Study of the Cedar Creek Corridor and the Possibilities of the Environmental Impact Statement

Accepted: M. 4/30/87

Honors Thesis
Spring Quarter 1975
Faculty Supervisor: Dr. Donald VanMeter

Written by Elden Stoops
In the June '74 issue of "Progressive Architecture" it is stated that Congress passed the National Environmental Policy Act (1970) "...to encourage productive and enjoyable harmony between man and environment; to provide efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the nation...." Despite these lofty objectives and countless other similar proclamations the situation has worsened. Every one of the National Wildlife Federation's seven headings for its Environmental Quality Index (air, living space, minerals, soil, timber, water, wildlife) has dropped significantly since 1970 (February-March)issue, 1975). More important environmental pressure is increasing with each increase in our population and with each 'improvement' in our technology. Even though environmental awareness is becoming more widespread, the acceleration of the rate of urbanization and other environmental pressures seem to be offsetting any gains. In addition the expense of many environmental clean-up programs appears prohibitive.

However, as in so many things looks may be deceiving. The "National Wildlife Magazine" quoted the EPA as saying "...we may have to spend $210 billion in the next ten years to clean up the air and water, but it also conservatively
estimates that the benefits in money and health would be $260 billion." (Feb.-March issue, 1975). Building facades, statues, concrete structures of all kinds, are being corroded away by acidic rainwater, fabrics and materials are damaged and weakened, metals are tarnished and eaten away as a direct result of air and water pollution. Not to mention a wide variety of things which have been assigned no economic value, notably aesthetics. Because many factories have chosen to save money (or are forced to because of economic conditions) their wastes are dumped directly into the atmosphere or a nearby lake or stream, and some person, or number of people, who may never have used that company's products, has to pay a large part of their income for treatment of bronchitis or emphysema or any one of an increasingly large number of diseases that are being linked to our unhealthy environment.

We can all see and feel air and water pollution, but there are environmental degradations that we are much slower to see. As more and more people began to connect a wide range of problems with the deterioration of our environment there will be more support for measures that would protect it, and that is where Environmental Impact Statements come in. According to Environmental Impact Statement Guidelines for Region X (published 1973) the EPA should "... assure that environmental values receive equal consideration with economics and need in the Federal decision making process. A principal means to accomplish these objectives is to call
attention to environmental relationships which may not have been given adequate considerations during initial planning. The vehicle for such comments is the Environmental Impact Statement (EIS) review." (page 1) According to these guidelines an EIS should include the following information:

1. A description of primary and secondary impact on the environment including impacts on aesthetics, and aquatic and terrestrial ecosystems.

   This would consist of mainly a detailed description of the proposed action, and of the environmental interrelationship in the project area and the total affected area, and how the project would affect it.

2. A description of any probable impact on the environment, including impact on ecological systems such as wildlife, fish, and marine life.

3. A study by the responsible agency to develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. Sufficient analysis of such alternatives and their costs and impact on the environment should accompany the proposed action through the agency review process in order not to foreclose prematurely options which might have less detrimental effects.

4. An assessment of the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term environmental productivity. The agency is required to assess their
proposed action for cumulative and long-term effects on the environment. The project must be evaluated in terms of use of both renewable and non-renewable resources.

5. A description of any irreversible and irretrievable commitment of resources. (Since irreversible damage can result from accidents, these risks must also be considered.)

6. A discussion of problems and objections raised by local entities in the review process should be included.

Of these six points, number three deserves special attention, both because it is so very important, and because this type of approach is often ignored. Due solely to economic considerations, many development projects begin to snowball, after conception, because of vested interests that may exist and because there is often no effective way to stop them that the public is aware of and can use.

This leads to the next point and that is, in order to be effective EIS's must be made available to the public and furthermore, must be brought to the public's attention. Aside from their value as technical documents, they could be used to break down technical information to a level that could be understood by most of the people who would be affected by the proposed project. They could also serve as a standardized method of notifying local residents of the proposed action.

According to the EIS guidelines, they stress impacts in
six areas: water quality, air quality, noise, solid waste, radiation, and pesticides. This is obviously only a partial list. The headings for a particular project would have to vary according to the project. For example, radiation would have very limited application, while many other topics are not on the list because there is no legislation (federal) available to use on them. In other words, the situation is left entirely at the mercy of economics, and this is not the healthiest of situations. One more step that must be accomplished before EIS's are truly effective, is the passage of a large number of enabling bills on federal, state, and local levels. This legislation must have as much cohesiveness as possible. One of the biggest additions needed to make the EIS useful is the inclusion of impact statements on such broad topics as land-use, and open space or living space.

These topics could be used to stress the detrimental effects of urbanization in an effort to offset the current established emphasis on its attributes.

Obviously there is much work to be done on Environmental Impact Statements, especially considering they are used in only a few areas of the country (of which California, a part of Region X, is one). A plethora of legislation is called for, with the awesome task of standardization all but out of reach, but to make matters worse, the legislative work needed to make the EIS effective is only half of the problem.
The number one problem facing environmentalists, conservationists, urban and regional planners, and all others concerned about or dealing with environmental issues, is a lack of public awareness. Brought up in an age of continued growth and expansion, most people in this country have failed to realize that finite resources, including space, could turn the near future, not into merely just another downward trend in our cyclical economy, but into an extended period of, what to us would seem, extreme privation and depression. The United States is already dependent on foreign countries for not only a large part of our petroleum, but also a large number of industrial minerals, most notably tin and chrome. Will we have a substitute ready by the time these minerals run out, and how long will these replacements be able to last? Our blind faith in technology's ability to solve or work around all major problems facing it, could be sorely tested if we continue to throw away aluminum cans, old cars, daily newspapers, etc., etc. The average inhabitant of America has no idea what it takes to keep him or her warm (or cool), full of food, clothed, and sheltered along with all the niceties that have become "necessities" for the vast working class. The demand in energy and raw materials, to keep us as country, satisfied is vastly out of proportion when compared to all other countries.

European countries are much more densely populated, and have for years practiced a variety of conservation techniques that would be considered completely unnecessary in the United
States. One of the best examples of this is the West German's reclamation of stripmined land. It is returned to, at least, the potential it had prior to stripmining. In the United States it is a far different story. While land is being strip-

ped at a faster pace each year, with the pace being 1,300,000 acres ten years ago in 1965 (Surface, Mining, Energy and the Environment, page 29) reclamation efforts are not keeping up. The cornfields of Ohio, and southern Indiana and Illinois, are left after only token reclamation efforts, at best, and are unable to yield anywhere near their former harvest, if anything at all. There are some model reclamation projects that prove that total reclamation is not a European phenomenon, but because there seems to be plenty of good land, and everyone seems to have plenty to eat very few people have bothered to force the coal companies into duplicating the efforts of Europeans.

This attitude has been established and constantly reinforced over a period of hundreds of years, and goes far beyond the reclamation of stripmined land. Beginning with the settlement of Jamestown in 1607, the new 'Americans' were thrown into an environment very different from the one they had been raised in. People who had been packed into filthy, crowded medieval cities or who had lived on English estates, or small cramped farms suddenly had all the land they could ever have imagined, staring them right in the face. And more significant, that vast land was a direct threat to their survival
and had to be conquered. The process of the subjugation of the land began immediately and by the time the threat was no longer a real one, domination over the land, instead of coexistence with it, had become a way of life. The early settlers had no reason not to clear as much land as they could, of the great forests that covered most of the eastern half of the country. If they overworked the land, or if it washed away they weren't threatened with ruin, as their fathers would have been in Europe, they merely had to clear more of the forest and make more fields. For the first time in centuries not only could the common man own his own land, but there was enough of it that he could do whatever he wished with it and not risk much more than a couple months of sweat with an axe and a saw. Very few of the original settlers wasted the land they worked, but as their sons became accustomed to this 'land of plenty', wise land use practices that had been learned over centuries became less and less used, and few if any new ones were developed.

As the country grew the biggest source of wealth, in the absence of large scale manufacturing, were the abundant natural resources. One after another they were discovered than exploited as much as possible to provide maximum income for the minimum investment. The forests were the first commercial product, but fur-bearing animals, cash crops, coal, petroleum, gold, silver, and whole host of other metals and minerals were soon being gathered to satisfy the growing
domestic and trade needs of a rapidly expanding country. As industry replaced natural resources as the number one means of generating wealth, the demand on those natural resources became even greater to satisfy the tremendous appetites of the expanding American public, made even worse by the ever increasing expectations they held.

The conquering of the West turned out to be much more brutal than that of the East. The West was composed of vast plains of grass, great mountains, and harsh deserts, and it offered an abundance of the 'get-rich-quick' resources (i.e. gold, silver, and fur). This land was not lived on to any great extent, it was only traveled through and exploited.

By the middle of the nineteenth century the country was settled from the eastern seaboard westward across the Mississippi and on into Kansas and Missouri. The eastern part of Texas was covered with ranches, but other than that there were very few people between the eastern edges of the Great Plains and the Pacific Coast. There was no civilization to restrain the early westerners and no reason as far as they could see, to try to conserve or care for the land. After all, no one lived there and there was so much to be had that whatever one man wasted or ruined, would never amount to enough to worry about.

The biggest problem caused by our ancestors is not the loss of the resources they wasted, although it would be nice to have a little more of the great timberland that was clear-
cut and left barren and virtually lifeless, or to have large numbers of wildlife living in a natural balance, if for no other reason than for our children to experience and enjoy as we have not been able to do. But, these things were not squandered by just a few greedy men. Our country was scarred and battered by a way of life that the European immigrants conceived and developed, and a way of life that we are still busy developing and reinforcing today. All of us are guilty of indirect environmental destruction, to varying degrees, when we buy the products whose manufacture, necessitates the enormous open pit copper and iron mines, the giant oil spills that are a part of the drilling business, the acres of treeless land, the ugly factories and their dense clouds of suffocating smoke, and the solid waste problems that result when we wear the product out or get tired of it.

Environmental awareness is beginning to dawn on many Americans, although it is often only because they have been hit over the head with it. However, the actual awareness is only the first step. After it must come recognition of the fact that the blame rests on the American people as a whole and not on the government, or the industrialists, or the businessmen and middlemen. The rationalization that the shiny advertisements and the slick public relations men have created the problem of overconsumption goes nowhere when it comes to dealing with the problem, which is a combination or a blend of overconsumption and the lack of environmental aware-
ness, magnified by overpopulation (important in the United States only because of our tremendous rate of consumption).

Americans have been freed from the consequences of their shortcomings because technology has kept in front of these problems, but technology may not always be able to keep up.

Once the American people have become aware that there is a major problem and that they are responsible for it, then real progress will be possible for a solution. The Environmental Impact Statement is an innovation that could make environmental awareness easier to come by. If nothing else, just the fact that a study based on something other than pure economics would be an improvement, and in addition it could provide a vehicle for the translation of technical knowledge into laymen's terms.

Currently EIS's are used in only four states. Among them are California and Florida where they are required for developments of four and five-hundred housing units respectively. The expansion and standardization of EIS's could prove to be a part of a new arsenal for environmentalists, and other concerned people.

***********

To move from the general to the specific, I would like to begin consideration of the Cedar Creek Corridor, in an effort to point out a perfect case in which an Environmental
Impact Statement is needed.

Cedar Creek is located in the north central part of Allen County, between five and ten miles north of the city of Fort Wayne, Indiana. It is noted for rugged, hilly terrain, cut by a number of streams. In contrast the eastern half of the county, is part of the lake bed of the glacial Lake Maumee that extended from the present-day Lake Erie, south-westward into Allen County. As a result the eastern portion of the county is part of a large plain stretching into Ohio. The southern part of Allen County is also relatively flat and both the south and east of the county are used primarily for agriculture. The western and northern (the Cedar Creek Corridor) parts of Allen County vary from gently rolling hills to fairly rough topography along Cedar Creek and along Squaw, Indian, and Aboite Creeks in Aboite Township. Fort Wayne is in the center of the county and is divided by the St. Mary's, the St. Joseph, and the Maumee Rivers. It is densely settled and its natural features have been covered over or destroyed.

The physical features of the county are highlighted by three glacial end morraines in wide V-shapes with the tips pointing west, and by the three rivers and numerous streams and creeks. The few major wooded areas that are left are located predominately along Cedar Creek or are scattered in the west central portion of the county. As can be seen on the map of Steep Slopes and Major Wooded Areas virtually the entire length of Cedar Creek is bordered by steep slopes. There are
no other areas of the county that have anywhere near the amount of wooded areas or the areas of steep slopes or the combination of the two that can be found along this Corridor. Cedar Creek is approximately fifteen miles long in Allen County, and virtually all of it has steep slopes and about two-thirds of it are bordered by wooded areas. Its watershed area is 270 square miles.

I would designate the Cedar Creek Corridor in the following manner: 1. The Corridor would in no case consist of less than the area of the Cedar Creek flood plain or the flood prone area (as is delineated on the map); 2. For the places in which major wooded areas exceed the flood plain of the Creek these areas would also be considered as part of the Corridor; 3. The areas immediately atop the ridges that border most of the Creek or on top of ridges that overlook the creek would also be included in order to protect them and thus the creek; 4. In no case shall the width of the corridor be less than 150 yards on either side of the stream in order to provide a continual pathway for wildlife along Cedar Creek; 5. The maximum width of the Corridor shall be determined by the above provisions.

This Corridor would consist of the area that has the most important ecological impact on Cedar Creek itself. Any major changes within this area would have farreaching and serious effects on the stream ecosystem and as a result should be carefully considered.

************
The soil along Cedar Creek is primarily of the Eel and Genesee Series, with small areas of the Blount, Morley, and Rensselaer Series scattered along the ridge tops, which in places actually border the stream. According to the Allen County Soil Survey, 'the Eel series consists of deep, moderately well drained, nearly level soils on bottom lands. The native vegetation was mostly water-tolerant hardwood trees. The soils are composed of a dark grayish-brown, friable silt loam. The underlying material is firm silty clay loam. Flooding and streambank erosion are serious hazards, but these soils are well suited to the crops commonly grown in the county. Both Eel loam and Eel silt loam have 0 to 2 percent slopes.' Genesee Series soils are very similar to Eel series being located in the same type of place (bottom lands). The other series along the creek are mainly located along the ridges that border the creek, or directly behind them. There are such a wide variety of these associations that it would be impractical to describe all of them, but in general they are poorly to moderately drained, between 0 and 12 percent slopes (mainly closer to 0), and are prone to erosion. The native vegetation of all these series was mixed hardwood forests.

The bottomlands are especially suited for crops, but frequent flooding and a lack of large areas in which to locate fields makes farming only marginally economical along Cedar Creek. Construction in these bottomlands is definitely out
of the question. Above the bottomlands, on top of the ridges along the creek, and on back from the creek, most of the land is well suited for agriculture with some restrictions due to poor drainage, erosion, or flooding.

Little hydrologic data is available for Allen County. There is no water survey as there is a soil survey, but there is some flow data. In the *Water Resources Data for Indiana* (1973), data is given for the water year from October 1972 to September 1973. The maximum discharge of Cedar Creek, at a measuring station about three miles northwest of Cederville, was 2,410 cubic feet per second (recorded on November 15, 1972). The minimum discharge was 36 cfs, recorded on September 23, and the average discharge for the water year was 313 cfs. The highest recorded discharge was in April 1950 when the discharge was 4,870 cfs, and lowest was 13 cfs recorded in October, 1949. The average flow over the last 27 years is 234 cfs. Over the 1972 water year the months of March, November and December have the highest total flow.

Cedar Creek is a tributary of the St. Joseph River, which is a part of the Lake Erie watershed. Its width varies from 30 to 100 feet and is generally a fairly swift stream except in the late summer and early fall. It has wide meander loops, and in several places its channel separates and it flows around small islands. In some cases it has small earth ridges, 20 to 60 feet high, directly beside it while in other places they are set back up to 100 to 150
yards. In between the ridges and the stream are low, flat, often flooded areas, that are usually turned into swamps in the springtime. The water in Cedar Creek carries a heavy sediment load, due to the fact that the stream is still in a down-cutting stage and because the earth ridges are especially vulnerable to erosion. There are no factories, towns, or other large sources of pollution along the entire length of the sediments and by the septic tanks of nearby houses.

The vegetation along Cedar Creek has changed drastically from the original hardwood forest that surrounded it and covered the entire county. The creek is bordered by trees along its entire length (for this report from the St. Joseph River to the Vandolah Road-bridge) varying in depth from only a few trees wide to several hundred yards. None of the original forest is left and in many cases the trees are in third or possibly even fourth growth. Oak is the dominant species, with a scattering of a wide variety of other species, such as cedar, sycamore, willow, maple, and hickory. Where it is feasible, there are fields along the stream where crops such as corn, soybeans, and hay are grown. Also in many places there are old abandoned fields that are dominated by thorn trees and briers. These fields and the many ravines and gullies provide excellent wildlife cover. The Corridor's wildlife consists mainly of small game such as rabbits, raccoons, woodchucks, fox, squirrel, and opossums; deer; and a wide variety of birds, and amphibians.

...............
The land within the Cedar Creek Corridor and directly adjacent to it is only sparsely developed, and in some areas, is virtually untouched. It appears that the degree of development is closely related to the type of roads that exist close to the stream. The exception to this is where I-69 crosses the creek. Although this is part of the interstate system there are no nearby interchanges and as a result there is no accompanying development.

Along the approximately 15 miles of Cedar Creek dealt with in this report, there are only five bridges spanning it including I-69. The bridges at Leo Road (State Road 1) and at Torkel Road are large, overhead span, double lane bridges. The other two bridges are much older and much smaller. They are both single land bridges, the one on Hursh Road having been built in 1879, and one on Vandolah Road dated at 1884. Neither of the latter two bridges can support heavy traffic in terms of either weight or volume.

There is one heavy-duty road in the Corridor as well as one medium-duty road. In addition there are two other medium roads that are in the area, although they do not enter or cross through the Corridor. Also there are numerous light-duty roads in the area some of which are paved and others that are gravel or dirt.

There are about fifteen to twenty homes located on ridges directly overlooking the creek, and perhaps twenty other houses located within the Corridor. Besides these
homes there is the town of Cedarville which is located between the creek and the Cedarville Reservoir, and two subdivisions called Cedar Shores and Cedar Canyons, the latter of which is located in what would be designated as part of the Cedar Creek Corridor. The great majority of homes are located on ex-farm land along the paved roads of the area. Where the roads are gravel there are only a few houses. Most of the houses in this area are above the $40,000 bracket and some go much higher than that (excluding the farm houses), and they are located on large often wooded lots especially in the Cedar Canyons area.

Commercial establishments such as supermarkets, restaurants, small store, etc., are non-existent in or around the Corridor. There are a few gas stations, stores, and other commercial outlets located in Cedarville. There are no factories or industries of any kind located close to the Corridor.

The main land-uses along the stream are either farming or unused woodland. The usual pattern is woods along the edge of the creek, inside the meander loops, in low spots, and along tributaries to Cedar Creek, with small irregularly shaped fields along the wooded boundaries of the Corridor, changing to larger rectangular shapes as one moves farther from the channel.

************
In the summer of 1974 the Board of Works of the city of Fort Wayne outlined its proposal for the extension of the sewer system of Fort Wayne. Basically it called for the addition of lines to service Waynedale, to the south of the city, and a more extensive expansion north of the city. Among the lines proposed for the northern part of the county, was one which was to run from the Cedarville Reservoir at Cedarville, northwest along the Cedar Creek to a point close to the Vandolah Road Bridge where it would turn west-southwest to Huntertown and then south and back to Fort Wayne.

This report is concerned with this last sewer line. It was felt by the city that this type of line would provide sewer service to both Cedarville and Huntertown and as an added bonus would provide a trunk line for an area that had great potential for suburban development projects, but that was currently undeveloped. Smaller sewer lines could be run into subdivisions as they were built, and to the two existing developments of Cedar Shores and Cedar Canyons.

No mention was made in the proposal of whether the area was capable of absorbing the impact of the proposed sewer line, much less the resulting urbanization that would in all probability follow close behind the construction of the sewer.

**********
One of the biggest handicaps in assessing the impacts of a project such as this is that so many of our valuable resources have never been assigned dollar values by society as a whole, and as a result impact statements appear extremely arbitrary. For example, a large black walnut tree located in the path of a sewer line would be valued at possibly $1,000 or even higher, while a young one would have no 'value' at all. Besides young trees there are many other things that have no value (at least as far as the Board of Works and many other people are concerned). Among them are most forms of wildlife, any trees that aren't commercially valuable for lumber or aren't in somebody's front yard, low-lying swampy areas that provide a home for a wide variety of life, vegetation of all kinds, open-space in general, etc. These things are readily sacrificed to development of any kind.

In the past this was much more acceptable than it is today. At one time there were plenty of trees and open-space surrounding the city of Fort Wayne, but as time went on it was gradually covered with asphalt roads and parking lots, and buildings of all shapes and sizes. Today there are only two areas in the county that offer a wide variety of scenery and topography. These are the Cedar Creek Corridor and areas in Aboite Township. Aboite has already been flooded with large lot subdivisions and the spectacle of urbanization at its worst. Because of a lack of effective zoning controls its development has been especially haphazard. Devil's Hollow
in the extreme western part of the township and the county, and Fox Island to the southeast, are the last surviving scenic areas that have not been developed. Devil's Hollow is now coming under increasing pressure to be subdivided and Fox Island is safe only because its 300 acres have been designated as a nature preserve.

So far Cedar Creek has been spared urbanization because it is separated from the city's present boundaries by about six to ten miles of undeveloped farm land. But as leapfrog development gains momentum it also begins taking longer leaps. Urban pressures driving people from the cities are now beginning to drive them from the older suburbs which have become more like the city then they once were. Areas such as Cedar Creek are very vulnerable because of the same assets that make them valuable.

In the past it has been the practice to develop areas and not bother about the consequences until they have become a problem. At that time, steps are taken to find solutions but more often than not these solutions fall far short of what is needed. Most long range plans either lack the insight needed to deal with long range problems or they only consider the economic type of problems. What is desperately needed are long range plans that are both comprehensive enough to cover all interests, i.e. economics, aesthetics, environmental quality, adequate room for directed growth, etc., and that are written and planned by people that are responsible
and qualified enough to make these plans accurate enough to be followed through.

What follows is an attempt to throw together a group of thoughts aimed at objectively analyzing the impact of urbanization. It will hopefully include a number of points that are all too often left out of the planning process. The intent is to stress environmental issues while not overly biasing the study against the economic side of the situation. The Cedar Creek Corridor will be used as an example or model. After a number of these thoughts have been put together, perhaps it will be possible to arrive at one of the three decisions listed in the original proposal for this project:

To conclude whether the corridor's value as a natural area would warrant the disallowance of future urbanization along it, or if limited urbanization could be fit into the natural scheme of the area, or if it would be beneficial to allow the urbanization processes to fully embrace the corridor.

The result is not intended to serve as a plan, but only as an exercise in thought leading to a new type of plan that is becoming more necessary to recognize their presence and for the purposes of this report it is probably already obvious that it is biased in favor of a pro-environmental point of view.
The first and most obvious environmental damage that would result from any sewer project would naturally be from the actual construction of the line. Because of the physical environment of the Cedar Creek Corridor it would be next to impossible to place the sewer line adjacent to the stream itself. In many places earth ridges up to 60 feet high form the streambank. This would force the sewer to be placed well back from creek. The rolling topography of the area around the creek would make it very difficult to find anything but a winding path from Cedarville to Huntertown because of the importance of keeping the line on a constant grade.

The size of the line is dependent on the city's appraisal of the areas growth potential. Currently the population of Cedar Creek Township is 4,414 (1970 Census), but this is a 23 percent increase over the 1960 population and if current trends continue the growth rate could pick up even more. However, it must be kept in mind that this population is spread out over most of the township, making it impossible to provide sewer service to the vast majority of the households. In other words, any sewer line along the Cedar Creek would either be intended almost solely for future use, or else it would be meant for use merely as a connection between two other points, in this case Cedarville and Huntertown. At this point no one in the city government seems to know or at least is not willing to say. Regardless, for the purposes
of this report it will be assumed that the sewer is intended both as a connection between Cedarville and Huntertown as well as for the future urbanization of the area inbetween.

The sewer line itself will be between 12 and 20 inches wide. The width the sewer itself is important in that it determines the volume of sewage that will be conveyed through the area, but the sewer width is only a minor factor in the size of the path that would have to be cleared and disrupted in order to facilitate the construction and maintenance of the line. The ground would have to be cleared so that heavy trenching machinery could be hauled in and operated, and so that semi-trailer rigs could bring in the equipment as well as the sewer pipes. These trucks would need room to maneuver necessitating a path at least 150 feet wide in some places.

This wide of a cleared area would virtually destroy the natural aspect of the corridor. Erosion from it would damage the stream, by reducing the dissolved oxygen, and by depositing excessive sediment in the stream channel. Wildlife paths and patterns would be badly disrupted and the destruction of ground cover would deprive many forms of life of both shelter and food. Also any time a natural habitat is seriously disrupted new forms of life are able to intrude, further upsetting the natural balance. Where the sewer line intersects the numerous tributaries of Cedar Creek, regardless of how far away from the creek the intersection is, significant damage is inevitable.
None of these things have any direct economic value connected to them, but to the area's hunters there would be a significant loss of recreational pleasure, and for people who enjoy a fairly natural setting in which to relax, this would be one final intrusion. However, one aspect of the actual construction could have a direct economic loss tied to it, and that is the danger of flooding caused by deposition or sedimentation which could increase many times with large scale construction too close to the creek. Besides the extra pressure put on the stream channel by erosion there will also be increased run-off from the construction area.

Another aspect of the situation is the impact of the increased sediment load downstream, in this case the St. Joseph River. The problems forced on Cedar Creek of excess siltation would soon find their way into the channel of the larger stream, which because of its already heavy load, might be hard pressed to accommodate them.

Problems arising from the actual construction of the sewer line would not end after the pipe was laid and covered over. First of all, it would take several years before the earth could again provide a complete cover over the scar of the sewer and much much longer to replace the trees that would be cut down or killed. Then this cover would be interrupted by the all too familiar manholes, necessary to provide access for repair or flushing or ventilation, and it would always have to be kept at least partially open.
to provide access for maintenance crews and machinery. This open pathway besides disrupting wildlife habitat and the natural ecosystem as a whole might turn out to be even more damaging since it would be an open invitation to Off-the-Road-Vehicles. ORV's have become increasingly problematic in the management of open space and all land public and private. When not used properly, as is all too often the case, because of the extreme difficulty in enforcing any regulation against them, they can create environmental havoc, as well as aesthetically ruining an area. Trail bikes leave the land rutted and eroding in ever widening strips of barren earth. Areas that once could not be reached except on foot would suddenly be exposed to a whole host of would-be motocross champs.

After the construction of the sewer is completed it will naturally be filled with the sewerage it was designed for, and a number of new problems will appear. A sewer the length of the one proposed, with joints approximately every 8 to 10 feet (which means over 9,000 joints) will have ample opportunity to develop leaks. To compound the problem some of the soils in which the line will be located have a high shrink-swell capacity (Eel series), and most of the soil types are listed as having only fair bearing capacity. Also the hazard of flooding is very real, and could cause extensive pollution as well as damage to the line itself. Any extensive leaks from the sewer system could prove extremely damaging depending on their size and their proximity to Cedar Creek or
one of its tributaries. The danger of leaks from the system is one that will exist as long as it is in operation, and as a result merits special attention during construction of the line. If past precedent is followed little extra attention will be paid to this hazard. If major leaks do occur the stream ecosystem will be traumatically upset by the influx of the effluent into a relatively pure stream. The immediate area around the leak or leaks would be very aesthetically offensive, and the effects of a variety of unknown chemicals excreted from the areas households and towns will not only have an unpredictable effect on the immediate area, but also downstream. They will add to the pollution of the water in the St. Joseph River that is used to supply Fort Wayne. The problem of leaks will be further compounded by the fact that for every new house constructed there will have to be a new sewer hook-up.

**********

This section has dealt solely with problems connected with the construction of the sewer line, but this was necessarily so, since little good can be expected for the environment from any construction project. It should be noted that the entire length of the sewer line would not be within the Ceevar Creek Corridor, but it would inevitably cross the stream in two places as well as run parallel to and in some places
within the Corridor itself. The other land across which it would run is primarily rolling farm land, that is also susceptible to environmental damage, but not so much so as the Corridor itself.

The next section will be an attempt to look objectively at the impact of subsequent urbanization that could occur as a direct result of the provision of sewer service.

**********

Once a sewer line is in place in an undeveloped area that has great potential for development, it is an open invitation for contractors, land speculators, and all manner of people interested in turning a fast profit. Whether or not the city government intended the sewer to serve the local population, it will. In the past local government exercised little or no control over growth in areas surrounding the city. It becomes easy for developers to convince zoning boards and other regulatory agencies that as long as the sewer is there it may as well be used, and assuming that this was not the original intention anyway, full-scale urbanization can soon be expected. What this implies is that as a part of any evaluation of the environmental impact on an area, the actual physical construction is only a small part. If urbanization results, on any scale, it will have a much greater and a much more lasting impact than the construction and operation of any size sewer line. Even though this impact
may be an indirect one it must be recognized and provided for in any plan calling for the construction of a sewer line.

Not only are the environmental impacts of unplanned for and uncontrolled urban growth extremely damaging and particularly irreversible, but there are also economic losses. Growth in rural areas is often brought on by leapfrog development from large urban centers. As the voids between these leaps are filled up and the area completes the transition from urban to rural, urban services are demanded by these areas that have made no provision for these services. If these rural suburbs are not yet a part of the city they will be very hard-pressed to supply their residents with urban services such as police and fire protection, education, street maintenance, trash pick-up, water and sewage service (the latter will become more difficult as homes are located farther and farther away from the main line), etc. When they do become a part of the city their tax rate will be significantly increased in order to provide these services.

Because provisions for growth were not made the city government will be confronted by a myriad of problems. As an example of the type of problems that will arise there is an illustrative case in St. Joseph Township. This township is in central Allen County and can be divided in half from the northwest corner to the southeast corner, the lower half is a part of the city of Fort Wayne, and thus urban in character, while the upper half is still basically rural although it is rapidly being encroached upon by new homeowners and
small businesses. The St. Joseph River winds across the township, separating the northwest portion from the rest of it.

The problem deals with fire protection. The township's fire station is located east of the river, and with only three bridges spanning the river, rapid response to fire alarms is an infrequent event. To make matters worse, the bridge at Mayhem Road (the center one of the three), is not solid enough to support modern fire-fighting equipment. This means about an additional ten minutes in the response time, during which time a house could be completely destroyed. The entire northwest portion of the township is left without any effective fire protection. This type of result is the natural consequence of urban growth in rural areas.

********

The first step in the urbanization process is necessarily the construction of roads. Environmentally their construction is much more damaging than the laying of the sewer line. More heavy equipment is needed and a much wider path must be cleared. The surface grade would have to be altered permanently which would disrupt wildlife habitat as well as endangering all animals by the presence of traffic. Drainage patterns would have to altered artificially, further altering the natural habitat, as would the increased noise levels from the new roads. Erosion during construction would also have
damaging effects on the area around Cedar Creek and much of the sediment would probably find its way into the creek itself.

It was mentioned that the construction of the sewer line would allow access to areas that had been previously used only by those who chose to take the time and effort to search out natural settings, by large numbers of people who were not overly concerned with quality of the environment (ORV operators). Roads would serve the same purpose on a much larger scale. The area would be completely opened up for development. Once the roads are there, whether or not to urbanize or develop will be a question replaced by, How fast? Farmers often cannot afford to turn down the high prices offered for small pieces of their land, and real estate brokers will be able to deal out large parcels of land at fantastic profits. Ironically the big drawing card of the area, the natural setting of the Cedar Creek Corridor, will be largely destroyed by those who are building their homes there because of it.

As roads are constructed in and around the Corridor, houses will begin to take the place of fields and woods along its edges, and more houses in the form of subdivisions will begin to fill in behind. The areas under the most development pressure will be the hilly, wooded, area adjacent to Cedar Creek, because this is the area that is the most desirable for home-builders. This is also the area in which the most damage can be done. Farm land around the Corridor will also eventually be threatened by roads, driveways, and homes of
A current trend in housing is the mushrooming of mobile home courts throughout the county. If constructed properly and conscientiously, they can provide a pleasant place in which to live and a much-needed source of low-cost housing (it must be kept in mind that contrary to public opinion, people living in low-cost housing do not necessarily have low incomes to match, as is evident in many of the better courts). However, all too often this type of development creates some of the worst eyesores and the worst type of place to live because of poor construction. Special care should be taken not to prohibit mobile homes or mobile home courts, but to insure that they provide maximum liveability, and minimum offense to the environment.

Once the people are located in and around the Corridor, business establishments will be sure to follow. Fast food restaurants, drive-in banks, supermarkets, car dealers, and gas stations will begin to clutter the sides of the new roads, and traffic will increase until it necessitates the construction of newer and bigger roads. To accompany these retail outlets will be the inevitable clutter of garish signs and billboards that confuse motorists and offend nearly everyone.

In the long run it is possible that offices and small
businesses would move out to where their employees are (and where the taxes are less), which would further compound the problems of congestion and pollution. However, even without them urban problems will be plentiful and will present more than enough work for anyone or any group that tries to solve them.

Even though urbanization of any magnitude resulting merely from the provision of sewer service might be a strain on some people's imagination, it is almost inevitable along Cedar Creek. The attractions of the region are many and urban growth in that direction is already threatening the Corridor. The population of Allen County was 280,500 in 1970, and this was an increase of over 20 percent over 1960. Well over half of these people (180,000) live within the city limits of Fort Wayne. The northern side of Fort Wayne has been characterized by a wild, patternless rush by developers to locate their shopping centers or subdivisions a little farther north of the last one. The traffic system is haphazard and extremely confusing and congested. Even without the sewer the Cedar Creek Corridor will be very hard to protect, but with it, it would become impossible for the decisionmakers to rationalize its protection.

.........

The problem is a very complicated one. As long as the population continues to expand the additional people are going
to have to live somewhere. But the rub comes when the decisions are made almost solely on the basis of economics. Many of the people who have the money have already moved out of the city, and some of these people have already moved into or close to the Cedar Creek Corridor. Now these people would like to prohibit others from following, in order to preserve the natural setting in which they live. Developers disagree. They would like to see the entire area subdivided and currently they seem to be winning because they have the resources, money and influence, needed to get things done.

Before the decision is made on what direction to allow development to take in the Cedar Creek Area, the rest of the county needs to be looked at in an attempt to see if the growth could be redirected somewhere else where it would do less damage and be more economical.

To the east of Fort Wayne, (Region 19 on map) covering almost one-third of the county, is part of a large prairie which extends on into Ohio. Formed as a glacial lakebed, it now provides some of the richest farmland in the country. This is the type of land that has historically been used for the location of towns and cities, especially in the Midwest, because it was most convenient, but this is no longer acceptable. World food shortages continue to worsen and with our prime agricultural land disappearing under pavement and rooftops, we can ill afford to take the threat lightly. One way in which to safeguard agricultural land is mentioned in
the "Open Space Plan" prepared by the Three Rivers Coordinating Council in the summer of 1974. It is Exclusive Agriculture Zoning. This 'AE' zoning utilizes a concept seldom used, in that it is aimed at 'preserving agricultural land as a non-renewable resource.' This is a controversial method at best, but it could be used as the first step in fostering public awareness of the fact that once a corn field is paved over, there is little chance that it will ever be used again, no matter how badly it is needed, and on a large scale this could be tragic. The key words, non-renewable resource, hit the issue squarely on the head. Because of this I would exclude the entire eastern half of the county, except for the areas already urbanized such as Monroeville, from any consideration for relieving the pressure on Cedar Creek Township.

The southern part of the county, consisting of Marion, Pleasant, and Lafayette Townships, (Region 2) is also a farming region, but it is already heavily dotted with large lot housing developments (often consisting of only 10 or 20 houses) and single residences. The area in between Air Field, the municipal airport, and Fort Wayne is quickly being covered by strip development along state highways 1 and 3. This development consists of a hodgepodge of warehouses, light industry, retail outlets, mobile home courts, and scattered housing developments. Because of the momentum already gained and scars already left by the urbanization process it might be necessary to plan to complete the urban transition of the
northern part of Pleasant and Marion Townships. Then perhaps the part south of Bair Field and all of Lafayette Township can be saved for agriculture and a bare minimum in housing growth.

The third region is Aboite Township. This region is a much more difficult case than were the other two. Aboite resembles Cedar Creek Township in many ways. It is characterized by hilly topography very similar to Cedar Creek's and offers the same natural setting to prospective homebuilders. The difference is that Aboite is much closer to Fort Wayne, and much of its eastern half has already been provided with shopping centers, office complexes, and an assortment of subdivisions. Some of the office complexes and one or two of the larger subdivisions have done an excellent job of providing themselves with an extremely attractive setting while doing as little environmental damage as possible. Because of its big headstart in Aboite, it would be useless to try and stop the development process, but it can be directed and controlled in order to save some of the natural beauty for the enjoyment of the local residents both present and future. Particular areas to be saved would be Fox Island and Devil's Hollow (both were mentioned earlier). These areas combined with development of aesthetically pleasing subdivisions would help considerable in taking the pressure off of Cedar Creek.

The fourth region is made up of Lake, Eel River, and the western half of Perry Township, along with the corner of
Washington Township. There are several small subdivisions in this region, but nothing major. As in regions 1 and 2 the predominant land-use is agriculture, and for the same reasons as stated for region 1, this land should be left in agriculture if at all possible.

The only area of the county that this leaves, other than Cedar Creek (Region 5), is the urban area of Fort Wayne and New Haven. There are numerous gaps left in the urban framework, some of which provide welcome relief from the city's many eyesores, but others of which comprise those eyesores. Much of the city's external growth could be turned back inward, although this would also create numerous problems, such as transportation. In addition, the gaps left by leapfrog development all around the city could also be utilized (taking care to provide for open space currently provided for by the haphazard development pattern). Before some of these gaps will be filled the environmental problems that have kept some of them open must be solved. For example, the reason for the large gap between the cities of Fort Wayne and New Haven is the industrial area located there. The pressure would have to be very great indeed before people could be persuaded into moving close to a factory instead of moving out to the cleaner fringe of the city.

Growth rates are slowing as the population levels off, and perhaps, if growth in the near future is channelled towards, 1. the northern parts of Marion and Pleasant Townships,
2. the eastern part of Aboite Township, 3. inside the cities of Fort Wayne and New Haven and around their fringes where partial growth has already occurred; then areas such as western Aboite, Cedar Creek, and the farm regions throughout the county can be saved with a minimum of damage. This may not prove to be possible, but when one considers the stakes, it is well worth a try.

Contractors and realtors are always talking about the economic side of the situation, and use it as a justification for development. They seem to feel that since they have the money to buy the land and to develop it, and because there is a market for what they create, then what they do is justifiable, and further that it is good for the economic prosperity of the community. However, it may not be as simple as they would like to imply. In the long run an ugly sprawl of patchwork urban landscape would not only be difficult to provide with urban services, but it would also provide little drawing power for the future growth of the county. Business interests are not looking for an area full of urban problems in which to locate their offices, and neither are industries looking for already congested and polluted areas to which they can contribute their pollution and congestion. In other words, rapid, uncontrolled growth now could come at the expense of future growth. Since private developers are not noted for their long-range concerns this might have little effect on them, but city planners and government officials
of all levels, as well as the public in general have much at stake, and should perhaps exercise a greater influence over the directions in which their community grows.

Even though it has been the habit of people, nationwide, not to take an active role in development decisions for their region, the increasing pressure and the rapid disappearance of open-space, farmland, and scenic vistas worth protecting, is forcing people to force their governments to take a protectionists stand against developers and contractors. Many methods are being developed or rediscovered by which controls can be imposed legally and forcefully.

Zoning is probably the most used method, but new varieties of it are needed. Conventional zoning's primary function is to protect against conflicting uses, but it could be expanded in use. Exclusive Agricultural zoning has already been discussed, and the same principle of viewing land as a non-renewable resource, can be extended to cover areas of natural, scenic, or historical significance. This type of zoning would be very valuable in areas such as the Cedar Creek Corridor because it could be used to protect the land itself and not the future development of the land, while such tools as building regulations would be much more important for use within urban areas because they are much more specific. Another type of zoning that is currently being considered is Impact Zoning. This could be used as a part of an Environmental Impact Statement or more accurately as the regulatory arm of the EIS. According to the 'Open Space Plan' for Allen
County, prepared by the Three Rivers Coordinating Council, impact zoning would prepare a "...realistic before the fact assessment of how a proposed project will affect a community by analyzing and correlating the effects of four key parameters: 1. the growth rate of the community; the available land and the growth rate of the surrounding region; 2. the community's infrastructure - sewers, water, roads, etc.; 3. the economic picture - what new projects will cost the community in services vs. what it will return in the form of tax revenue; 4. natural and environmental determinants - the impact of the project on the environment and the surrounding areas."

Another topic mentioned in the Open Space Plan that could be used not to prohibit development but to provide for it, is the 'taking for future public needs' through condemnation. This would entail the local government to acquire, through condemnation, land 'to meet anticipated future requirements, e.g. streets, sewers, property right-of-ways, school grounds, airports, etc.' Then on the other side of the coin, the next thing the 'Plan' talks about is acquisition of development rights, in order to prevent development in specific areas. This is being done around New York City, where the local governments of the rural areas of Long Island, are buying the development rights while the owner (the farmer) retains the title to the land. Speculators can no longer buy farm land at low prices and sell it for higher prices, they must
buy both the title from the farmer as well as the development rights from the government, sharply limiting his desire for such transactions.

Another way of protecting land for uses other than development, is Preferential Assessment. This would mean assessing land, for tax purposes, according to its "highest and best" use and not according to its most profitable use. This would be very similar to the Forest Classification Act (1921) under which areas of ten acres or more of wooded land, which is not used for economic profit, can become a 'classified forest' with greatly reduced taxes, and is taxed as in cases where the development rights have been purchased as on Long Island. This allows the owners to preserve wooded land without losing their shirts in taxes. Preferential assessment would include a provision for a tax roll back of up to five years if the land is later used for profit to 'ensure the public recompensation for the tax break given.'

Two more methods that could be incorporated in an attempt to slow runaway urbanization are: Purchase and Sale Back, which would allow city or county to purchase land and then sell it back with certain restrictions on it. This could be used either to stifle growth or to control it. The other is Pre-Emptive Buying, which is the "...tic-tac-toe acquiring of strategic pieces of land within a general area, so as to severely limit or restrict the kind of private development that could take place." (also found in the Open Space
Plan)

One final method is the use of easements. Easements can be used to direct or prohibit development. For example, a scenic easement along the Cedar Creek could forbid any type of construction along it, a highway or sewer easement would determine where development would take place.

**********

Whatever methods are used in the efforts to control urban growth the interaction and cooperation of all facets of local government are essential. Regional planning offices were originally intended to help accomplish this, but two things have contributed to keep this from being achieved. The first is local politics and power struggles, and the second is the lack of credibility established by most planning agencies. Hopefully, the first problem will be dealt with naturally once the second one has been solved. It is a popular conception that the job of planners consists of writing plan after plan, all of which are quietly published then just as quietly put away. Unfortunately this comes very close to the truth, since plans are all too often adapted by plan commissions, but are not followed either because it would be too difficult or costly to follow them or because there is no enabling legislation through the state and local governments, but before this can be done it will be necessary to improve
the image of the planning agency, and this must be done through the planners themselves. Interaction with the public, receiving their ideas and using them when possible is one way, another would be make efforts to expose the public to top quality planning efforts to show them what could be done and explain to them why it isn't being done.

To illustrate a classic example of what can happen when planners and government officials do not work together a current situation can be referred to. In the May 5, 1975 issue of "Time" Magazine there is an article about the city of Rome (page 65). "Under Roman law, all buildings must receive municipal permits before construction, to ensure that the structures are sound and to require builders to follow Rome's 1965 master plan, which specifies where and how the city should grow. The plan has been largely ignored and by one estimate more than 300,000 people live and work in a chaotic jumble of drab office and apartment towers on narrow, treeless streets, all constructed without the required building permits. The mess is on the urban fringes, where land was cheap and speculators bought farm land and subdivided and sold for profits of 500%. Many of the builders had applied for the permits, but begin construction when the Roman bureaucracy proved to slow. At any rate, over the past four years Rome's mayor has signed 6,000 orders for the demolition of illegal buildings, few of which were followed, and now a new approach is being used as utility companies are ordered not to supply
new building sites with water, electricity, or gas without the permit.' The last line of the article is: "...and no one was certain when—or if—Rome could begin moving toward orderly growth."

Even though American cities, Fort Wayne in specific, have not yet reached this extreme the chaos of undirected urban growth is still making itself felt, and it is up to the planning office to combat this.

********

CONCLUSIONS

The original purpose of this paper was to conclude whether or not the area around Cedar Creek should be subjected to urbanization or should be protected from it, to provide a specific example of a widespread problem. My conclusion is that at the present time the need for more urban space is not great enough to necessitate the destruction of one of the last natural and scenic area left in the county. The Cedar Creek Corridor is characterized by beautiful scenery and has been largely untouched by destructive forces. Attempts are now being made to regain a measure of control over development forces and as the rate of population growth slows these forces will be correspondingly lessened. If this proves to be the case over the long run, it may never be necessary to even
partially develop the area, but if urban growth remains constant, it will only be a matter of time until the area is inundated by subdivisions and shopping centers. It is important to keep in mind that even if the development takes place outside of the Corridor itself there will still be a great deal of environmental damage to Cedar Creek, and because of this all possible steps should be taken to protect the entire area for as long as possible.

In way of compromise, development should be directed away from the Corridor and into the northern parts of Pleasant and Marion Townships, into the eastern half of Aboite Township, and into caps in and around the already urbanized areas of Fort Wayne, New Haven, and their suburbs. It will be necessary to use a variety of new and old methods, i.e. impact zoning, pre-emptive buying, building regulations, etc., to achieve this, but more important it will take a new type of environmental awareness on the part of the public in order for them to see through the economic haze we have built up around us over the last 370 years, and to recognize the value of the land we are sacrificing to private profit. And it will be necessary for the public to exert the pressure on the governmental processes through which we must go to achieve any thing at all. Furthermore it is the job of the urban planner to analyze and understand the situation and to come up with solutions that can effectively provide for continued growth at a price the public can afford, and to do this the planner
must establish himself in the public confidence and operate effectively in government on all levels in order to deal with the threat of private enterprise.

Our ancestors found they did not have to be preoccupied with conservation as their ancestors had been before them, but their time is past and we have completed the cycle back to the point where we must again preserve and conserve the resources that support us and our ponderous life style.

**********

As I warned, this paper is obviously an extremely biased one, but I try to rationalize that by reminding myself that the bias is even stronger the other way when it comes to the people who are largely responsible for the development and growth of our cities, and for the destruction of our countryside. I would also point out that the public's bias is slowly but surely swinging away from these 'developers' towards environmentalists and ecologists. This process is being slowed by the moneyled influence of the people who are running things, and by the pseudo-environmentalists who are trumpeting all manner of doomsday warnings to a skeptical society.

This paper has come almost entirely from my own thoughts and I take full responsibility for the weaknesses in my thought processes, and I would like to end it with someone else's words, because he can say in a few lines what it takes me
many pages to say about the men who are hurting many of us and all of our children, through the degradation of our environment, and the system in which they work. The quotes are taken from Ian McHarg and his book, Design with Nature.

"The developer takes the public resource of the city's hinterland and subdivides to create a private profit and a public cost."

"We have but one explicit model of the world and that is built upon economics. The present face of the land of the free is its clearest testimony, even as the Gross National Product is the proof of its success. Money is our measure, convenience is its cohort, the short term is its span, and the devil may take the hindmost is the morality."