. Gravel pits and quarries create noise, dust, visual pollution, silting of streams and many other adverse effects. The flora and fauna are destroyed. Environmental disturbances and damage resulting from present practices are:

### 1. Noise, Dust, Natural Habitat, Water Resources, Landscape

- . Noise - operation of heavy machinery in pits and quarries causes severe noise pollution to abutting property owners. Truck traffic noise along transportation routes was found to be one of the most widespread objections.
- . Dust - dust arising from earth moving, crushing and transportation on unpaved roads affects many property owners.
- . Natural Habitat - destruction of natural habitat, southern Ontario hardwood forests, unique ecological systems, recreational and natural history opportunity can no longer be accepted.
- . Water Resources - stream silting from run off on bare land and alteration of water tables permanently impair water resources.
- . Landscape - degradation of the landscape has reached objectionable proportions.

### 2. Recommendations

- a) Approval of Pit or Quarry licences must be subject to environmental assessment prepared using the criteria of the Ministry of the Environment, Environmental Assessment Act, 1975.
- b) Municipalities should pass municipal noise by-laws to control noise levels in their municipalities.
- c) Proposed legislation governing the noise emissions from trucks should be implemented forthwith.
- d) Transport by rail and boat should be encouraged by increasing the licencing fees for pits and quarries dependent on road transport, enforcement of the Highway Safety Act and limiting axle loads. The per ton levy on operators should include a significant sum which can be transferred to the municipalities for road maintenance and law enforcement.

## C. Land Use

What are our priorities for use of the Province's land resource? Is it wise to extract gravel at very cheap prices, close to our major urban areas, on land valuable for food production? Surely these lands should be reserved for renewable resource uses. What is the urgency of irreversibly committing ourselves at a time when future priorities can only be guessed?

### 1. Agriculture and Aggregates in Conflict

The potential sources of aggregates in Ontario are almost infinite, but agricultural land is very finite in quantity and quality within a suitable climatic range. It makes no difference whether gravel is mined in northern counties within a 2,000 b.t.u. heat zone or in the south where there is a 3,000 b.t.u. heat zone, as far as quantity and quality of the product is concerned. But agriculture is only viable in a very small area of southern Ontario. We note the Ontario government's published policy:

"This Government is committed to preserve the better agricultural lands in all parts of Ontario".<sup>1</sup> This is inconsistent with the recommendations of the Working Party's report. The Ontario Institute of Agrologists called on the Ontario Government in 1975 to immediately pass legislation designating Class I, II and III and special cropland for the production of food only. On some occasions land may be needed for other purposes, but the developer should prove that he cannot find suitable land elsewhere.

The United Nations World Food Conference projected the demand for food at an increased annual rate of 1.5% between 1970 and 1985. This is a 26%

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<sup>1</sup>A Strategy for Ontario Farm Land, March 1976, a statement by the Minister of Agriculture and Food.



accumulated increase. But developing countries must increase production at 3.6% or 70% improvement in total volume. Annual world production will need to provide an additional 230 million tons of cereals, 40 million tons of sugar, 60 million tons of meat and 140 million tons of milk. The forecasts are staggering.

The Science Council of Canada<sup>2</sup> points out that only 19% of Canada's total agricultural land is prime farm land suitable for a wide range of field crops. Present urban growth is encroaching on the key farm land, that which has the best soils and climate.

The Council estimates that half of the farm land lost to urban expansion is coming from the best one-twentieth of our farm resource.<sup>3</sup> The Science Council concludes that strong measures are called for:

- . Recognition that the designation of our best agricultural land as agricultural is urgent, and that bold provincial initiatives in planning are urgent.
- . Rural land use planning should have as high a priority as urban land use planning, and conflicts between incompatible rural uses must be defined in terms of an appreciation of the food-producing landscape and its limitation.
- . In-filling must be encouraged. At considerable economic, environmental and social cost, urban sprawl is proceeding at an alarming rate. It must be prevented, not simply regarded as a necessary evil.
- . The disruptive influence of growth - non-farm uses - requires close and urgent examination.
- . Cities at higher density must be made more attractive and recreational urban space opportunity must be provided.

The preservation of farm land is a desirable, necessary first step, but ..

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<sup>2</sup>Report Number 25, Population, Technology and Resources, July, 1976

<sup>3</sup>G. D. V. Williams, Urban Expansion and the Canadian Climatic Resource Problem

the economic incentives to farmers must be enhanced. Land ownership is a privilege and an obligation which must not be abused. Ownership of land should not convey the right to destroy that land.

These warnings of our scientific and agricultural communities on the urgency to preserve the productive agricultural capability of southern Ontario appear to be unanimous and overwhelming. But despite these warnings, aggregate production is allowed to take precedence over agriculture. Viable agriculture cannot be realized today on land valued at much more than \$1,000 an acre. But an acre of aggregates may have a market value of \$60,000 as a one-time non-renewable resource. The temptation to kill the goose that lays the golden eggs is obvious under present economic conditions and inadequate land use conservation planning.

The table opposite shows that at present 54,000 acres are already licenced for gravel production in the Central Ontario Region. This is more than twice the area of the City of Toronto. Some licences restrict the tonnage to be obtained. These restricted licences would produce 270 million tons of aggregate. Although the total potential tons from the 54,000 acres is unknown, it is apparent that if growth of demand continues and there is no land conservation policy, very serious inroads will be made into our remaining agricultural resource.

The "Proctor Redfern" report ("Mineral Aggregate Study, Central Ontario Region") disguises the agricultural/ aggregate conflict. By plotting township areas with greater than 75% ARDA Class I soil capability for

CENTRAL ONTARIO REGION

<u>Area</u>	<u>Number of Townships</u>	<u>Number of Licences</u>	<u>Number of Licences Without Acreage Limitations</u>	<u>No. Acres Licenced</u>	<u>Tons Licensed on Restricted Licences</u>
Cambridge	27	184	27	17,074	80,595,000
Huronia	22	131	23	8,850	10,688,000
Lindsay	26	138	6	9,856	27,396,000
Niagara	11	25	12	4,038	6,072,000
Maple	13	142	56	14,763	80,670,000
<b>Total Region:</b>	<u>99</u>	<u>620</u>	<u>124</u>	<u>54,581</u>	<u>215,421,000</u>

Estimated tons available from 54,581 acres  
at 60% yield:

- . based on 30' average depth: - 2,400,000,000 tons
- . based on 20' average depth: - 1,600,000,000

agriculture, they have managed to show an apparent small conflict. Class I is indeed a very rare, unique asset, being only 4% of land having agricultural capability. Class II at 15% and Class III at 23% are very high capability, agricultural assets. If these also had been plotted on the map of the Central Ontario Planning Region, it would have shown that in practically all townships, agriculture is in direct conflict with aggregate open-pit mining.

## 2. What is Wrong?

The Working Party proposals fail to show the slightest concern, important though it appears, over the agricultural/aggregate conflicting land use problem. But we could not expect the Division of Mines of the Ministry of Natural Resources to consider industries other than their own. That is not within their terms of reference.

The Province of Ontario, however, in formulating policy must, in all responsibility, weigh this conflict.

## 3. Recommendations

- An Ontario Land Use Policy is essential and must be implemented without delay.
- The mining of aggregates from Class I, II and III lands in Central Ontario must cease immediately, until a Provincial Land Use Policy is put into effect.
- A licencing approval system requiring application of the Environmental Assessment Act and calling on the advice from the Ministry of Agriculture with respect to farm land use must be initiated.

- . An Official Plan Approval based on the Regional or Municipal Government designating permanent agricultural areas which would preclude open-pit mining is needed immediately.

#### D. Transportation

##### 1. The Facts

Here are the bare facts:

Ninety per cent of all aggregates are hauled on public roads although there is some rail and boat haulage to the Toronto area.

Current trucking rates, based on the suggested MTC schedule are:

<u>Distance</u> (Miles)	<u>Rate/ton</u> \$	<u>Rate per ton</u> <u>Mile</u> - \$
20	1.78	.089
50	3.88	.078
100	7.30	.073

Under present economic conditions there is a surplus of truckers, so producers frequently negotiate rates 20% less than those the MTC recommends. Haulers are usually heavily in debt, pay high interest rates, as much as 18% - 20% to provide capital for trucks and there is a chronic over-supply of truck licences.

Truck insurance averages \$1,600 to \$2,000 per annum. Licences cost \$28.00 per annum plus \$175 to \$185 every three months, plus \$250 for a Metro area licence.

Unit train rates have not been uniformly established. Obviously the railways want the highest revenue they can obtain and charge what the market will bear.

Where the market exists and they must be competitive, their rates are surprisingly and relatively low:

<u>Trip</u>	<u>Distance</u> (Miles)	<u>Rate/ton</u> \$	<u>Rate per Ton Mile</u> \$
Sudbury to Courtright	485	7.47	.0154
Uththoff to Agincourt	91	1.55	.017
Estimate Quoted Price (CP Rail)	100	1.50/2.00	.015/.02
Temagami to Hamilton	346	4.95	.014
Kirkland Lake to Hamilton	430	6.45	.015

Water provides the least expensive method of shipping:

<u>Trip</u>	<u>Distance</u> (miles)	<u>Rate/ton</u> \$	<u>Rate per ton mile</u> \$
Duluth to Toronto	1,020	3.70	.0036
Marguitte to Toronto	930	3.05	.0033
Escombe to Windsor	270	2.22	.0082
Cedarvale to Stoneport	420	2.53	.0060
Lake Erie to Detroit	240	2.62	.0109
Thunder Bay to Toronto	900	1.80	.0020

Rate estimates researched in 1978 show the relative costs for the three modes for various distances.

	<u>COST PER TON</u>		
	<u>TRUCK</u>	<u>UNIT TRAIN</u>	<u>SHIP</u>
Cost per ton mile	\$0.055 <sup>a</sup>	\$0.012 <sup>b</sup>	\$0.0038 <sup>c</sup>
Distance (Miles)			
5	\$0.275	--	--
10	\$0.550	--	--
15	\$0.825	--	--
20	\$1.100	\$0.240	\$0.076
50	\$2.750	\$0.600	\$0.190
100	\$5.500	\$1.200	\$0.380
250	\$13.750	\$3.000	\$0.950
500	\$27.500	\$6.000	\$1.900

<sup>a</sup> Working Party 1976 plus 5% per year increase to 1978

<sup>b</sup> Based on Ontario Hydro transport of coal

<sup>c</sup> Average from shipping lines and producers' figures

In practice gravel used for road construction is shipped directly from the pit to the site, whereas gravel for processing is shipped to cleaning and sorting plants. Where rail or ship transport were used the gravel would go to distribution yards and be transported by truck to the specific sites. This is an additional handling cost. Total cost estimates for the ship and rail modes and local distribution are tabled overleaf.

Combined Ship and Truck to Site

<u>Distance</u> (Mile)	<u>Transportation Cost</u> (per ton)	<u>Yard Cost<sup>a</sup></u> (per ton)	<u>Trucking to Site</u>			<u>Total Transportation<sup>c</sup></u> <u>Cost to Site</u>		
			5 mi.	10 mi.	15 mi.	5 mi.	10 mi.	15 mi.
20	\$0.076	\$0.60	\$0.275	\$0.55	\$0.825	\$0.951	\$1.226	\$1.501
50	\$0.19	\$0.60	\$0.275	\$0.55	\$0.825	\$1.065	\$1.34	\$1.615
100	\$0.38	\$0.60	\$0.275	\$0.55	\$0.825	\$1.255	\$1.53	\$1.805
250	\$0.95	\$0.60	\$0.275	\$0.55	\$0.825	\$1.825	\$2.10	\$2.375
500	\$1.90	\$0.60	\$0.275	\$0.55	\$0.825	\$2.775	\$3.05	\$3.325

Combined Unit Train and Truck to Site

20	\$0.24	\$0.48 <sup>b</sup>	\$0.275	\$0.55	\$0.825	\$0.995	\$1.270	\$1.545
50	\$0.60	\$0.48	\$0.275	\$0.55	\$0.825	\$1.355	\$1.630	\$1.905
100	\$1.20	\$0.48	\$0.275	\$0.55	\$0.825	\$1.955	\$2.230	\$2.505
250	\$3.00	\$0.48	\$0.275	\$0.55	\$0.825	\$3.755	\$4.030	\$4.305
500	\$6.00	\$0.48	\$0.275	\$0.55	\$0.825	\$6.755	\$7.030	\$7.305

<sup>a</sup> Average of actual costs

<sup>b</sup> This is a conservative figure based on facilities for unloading hopper cars. No aggregates are shipped by unit train in Ontario at present

<sup>c</sup> This is a transportation cost only. It does not include the cost of extraction or profit for the operators



2. Energy Use

Energy efficiency will have an increasing impact on decision making. But it is unlikely price alone will be allowed to allocate energy resources.

Energy consumption per ton mile is tabulated below using two estimates:

(1) MTC; (2) Rand Corporation:

<u>Mode of Transportation</u>	<u>(1) BTU/tm</u>	<u>(2) BTU/tm</u>
Boat	540	500
Rail	680	750
Truck	2,300	2,400
Plane	37,000	63,000

In both estimates rail is about 340% more fuel efficient than truck.

3. How Road Haulage Causes Damage, Danger and Pollution

- Gravel is a dense, heavy commodity. Trucks operate at high speeds with heavy loads in the 30 to 40 ton range. The Working Party suggests this be increased to 50 ton payloads. It ignores the fact that these heavy trucks destroy roads, bridges, cause heavy maintenance cost for the community and present a serious danger to highway traffic.
- Heavy diesel trucks generate excessive noise, dust and air pollution and are environmentally damaging to those living along truck routes.
- Trucks cause congestion on highways due to their numbers and because they cannot accelerate or decelerate at the same rate as light vehicles.
- The system of payment "tons delivered per day" encourages speeding, overloading, poor container up-keep, and failure to cover the load. This becomes a safety hazard to other motorists.

- . By the year 2000, it is forecast that to move 100 million tons fifty miles to the Central Ontario market, 67,000,000 gallons of diesel fuel per year will be required. Rail shipment could provide a 47,000,000 gallon fuel saving per year.
- . Truck trips per year to move 100 million tons would require about 6 million trips or 24,000 trips per day. This is an intolerable level of traffic that must never be inflicted on our highway system.

#### 4. Conclusions and Recommendations

The Province of Ontario and the municipalities over a five to ten year period, should progressively discourage road haulage of mineral aggregates by means of a program which:

- . increases the road haulage licence fee for aggregate movement;
- . refuses pit licences where the planned haulage method is by road;
- . requires strict regulations on pit operators to pave pit entrances and interior haul routes, supply axle weight scales in the pit, enforce regulations to cover loads and require a set of standards for truck body maintenance;
- . regulates conditions and prices paid to haulers in line with MTC rates to provide a fair return to haulers and eliminate the incentive bonus pay system of "tons delivered" which encourages irresponsible handling and driving, creating highway hazards;
- . includes in the per ton levy an amount adequate to pay for road maintenance, policing and regulation;
- . requires joint liability between the hauler and the pit operator for infractions on overloading, and enforce them strongly;
- . establishes a clear policy that in the future, as part of the Province's energy conservation program, rail transport (or water) will be required and no licences will be granted to operators planning to haul by road.

The economics of truck transportation and absence of a need by the industry to rationalize its operations has resulted in open pit mining on the fringe of urban areas in the most densely populated areas of Southern Ontario. The present industry structure and land holdings dictate that pits and quarries

must be as close as possible to their markets. By eliminating this single factor and encouraging widespread dispersal to less sensitive areas, the use of rail and ship transportation will result.

E. Rehabilitation

There has been no significant rehabilitation of pits and quarries in Ontario, a situation that is shocking. The Pits and Quarries Control Act, 1971, has proven totally ineffective as administered. There are presently about 54,000 licenced acres of pits. Additionally, the Working Party Study estimates there are 20,000 acres of abandoned pits. The existing 2 cents per ton levy for such rehabilitation (which operators regards as a tax) is obviously insufficient to provide an incentive for rehabilitation.

Responsibility for rehabilitation was assigned to the Mines Branch of the Ministry of Natural Resources. Shortages of staff have been blamed for the failure to rehabilitate. This is a lame excuse. Surely some action should have been forthcoming over five years from the staff available.

Compared with many other jurisdictions in North America and Europe, Ontario has permitted almost unrestricted open-pit mining without effective rehabilitation. Strip mining around Metro Toronto and other heavily urbanized and urbanizing areas is a disgrace in a civilized society. This physical and visual degradation of our communities is an embarrassment, seriously affecting our pride and affection for our Province. It must be corrected.

## 1. The Problem

We support the concerns expressed by the Working Party in its report:

"A Policy for Mineral Aggregate Resource Management":

- . lands should be returned to a similar level of productive use as existed before extraction started;
- . lands should be in a useful form and harmonious with their surrounding environment;
- . lands should be graded, stabilized, top soil covered and planted;
- . interference with hydrological systems must be strictly controlled;
- . each site is unique and therefore requires a specific plan;
- . rehabilitation must be progressive and scheduled;
- . there must be a site plan and effective enforcement.

We agree with the statement: "The Working Party has observed very few examples of progressive rehabilitation in Ontario today and yet this is the concept most desired by those residents in the extractive areas".

Abandoned pits may or may not be owned by the original operators. Therefore allocating responsibility for rehabilitation would be impossible. The present owner may benefit from rehabilitation but so will the community.

The Working Party's recommendations on rehabilitation are particularly constructive. But while we support the intent, FAS challenges the allocation of authority for action and the inadequate funding proposed.

Many areas of ecological sensitivity, river valleys, hardwood forests, Class I, II and III agricultural land, prominent land forms, and the Niagara Escarpment, cannot be rehabilitated to their original state or an acceptable alternate

condition. An environmental impact assessment under similar regulations to the Environmental Assessment Act would preclude the issue of a licence.

There is a tendency to assume that the state of the art and science on rehabilitation is known. This is not so.

The Mines Branch lacks the skill and perspective to guide such activity. Rehabilitation cannot be arbitrarily implemented. Rehabilitation skills must be added to the Ministry of the Environment. Each site is different: ecologically, socially and physically. Plant genetic factors influence rehabilitation of native species. An understanding of natural succession, soil sciences on absorptive or disorptive characteristics, micro-biology, chemistry and hydrology is essential. Rehabilitated uses could include housing industry, forestry, recreation or provide wildlife habitat. Each use could make a positive contribution to the community, compared with a derelict site, but only individual site analyses can determine the most desirable and feasible social contribution. Site evaluation falls naturally in the role and interests of the Ministry of the Environment, not the Mines Branch whose primary concern is exploitation of resources.

## 2. Costs and Funding

To rehabilitate abandoned pits and implement progressive rehabilitation of working pits will cost money. To assure it is met equitably the aggregate industry must be required to carry future costs and redress omissions and exploitations of the past.

The proposed licence fees and per ton royalty suggested by the Working Party are ridiculously inadequate, to assure the task is taken seriously.

Some estimates of rehabilitation costs are:

	<u>\$ per acre</u>	
<u>Pennsylvania (1974)</u>	<u>Maximum</u>	<u>Minimum</u>
Backfilling and grading	3,222	1,700
Trees (700 per acre)	500	90
Grass	220	180
	-----	-----
Total:	\$3,942	\$1,970
	=====	=====

University of Waterloo (1976)

	<u>Cost of Rehabilitation per Acre</u>	
	<u>Estimate of Producer</u>	<u>Estimate of Land- scape Architect</u>
Cropland	2,500 - 5,000	4,000 - 8,000
Pasture	2,200 - 4,500	4,000 - 8,000
Forest	2,200 - 4,500	4,000 - 8,000
Recreation	2,500 - 5,000	4,000 - 8,000

The Working Party estimate \$300 - \$1,600 per acre and propose a security deposit of 8 cents per ton of material removed.

Using a 60% yield since an owner cannot mine vertically to his boundary, and not all material is saleable, the security would provide:

<u>Depth of Gravel</u>	<u>Tons/acre</u>	<u>\$ Deposit/Acre</u>
10'	14,520	1,161
20'	29,400	2,352
30'	43,560	3,485

This will not guarantee compliance, particularly when the objective is to return the property to its original use. The industry has shown virtually no interest in rehabilitation. It is likely that 8¢ per ton will be considered as a slightly higher tax than the present 2¢ and will be passed on to the consumer still with no rehabilitation being done.

Rehabilitation requires planning and special skills. Aggregate mining is a simple process, whereas rehabilitation is far more complex. The industry lacks both the skills and the motivation to rehabilitate. Eight cents will not be sufficient to cause the industry to accept the direct costs and overhead of implementing rehabilitation. Rather the low fee will encourage procrastination, argument, litigation and a policy to do the job at least cost. The levy must be sufficiently high that there is no doubt of the economic benefit to the producer and so that all costs of government rehabilitation, both direct and indirect, are recoverable.

A pit licence fee is proposed by the Working Party to support rehabilitation of abandoned pits as well as road maintenance and inspection. The Working Party estimate \$3 million from 2,100 pits and quarries. This is to be divided as follows:

Regional Governments or Counties	20%	600,000
Local municipalities	50%	1,500,000
Provincial rehabilitation	10%	300,000
Provincial Planning and Enforcement	20%	600,000
		<u>3,000,000</u>

Again, we commend the Working Party for its concern, but it fails to grasp the picture; the fee schedule is much too low to achieve the needed results.

Here are some comparative rehabilitation estimates:

	<u>Cost/Acre</u>	<u>Cost/Acre</u> (adjusted 1978)
Working Party (1976)	300 to 1600	363 to 1936
Foundation for Aggregate Studies (1977)	4000 to 6000	4840 to 7260
Pennsylvania (1974)	2000 to 4000	2420 to 4840
University of Waterloo (1976)	2200 to 8000	2662 to 9680

Clearly no estimate is valid for all sites. Each site is different depending on the end use and location. In remote areas of northern Ontario, grading combined with natural succession might be reasonable but in southern Ontario far more sophisticated rehabilitation is socially necessary.

Abandoned pits are estimated to exceed 20,000 acres. At a nominal estimated cost for rehabilitation of about \$4,000 per acre, only 75 acres per year could be rehabilitated. The job would be done by the year 2240. Even if a modest cost of \$1,000 per acre was allocated, only 300 acres per year would be restored.



The other major additional cost incurred at the Regional or County level, subsidized by conditional grants from the Province, is road construction and maintenance. Regional arterial roads built to a 3,000 car per day standard cost about \$300,000 per mile. The grant recommended by the Working Party report would fund 2 miles per year. Considering high maintenance caused by gravel trucks and new construction caused by gravel road traffic, the licence fee is impractical - not nearly high enough.

The local municipalities receiving 50% of the licence fee or \$1,500,000 per year fare a bit better. But \$1.5 million divided amongst some 200 municipalities is not overly generous and would only partially cover their many costs as the aggregate industry's "hosts".

### 3. Recommendations and Conclusions

- . The per ton levy should be set at twice the estimated cost of rehabilitation, based on site rehabilitation plans, as administered, estimated and agreed upon by the Ministry of Environment.
- . Licence fees should be set to cover all direct and indirect costs accruing from: enforcement, planning, research, rehabilitation of abandoned pits and road construction and maintenance.
- . Greatly reduced licence fees should apply to pits which ship by rail or boat to encourage this method of transportation.
- . Rehabilitation standards, research and site planning should be strictly enforced by the Ministry of Environment and costs recovered through licences.
- . All site rehabilitation plans should be approved by the Area Municipality and the Regional Government.
- . The Ministry of Environment should set the per ton levy to include a non-refundable amount payable to the municipality to compensate for social costs, loss of property value, noise, disturbance, general nuisance and injurious affection in designated areas of high impact in southern Ontario where aggregate is shipped by truck.

## F. Social Issues

### 1. The Challenge

An increasing number of people are questioning priorities given to open pit mining development. They are gravely concerned, incensed, outraged. Rapid, unplanned economic growth, large government and centralized organization are viewed by many people as serious threats to individual liberty, justice and the pursuit of happiness. There are obvious trade-offs between the affluence provided by development and the loss in the quality of life. The unbridled pursuit of great G.N.P. at a cost of personal freedom, life style options and a deterioration in the environment must be interpreted as a danger to our free society.

To many, the freedom allowed the aggregate industry exemplifies autocracy. On the one hand, there is the argument for need of the cheapest, most accessible supply of aggregates to the development industry. Low cost aggregates support industrial building, roads and other infra-structure. To achieve this priority, unfettered aggregate exploitation, allowing pre-emptive land use, zero rehabilitation, freedom from damage claims, unrestricted road use, neglect of environment, noise pollution, visual degradation of the countryside, and power to ignore community concerns in the interest of "the common good" have had to be permitted.

To those affected, the problems are very real: people perceive their nation and community to a large degree through the physical environment that surrounds them. The condition of our landscapes, streams, lakes, forests and the built environment, and our loyalty, and freedom from alienation is inextricably

related to the land which is our country. Our people will not accept irreversible destruction of their landscape much longer. If the government will not act, the majority of people will.

A growing number of citizens challenge the growth ethic and the timing for its control. The Honourable W. D'Arcy McKeough, Treasurer of Ontario, commenting on Ontario's Future, Trends and Options, March, 1976, made some succinct comments:

"The notion that Ontario is a land of limitless space is in fact a myth and a dangerous one. Nine out of ten Ontarians live in the three southern planning regions, at an overall density of nearly 170 people to the square mile -- higher than that of India and approaching the densities of Britain and Italy. The myth is dangerous because it encourages a profligate attitude to a land resource which is effectively very small and must be husbanded with great care. We cannot afford to waste or misuse it ... The pace of change has been breathless. Steadily rising prosperity led to the assumption that growth must be good. For a long time, few were inclined to consider whether it might not be an unmixed blessing, or where it might eventually lead."

"We look ahead now to the next quarter century in perhaps a rather less euphoric, rather more sober, mood. We cannot know exactly what it will bring to Ontario, but there are some things we do know. Even though the population may grow more slowly than before, and perhaps fall well below past forecasts, we know that for many years it will nevertheless continue to grow substantially."

"We know that this growth, if allowed to take its natural course, will tend to gravitate to a few already crowded parts of the Province. We know now from experience that growth can do harm - as well as good. The change can be for the worse as well as for the better. And we understand more clearly than we did 25 years ago that our resources -- of natural wealth, of energy, of money -- are not unlimited and must be used with care."

The Science Council of Canada provides further insight into changing priorities. They forecast a 29 million population for Canada for the year 2,000 and achievement of stability shortly thereafter, higher density living

in established urban areas, food as our major export and a high priority for farm land preservation, stabilization of manufacturing production and greater imports of manufactured goods and a consumer society life style.

The impact of new economic considerations is already being felt in our planning. The Province of Ontario has reduced its population target for the COLUC region. In 1967 the Metropolitan Toronto and Region Transportation Study forecast population for the year 2000 in the Durham Region at 1,075,000. This is now targeted between 545,000 and 825,000. Economic growth is also being forecast at a declining rate.

As population increases, so will demand for conservation -- visual, habitat and freedom from injurious affection and nuisance of development. The quality of outdoor experience close to urban areas has a new priority. Cases of rejection of economic benefit are numerous. For example, in the last municipal elections, the people of Uxbridge rejected economic benefits of a Federal penitentiary project through concerns for deterioration of the quality of their life style. The City of Toronto's development constraints are well known. Almost all municipalities impose some control over development. Where aggregate mining is concerned, the Working Party wants to strip the communities of their local jurisdiction. This must never be allowed.

A recent study by the Bureau of Municipal Research, titled "Legislative Attempts to Control Urban Growth in Canada", shows that of those with positive positions within the advanced industrial communities, 78% oppose growth while only 22% favour growth.

Relating these priorities to the aggregate industry in Ontario implies:

- . an acceptance of the need for aggregates to sustain our affluence and accommodate reasonable growth;
- . demands that the industry not impose hardship or injurious affection on the individual or the communities that host the industry.
- . protection of our renewable land resource base;
- . acceptance of significant costs to achieve socially acceptable development;
- . rejection of a "least cost" philosophy as the only basis for decision-making;
- . a demand for comprehensive research into alternatives;
- . citizen input to decisions on the rules within which the industry operates; and
- . considerable local autonomy to assure that municipal and community rights cannot be disregarded.

The attitude of the aggregate industry to legitimate social concerns and priorities articulated by the public is well described in the abstract and summary recommendations of the Mineral Aggregate Study, Central Ontario Planning Region, of March, 1974, which states:

"The extractive industry, functioning near capacity, is struggling to improve a poor image in the face of an ill-informed consumer public."

This clearly illustrates the industry's awareness towards the community's concern for regulation of the industry and how it might affect it. But it arrogantly dismisses them as arising from "an ill-informed consumer public".

The Working Party Report admits that today, more than five years after the passage of the Pits and Quarries Control Act, "we have in Ontario a confrontation situation between the extractive industry and the residents of the extractive areas".

## 2. The Answers

The aggregate industry must be made to operate within a framework of laws and regulations in a manner acceptable to the communities it affects.

Municipalities must have the option to host the industry or not. Imposition of the industry on a municipality by a branch of Government is socially undemocratic and cannot be accepted. Most municipalities welcome industry. Industrialists are generally reluctant to locate in a community that does not seek their presence. So why is the aggregate industry different? Because it has government support and is not bound by enough regulations to control its operations.

There is only one solution. The aggregate industry must provide benefits -- funds to compensate for costs, rehabilitation, less road hazards, less noise and an unobtrusive presence so the benefits outweigh the costs. Social and environmental costs cannot be calculated. They are subjective. These subjective evaluations can only be made at the community and municipal level.

Pre-emptive land use for the private gravel industry is unacceptable.

Forcing an annual quota on each municipality is a bureaucratic solution alien to our way of life. Municipal and regional councils will hardly relish the idea of deciding who shall be the neighbours of the open pit mine or whose property is designated for gravel extraction. In the long term, open pit mining in the densely populated regions of Ontario must be phased right out. The Southern Ontario landscape close to our growing urban centres must be conserved at all costs.

Other than supplying very local needs, in special instances, aggregates

must be mined in areas remote from urban centres. Bulk transportation by lake boat or modern unit trains can provide economical transport. In fact, it is already taking place; some Toronto aggregate supplies already are arriving by boat and train. For truck transportation to be economical, pits and quarries must be as close as possible to markets.

By requiring the industry to pay all costs, dispersal to less settled areas will become a viable and socially acceptable alternative.

#### IV. THE INDUSTRY

In evaluating its role and exploring its conduct, some understanding of the aggregate industry is essential.

Mineral aggregate production in Ontario is about 100 million tons per year or 13.12 tons per capita based on 1975 figures. About 50 million tons are used in the Metro Toronto area. Annual sales exceed 300 million dollars.

An Aggregate Producers' Association is the industry lobby and spokesperson. The Government of Ontario encourages and supports the industry through the Division of Mines of the Ministry of Natural Resources whose terms of reference date back to 1891: "There shall be established ... a Bureau of Mines to aid in promoting the mining interests of the Province". The objective of the Division of Mines has not appreciably changed since 1891.

The industry is entrepreneur oriented, has simple management structures and is characterized by low-capital investment, high profits, low employment per sales dollar. Its main asset is the non-renewable gravel resource which is banked in the form of rural agricultural land up to the point of

exploitation. During the banking period, the industry benefits from the Province of Ontario's farm taxation programs. Farm land can only be assessed at its value for farming purposes. The only assessable asset is the farm land since there are few buildings and most of the equipment is mobile and not included in assessed value.

Many companies contract the haulage to small trucking companies or individual truck owners at very low cents/mile rates. There are many small producers but the largest 28 supply 75% of the Province's gravel. Some owners merely subcontract their pit to others to mine, while other companies do their own mining and distribution. There has been no rationalization of the industry such as has occurred in other mining ventures probably due to the low demand for capital funds and efficiency. It has never been forced to clean up its act.

Municipal attempts at legislating regulations of the industry have proven to be extremely difficult. Attempts at enforcement of zoning or other by-laws have often ended in lengthy, expensive litigation. The common law in Ontario has also afforded little protection to municipalities or to individuals who have suffered from nuisance or injurious affection. The Pits and Quarries Control Act of 1971 was an initiative of the Government of Ontario to provide for some control of the industry and to encourage rehabilitation. It has been allowed to fail.

The municipalities whose authority is challenged by the Working Party's report, are under pressure from their electorate who suffer noise, dust, road deterioration, danger and depreciation of their property rights and



values. The industry's financial contribution to the municipality is minuscule. Environmental groups are concerned for the destruction of the water table, recreational opportunity and wildlife habitat. Land use planners and the agricultural industry oppose losses of huge amounts of farmland. The failure of the industry to rehabilitate and voluntarily accept responsibility as corporate citizens has given the industry a less than pure public image.

The Ontario Government, through its Division of Mines in the Ministry of Natural Resources, is supportive of the industry's efforts. Aggregates are a vital raw material for development which have been generously endowed to Ontario by nature, and the Mines Branch has perceived its role as a support to the industry to assure adequate supplies at low prices. The Ministry of Natural Resources' Mines Branch has fulfilled this development role very adequately.

The aggregate industry has been successful and profitable from the viewpoint of its owners. It is apparently in the habit of operating without any interference or control over its activities. As a supplier of a basic raw material, it views itself as needing special status, free from any of the regulations which control other industries.

Unfortunately, the goals of the industry and society come into conflict. Our society has long accepted limitation on the unbridled right of one group to impose injury on other groups or minorities. Most industries work within laws and customs which are acceptable to their host communities. Not so with the aggregate industry. It is a unique cartel enjoying governmental support at the expense of community indignation, that would be unacceptable from any other industry.

V. THE AGGREGATE RESOURCE BASE

What aggregate resources are available to the people of Ontario? Where are they located? Are we in jeopardy of running out? Is scarcity a problem? None of these questions have been adequately or impartially analyzed, though studies to date present an unduly pessimistic view of resource potential as well as exaggerating future demand.

The Mineral Aggregate Study, Central Planning Region of March, 1974, estimates total reserves in the Central Ontario Region alone at 93.6 billion tons. Limiting the study to the Central Ontario Region, the most densely urbanized area of Canada, and comparing reserves to consumption, shows conditions not representative of the province at large. The inference is that consumption must come from the reserves in this area. By assuming this arbitrary boundary and a whole host of restrictions, the analysts were able to deduce that only a little over 3 billion tons were actually available. Depreciation of the reserve potential and exaggeration of demand affects both sides of the equation and implies a crisis which is non-existent.

A. Natural Aggregates

Aggregate deposits in Ontario are clearly far more than adequate for foreseeable needs. The Ontario Department of Mines, "Sand and Gravel in Southern Ontario, Industrial Mineral Report #11", 1963 states that: "Deposits of sand and gravel are widely spread in Ontario". Throughout central Southern Ontario are glacial deposits -- outwash, moraine, kames and eskers, dolomite/limestone, which are natural aggregates. The Proctor Redfern study estimates reserves in the Central Ontario Planning Region alone at 93 billion tons and admits that the reserves could possibly be twice this figure.

But Ontario cannot be divided into arbitrary boundaries. Bruce, Grey and Huron counties were not included in the Central Ontario Planning Region resource estimates, but they are as close to Toronto as Peterborough and Haliburton, which were included. Yet the vast reserves in the former, as yet not inventoried, are implied to be irrelevant to Ontario's future needs. The whole of northern Ontario and eastern Ontario provide potential sources for supply.

B. Aggregates from Waste

The employment of industrial waste in the production of aggregates has future potential -- fly ash, cinders, mill slag, mine tailings, refractory wastes, demolition wastes (brick, concrete, pavement), crushed glass, sulphur, must have market potential and should be included in reserve calculations.

A recent U.S. Study entitled, "Promising Replacements for Conventional Aggregates for Highway Use" claims: "Raw materials for the use in the manufacture of synthetic aggregates are abundant throughout the country". With the generation of 673 million tons of solid waste in Canada, it is reasonable to believe that the same potential is available here. The technological capability exists, or can easily be developed, to provide the aggregate needs of the future. Application of alternate materials will, of course, await market conditions which would absorb some additional transportation costs, and acceptance of the new materials. J. J. Emery, in "Waste, An Alternate Source of Highway Materials", explains the problem:

"New methods and technologies requiring homogeneous raw materials stand at one end of the spectrum, while old prejudices and protectionist devices too often preserve obsolete specifications, stand at the other. Central is the matter of price, particularly if environmental enhancement factors are not applied."

No valid estimate of total aggregate potential supplies has been forecast, but a figure for Ontario of 200 billion tons would not appear to be unreasonable. At a consumption rate of 100 million tons per year, this would last for 2,000 years.

#### IV. DEMAND FORECASTS

A forecast of future demand for aggregates is essential to decision making relative to the aggregate industry. If due to a shortage of production and high demand, we will be faced with economic collapse, serious added cost to development or a hardship to the people of the Province, different priorities would emerge. The fact is that demand will not reasonably approach supply availability. There is, therefore, no need to panic in providing pre-emptive rights to the industry, irreversible damage to the environment or to subjugate the rights of a large number of Ontario citizens.

Exaggerated forecasts imply an emergency necessitating forthright action now, which distort priorities and encourage possible misuses of our resources.

We submit that the aggregate industry and their advocates, the Division of Mines of the Ministry of Natural Resources and their consultants, have exaggerated future possible demand by using obsolete forecasting methodology and failing to perceive fundamental changes in our economy.

Our concern that the Government of Ontario, the Ministry of Natural Resources and the public will take seriously the aggregate demand forecasts of the Mineral Aggregate Study, forces us to evaluate their findings.

### A. The Economic Model

The purpose of the model used in the Mineral Aggregate Study, by Proctor and Redfern, published in March of 1974, was to project consumption of mineral aggregates to the year 2001. It is a mathematical model which assumes the total aggregate consumption equals a sand and gravel usage coefficient applied to residential construction, non-residential construction and engineering construction. The share of construction activity is estimated from past data. The total consumption in a year equals a share of adjusted gross provincial product based on past data. The adjusted gross provincial product equals the gross provincial product adjusted for assumed participation rate and employment rate. Per capita income is derived from the income data of 1947 to 1974. Ontario Government population goals forecasts were employed.

Some deficiencies of this model are:

- . mineral aggregate consumption is assumed to be a function of only two variables, the quantity and mix of construction activity. No justification in a statistical sense is given for this major assumption. Apparently only the year 1971 was used;
- . sensitivity of demand to price was ignored;
- . there are no illustrations of statistics and relevant confidence limits for the past data. There is no statistical testing of the share ratios going into residential, non-residential and engineering construction;
- . the forecaster assumes a relationship between the overall level of gross provincial product and the rate of investment, without justifying this assumption - a factor which would appear very dubious considering recent trends to an increased proportion of GNP being soft services.
- . the construction activity forecast is based on two separate numbers -- population and income -- adjusted by two separate indexes, employment and participation rate. Yet possible errors exist in any one of these numbers or indexes that could invalidate the whole projection particularly since no confidence limits are given to determine a combined confidence limit for the overall forecast.

- . the population projections were based on a past goals forecast which has already been revised downward in 1976 by the Province of Ontario.

Forecasting based on a projection of factors such as gross provincial product and construction mix are too simplistic for long range forecasting. The energy cost impact on the economy and gross provincial product will not come from projecting past data. For example, the impact of the Organization of Oil Exporting Countries (OPEC) energy pricing will result in a major change in transportation needs relative to roads, airports and other capital and energy consuming projects. Energy costs will change aggregate prices.

The population projection has already been reduced. The forecast used for the Ontario population was 12,607,000 whereas the Government of Ontario's goals forecast of March, 1976, is 11,646,000. This forecast is a goal not a probable forecast.

The mix of construction activity will obviously change over the forecast timeframe from energy wasteful uses such as roads, to light, rapid transit and housing. Increased urban density reduces urban sprawl and shortens transportation links and will affect the mix and total consumption forecast.

#### B. Economic Change

The demand forecast of 143,000,000 tons in the year 2001 seems incompatible with a levelling off in population which is forecast by The Ministry of Treasury, Economics and Intergovernmental Affairs report of March, 1976 - Ontario's Changing Population. At a time when population growth is forecast to level out the aggregate study shows a peak in aggregate

consumption. In fact they forecast a consumption at three times present use. Table 5.3 of the Mineral Aggregate Study, above referred, shows an annual consumption rate starting in the 70's at about 4.5% declining to 2.4% by 1986 and rising again to 3.9% in the year 2000. It is truly amazing that in the years 1983 to 1988 the lowest rate of increase in consumption is shown -- at a time when the Province of Ontario is forecasting a major demand for new housing to accommodate the peak in family formation. Table 14 of Ontario's Changing Population, Volume 2, forecasts that 31.7% of the population of Ontario will be in the age range of 25 to 44, the age bracket in which homeownership occurs.

The Table below illustrates some of the inconsistencies and unbelievable figures which result from projection type forecasting on the basis of exponential growth:

Comparison of Aggregate Study Consumption vs.  
Population

Forecast Aggregate Consumption (Tons)

	<u>Ontario</u>	<u>Central Ontario Region</u>	<u>Forecast Population</u>
1972 (actual)	112,600,000	51,500,000	7,842,000
2001	211,600,000	142,700,000	11,646,000
% increase	177	177	48.5
Per Capita 1972	14.75		
Per Capita 2001	26.75		
% increase	86		

From: Table 5.3 & 5.4, Mineral Aggregate Study, Central Ontario Planning Region.

The Ontario Government's restraint program is an early indication of a changing economic situation. Already Ontario Hydro has reduced its rate of capital construction. The Committee on Program Review is critical of the conditional grant program to municipalities for road building -- "a formula of this type can act as an incentive for municipalities to direct monies into roads". The Committee proposed: "the province re-examine the existing grant structure with a view to reducing grant levels for roads and bridges towards 50%". Roads account for 50% of past aggregate consumption.

The basis of the forecast that real per capita income will double by the year 2001 is not supported by current economic research. The impact of OPEC's high prices is only now being felt. The International Economics Section, "Business Week", of December, 1976 reported:

"... using the Federal Reserve Board's econometric model, George Perry of the Brookings Institution estimates that increased oil prices has cost the nation in 1976, \$60 billion in gross national product and more than 2 million jobs. These losses occurred because the price hike triggered a decline in real disposable income leading in turn to a cut in consumption and investment spending"

Dale Jorjenson of the Howard University states:

"The ability of new adaptive capital stock of the world to produce has been permanently lowered -- the average job in the economy will be less capital intensive and therefore intensive and therefore less productive".

The Urban Transportation Development Corporation Limited, forecast that Ontario will spend \$50 billion on imported oil during the next fifteen years and \$40 billion of capital on electric power generation. This major



price/cost escalation and major new capital demand will have a very negative impact on per capita income growth. But the aggregate industry's forecast is based on a doubling of real per capita income at an exponential annual rate of 2.5% and they use this forecast to justify their aggregate demand forecast. They say:

"The rate of construction of residential building, non-residential building and engineering projects such as roads, dams, airports and so forth will likely increase considerably. The demand for mineral aggregates will also rise accordingly."

Yet it is obvious that aggregate demand will not increase at this high rate.

### C. The Trend

In fact, analysis of consumption statistics show a decreasing per capita trend in aggregate consumption which peaked in 1966 at 17.1 tons per capita and has decreased as shown by the table below:

#### Aggregate Demand Trend

<u>Year</u>	<u>Tons per Capita</u>
1966	17.1
1967	16.8
1968	15.3
1969	14.7
1970	14.4
1971	13.6
1972	13.7
1973	14.6
1974	14.1
1975	13.3

From: Statistics Canada and Ontario Statistical Centre.

The total value of producers' shipments of sand and gravel extracted from the Canada Year Book, 1974, page 507, shows:

<u>Year</u>	<u>Tons x 1,000</u>
1966	94,124
1967	94,751
1968	84,091
1969	82,657
1970	82,877
1971	77,631
1972	76,380

Again a reduced consumption rate trend is established. Ontario Hydro state in "Long Range Planning of the Electrical Power System", page 8:

"Now most major Hydro Electric sites in Ontario have been developed to the full energy capability ... it therefore appears unlikely that new Hydro Electric development will provide a significant part of our future developments."

Neither of the previous forecasting assumptions - that the mix of sub-aggregates or the relative uses of construction materials will remain at the 1971 ratio - is credible.

At the present time, forecasting is admittedly a difficult chore.

Ontario's dependence upon imported oil and its huge capital requirement for nuclear energy over the next 15 years are a new economic factor which cannot be ignored. It is incredible to assume that the same proportion of gravel will go into highway construction in the future as did in the 1960's. The peak demand for housing will occur between now and 1990 as the post-war babies form families and acquire houses. After that time, a rapid decline in housing starts can be anticipated.

Instead of the exaggerated exponential growth based on the future being the same as the past, a very different forecast is apparent. But even if projection techniques were used for forecasting, it is unexplained how a decline in both absolute consumption and per capita consumption can be projected into a growth trend.

Exhibit A shows the actual per capita consumption and the forecast of the Mineral Aggregate Study. With a declining consumption rate from 1966 to 1975 it is inexplicable how the trend suddenly turns upwards after 1976.

It is obvious this downward trend will continue. To what extent is unknown. Other western nations with more stable growth patterns use only about 6 tons per capita. This could be our consumption rate by the year 2000.

Recent data shows the downward consumption trend is continuing. Already the forecast has been proven wrong. The Working Party has conceded that perhaps the original forecast is 25% too high. It may in fact prove to be 200% to 400% too high.

To forecast unreasonable growth in consumption in support of one's argument, is to mislead the public and political leadership. It creates concern for shortages, advocates pre-emptive land use and encourages disregard of other priorities.

#### D. Conclusion

The forecast of available aggregate resources and demand is essential to policy formation. Aggregates are an essential commodity in our economy.

But to claim scarcity when none exists, and to exaggerate demand beyond reason is to mislead the public and the political leadership. It creates concern where none need exist and advocates pre-emptive use, disregard of other priorities for land use and environmental conservation, and discourages necessary control over the industry in the best interests of the people of the Province.

EXHIBIT A

FOUNDATION FOR AGGREGATE STUDIES (1977)  
ONTARIO MINERAL AGGREGATE CONSUMPTION 1948-1975  
AND FORECAST TO YEAR 2000

