Industrial Development Subsidiary Agreement

CENTRAL OKANAGAN REGIONAL DISTRICT INDUSTRIAL LAND STUDY

MAY 1981

Research Report

Province of British Columbia

Ministry of Industry and Small Business Development

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CENTRAL OKANAGAN REGIONAL DISTRICT INDUSTRIAL LAND STUDY

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The responsibility for the content of this report is the consultant's alone, and the conclusions reached herein do not necessarily reflect the opinions of those who assisted during the course of this investigation or the Federal and Provincial governments which funded the study.

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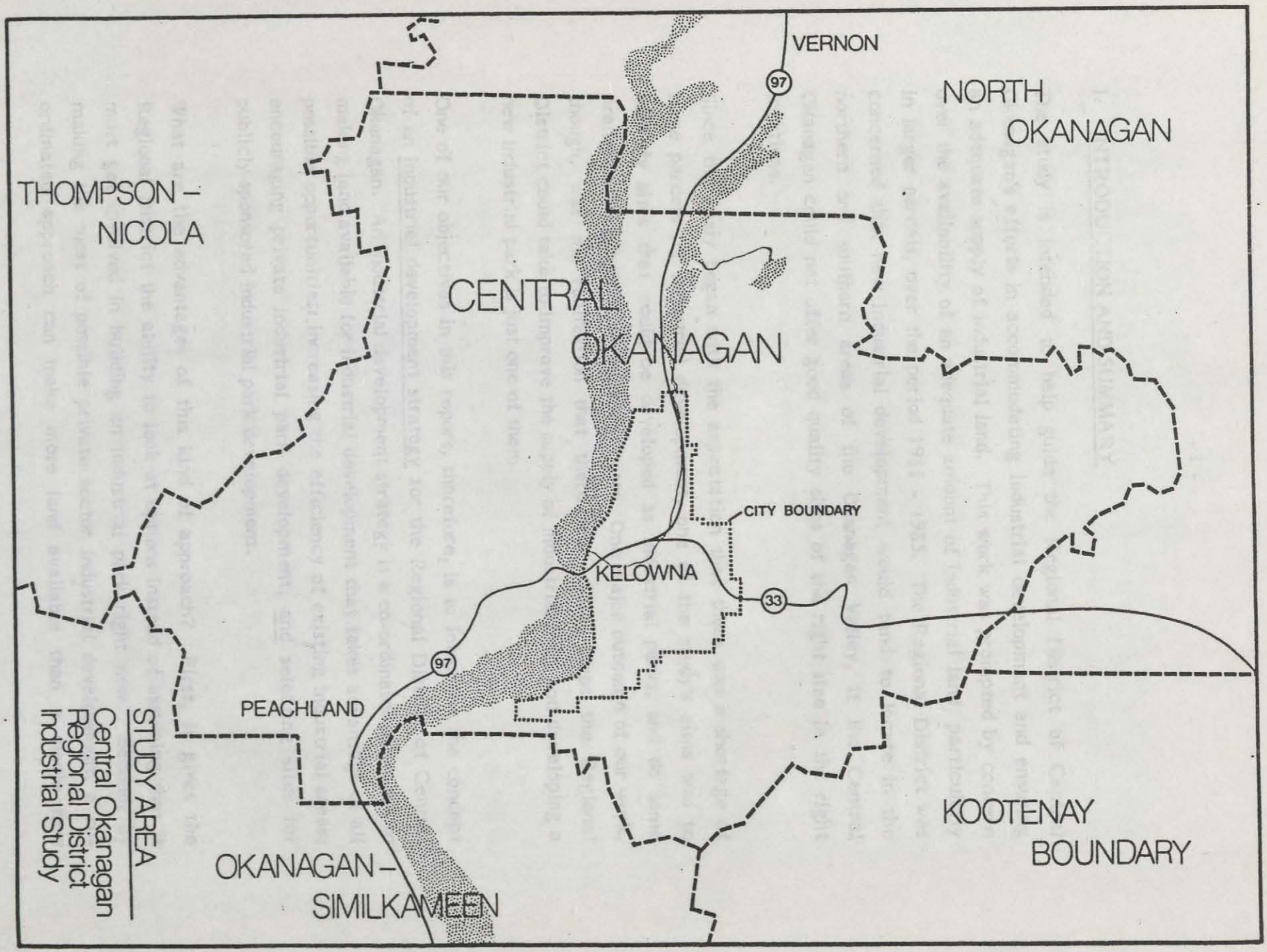
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STUDY AREA
Central Okanagan
Regional District
Industrial Study

1. INTRODUCTION AND SUMMARY

The study is intended to help guide the Regional District of Central Okanagan's efforts in accommodating industrial development and ensuring an adequate supply of industrial land. This work was prompted by concern over the availability of an adequate amount of industrial land, particularly in larger parcels, over the period 1981 - 1985. The Regional District was concerned that new industrial development would tend to locate in the northern and southern areas of the Okanagan Valley, if the Central Okanagan could not offer good quality sites of the right size in the right locations.

Since the study began with the expectation that there was a shortage of large parcels for industrial development, one of the study's aims was to identify sites that could be developed as industrial parks, and do some preliminary analysis of development costs. One major outcome of our work, though, was the realization that there are several steps the Regional District could take to improve the supply of industrial land, and developing a new industrial park is just one of them.

One of our objectives in this report, therefore, is to introduce the concept of an industrial development strategy for the Regional District of Central Okanagan. An industrial development strategy is a co-ordinated approach to making land available for industrial development that takes advantage of all possible opportunities: increasing the efficiency of existing industrial areas; encouraging private industrial park development; and selecting sites for publicly sponsored industrial park development.

What are the advantages of this kind of approach? First, it gives the Regional District the ability to look at options instead of assuming that it must get involved in building an industrial park right now. Second, by making the most of possible private sector industrial development, a co-ordinated approach can make more land available than a single new

industrial park would on its own. Third, this approach allows the Regional District to see a possible public sponsored industrial development as one component in a whole program of industrial land management, not just as an end in itself.

This is not to say that the Regional District shouldn't consider getting involved in building an industrial park. We completed the original terms of reference, so we have a recommendation for the best site, an estimate of cost and a development plan. But we've gone a little beyond that to suggest that the Region consider all of its options and decide whether or not sponsoring its own industrial park is the best way to go.

Our report follows this outline:

- first we inventory all industrial land in the Regional District and categorize it to determine how much land is currently zoned, physically developable and probably available for use in the short term.

- next, we forecast the demand for industrial sites over the period 1981 - 1985.

- we compare the available inventory of land with the demand for sites to see if there is enough land in the right parcel sizes.

- we outline alternatives open to the Regional District to increase the supply of industrial land, and suggest that several of these alternatives be pursued.

- since one of the alternatives is developing a publicly sponsored industrial park, we recommend a site, a development program and we estimate development costs.

INDUSTRIAL STUDY FOR REGIONAL DISTRICT OF CENTRAL OKANAGAN

SUMMARY:

Current Supply of Industrial Land

In 1980, the Regional District had 605 acres of land not in the Agricultural Land Reserve that were designated for current or future industrial use. About 470 acres are developable in the short term, if the City of Kelowna converts industrial reserves to zoned industrial land.

Nearly all of the industrial land inventory is in small parcels (less than 5 acres).

The Central Okanagan has about one-third of the current zoned industrial land inventory in the three Okanagan Regional Districts. However, the Central Okanagan only has one-quarter of the total inventory of zoned and reserve industrial land.

In 5 to 10 years, the Central Okanagan could be at a disadvantage in attracting new industry unless new industrial reserves are added to the inventory.

Projected Demand for Industrial Land

Based on projected growth in population and labour force, the Regional District is projected to need 35 to 50 acres of industrial land per year over the period 1980 - 1985. As a check on this projection, the Regional District absorbed about 37 acres of new industrial land per year over 1978 - 1979.

This projection assumes that no radical, unpredictable changes happen in the Okanagan Valley's economy over the next few years.

The demand for industrial land is strongest in the small parcel market. About 70% of the industrial firms in the Central Okanagan have sites less than 2 acres. Only 8% of all firms have sites larger than 8 acres.

Current Industrial Land Situation

The current available inventory of vacant industrial land is adequate for growth in smaller industries over the period 1980 - 1985 and beyond. As these sites are developed, though, new ones need to be added to the inventory to maintain the wide range of alternatives for new industries and to maintain the Central Okanagan's competitive position.

The demand for large industrial parcels is small. Private industrial development in the area is concentrating on the 1 to 5 acre site range, because this is the market that is strongest. There is a need for additional larger industrial parcels if the Regional Disrict wants to be able to accommodate any prospective industry on short notice. However, the demand is apparently not strong enough to enable or to entice the private sector into developing large-parcel industrial parks.

Industrial Land Strategy

To increase the size and flexibility of the industrial land inventory, the Regional District should:

1. Encourage the assembly of sites already zoned for industrial use. Small, adjacent industrial parcels could be more efficiently developed if assembled into a single site.

2. Encourage increased efficiency in existing industrial areas by: allowing subdivision of sites where the present use is only occupying part of the site, and by allowing increased site coverage where applicable.

3. Encourage private sector industrial development and encourage efficient staging. A small-lot subdivision sold on a random lot-by-lot basis doesn't leave flexibility to accommodate a larger industry by combining small sites. A staged sequence of subdivision and sales can meet short term needs and maintain flexibility to provide larger sites if needed.

4. Require that gravel pits, when worked out or abandoned, be graded to provide industrial sites. About 370 acres of land could be added to the inventory this way.

5. Designate lands with industrial potential as industrial reserve. Sites that should be designated industrial reserve include:

   - Lot 5, Plan 23061, D.L. 2602 on Bartley Road in Westbank; approximately 50 acres.
   - 150 acres on Indian Reserve No. 9.
   - Part of Indian Reserve No. 7.
   - Inland Natural Gas site and possibly expansion area to the north.
   - The lands around the Hiram Walker distillery, which are apparently being held for future distillery needs.

6. Consider developing, or encouraging, a publicly funded large-site industrial park.

Developing An Industrial Park

Only direct government involvement is likely to produce a large-site industrial park in the short term. The private sector does not appear able to develop a park and then hold on, waiting for the few large-site users that will want a Kelowna location.

The only site worth serious consideration as a public-sector large-site industrial park is the Inland Natrual Gas site and possibly some additional land to the north. This site is in an industrial area, is not in the A.L.R., has good topography, and has excellent access to rail, air and road transportation.

Developing the roughly 60 acre site in a pattern of 5 to 15 acre sites would cost on the order of $3.3 to $3.8 million (1980 dollars) for the major costs of land and servicing. This estimate includes no allowance for sales commissions, finance costs (which would depend on the availability of government assistance), developer's profit or the minor incidental costs of development (such as taxes during construction). The estimate also assumes a raw land cost of $25,000 to $35,000 per acre -- there is current evidence of land sales in this range, but the market is apparently changing very rapidly. The holding costs, or the opportunity costs, of building a large-site industrial park and then waiting for the occasional industries needing large sites, will be substantial.

The holding cost (say an interest rate of 18% applied to $3.5 million dollars for one year = $630,000) is the cost of keeping large-sites available for a few years, to have the flexibility of accommodating these industries when they come. New industries requiring sites of 5 to 15 acres are likely to locate in the Central Okanagan at a rate of one or two per year, based on current evidence, but this is impossible to accurately predict.

2. THE CURRENT SUPPLY OF INDUSTRIAL LAND IN THE CENTRAL OKANAGAN REGIONAL DISTRICT

The inventory of land that could theoretically be used for industrial development is actually made up of several distinct categories. Some sites are currently zoned for industrial use and vacant, so they could be developed in the short term. Other sites are designated industrial reserve so, even though they are part of the inventory, they are not available to meet short term needs.

In order to provide a realistic picture of the current availability of industrial sites and potential future additions to the inventory, we catalogued sites in six categories:

1. currently industrially zoned, vacant, and available(i) for development.

2. currently industrially zoned, vacant, but not available(i) on the open market.

(i) We found sites that were industrially zoned and vacant but were pre-empted for a specific use. The most common reason for a site being unavailable was that the owner was holding the site for future expansion or relocation of a present industrial use, or that the site was required for storing materials. Our sources for determining whether or not sites were currently available included input from City of Kelowna and Regional District staff. It is possible that some sites that we have categorized as available may actually not be available on the open market. However, the demand for industrial land includes demand as expressed by new industries and additions to existing ones - so the "unavailable" sites still form part of the inventory.

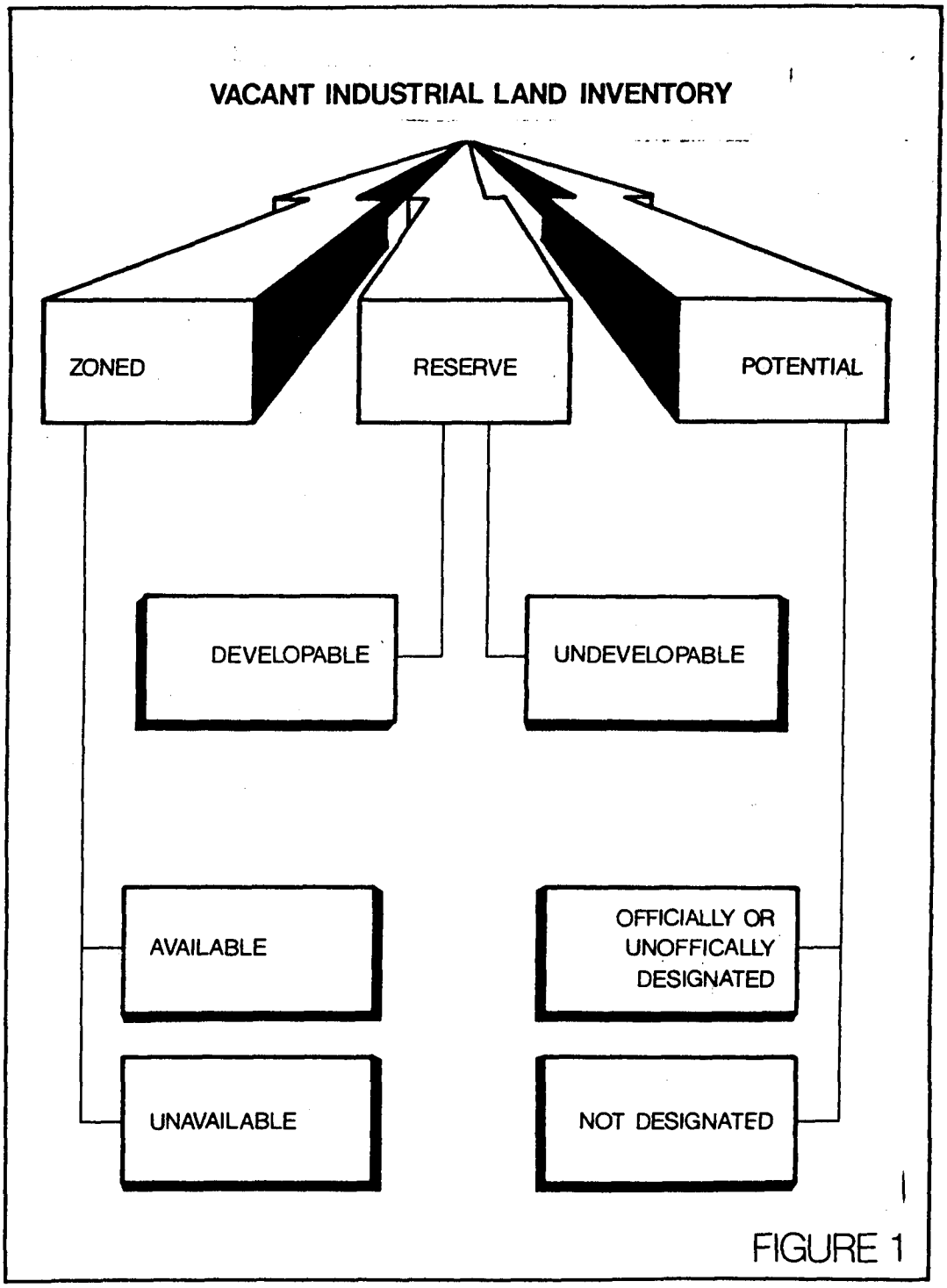
VACANT INDUSTRIAL LAND INVENTORY
ZONED
RESERVE
POTENTIAL
DEVELOPABLE
UNDEVELOPABLE
AVAILABLE
UNAVAILABLE
OFFICIALLY OR UNOFFICALLY DESIGNATED
NOT DESIGNATED

FIGURE 1

3. vacant land designated industrial reserve[ii] and probably developable.

4. vacant land designated industrial reserve[ii] and probably <u>not</u> developable.

5. vacant lands with potential for industrial development that have officially or unofficially been recognized by either the City or Regional District as good prospects for industrial use.

6. vacant lands with potential for industrial development that we, or some one we contacted during the study, put forward for consideration[iii].

(ii) The City of Kelowna designates industrial reserve lands and zones them A-6. Some of the lands are in the Agricultural Land Reserve. Recognizing a <u>regional</u> policy favouring the maintenance of agricultural land, we included in the inventory only those industrial reserves not in the A.L.R. These sites have a wide range of physical features (slope, relationship to creeks) and so we subdivided these lands into developable and not-developable based on these site conditions. There are no lands zoned industrial reserve in the Regional District outside the City boundary, although there are some sites recommended for industrial designation in regional planning studies.

(iii) These sites meet the criteria of: not in the A.L.R.; level topography; good highway and, in some cases, rail access; near existing industrial areas; and not likely to cause conflicts with present or future adjacent land uses.

The total amount of land in the first five of these categories is the Central Okanagan Regional District's inventory of land that is currently designated or recognized as industrial. The categories serve to break this inventory down into the probably available sites at present and in the future. The sixth category adds to this inventory sites that have good potential for industrial development and that should be considered for industrial designation.

The first five categories tell us most about the current supply of industrial sites. These categories can be further broken down based on parcel size and availability of services to show how well the present inventory can meet the near future need for industrial sites.

The inventory is best presented in a series of tables.

Table 1 shows the total land area in each of the six categories in the City of Kelowna and in the rest of the Central Okanagan Regional District.

Table 2 shows the total land area in the three categories of sites that are most able to meet near future industrial land needs.

Table 3 shows the distribution of parcel sizes (i) in each of the six categories. Tables 3A and 3B show the breakdown for parcels in the City of Kelowna and the rest of the Regional District respectively.

Table 4 shows the distribution of parcel sizes (i) in the three categories most able to meet near future industrial land needs.

(i) "Parcel size" in these tables means the size of any group of adjacent individual properties that could be developed as a unit. Therefore, the larger parcels are sometimes made up of 2 or more separate legal properties.

All of the sites in the first five categories have the ability to be served with water; sewer is not available to all the sites, but septic fields are an alternative and there are industrial developments in the region that use this method of sewage disposal.

The last category, sites worth considering for industrial development, includes some areas not presently served with water. Obviously the ability to bring water to these properties affects their potential for development.

It is important to note that this inventory does not include any land which is presently in the Agricultural Land Reserve and does not include any sites now or previously used for gravel extraction (even though these sites are technically vacant and zoned for industrial use, they are not developable unless they are rehabilitated). Some of these sites could be added to the active industrial land inventory, and the Regional District could benefit from encouraging the transition from abandoned or unused gravel pit to industrial land.

TABLE 1: EXISTING AND POTENTIAL INDUSTRIAL LAND IN THE CENTRAL OKANAGAN REGIONAL DISTRICT, 1980

	Category	City of Kelowna (acres)	Rest of C.O.R.D. (acres)	Total (acres)
1.	Industrial zoned, vacant, available	204	70	274
2.	Industrial zoned, vacant, unavailable	25	52	77
3.	Industrial reserve, vacant, developable	53	-	53
4.	Industrial reserve, vacant, not developable	55	-	55
5.	Potential, with City or Regional District Recognition	113	33	146
	Sub Total	450	155	605
6.	Potential, no City or Regional District Designation	269	198	467
	Total	719	353	1072

SOURCES: Zoning maps, City of Kelowna and Central Okanagan Regional District.

Land use maps, City of Kelowna and Central Okanagan Regional District.

Cumberland Group research and field work.

TABLE 2: EXISTING AND POTENTIAL LAND MOST ABLE TO MEET NEAR FUTURE INDUSTRIAL LAND NEEDS IN THE CENTRAL OKANAGAN REGIONAL DISTRICT, 1980

	Category	City of Kelowna (acres)	Rest of C.O.R.D. (acres)	Total (acres)
1.	Industrial zoned, vacant, available	204	70	274
3.	Industrial reserve, vacant developable	53	-	53
5.	Potential, with City or Regional District Recognition	113	33	146
	Total	370	103	473

SOURCES: Zoning maps, City of Kelowna and Central Okanagan Regional District.

Land use maps, City of Kelowna and Central Okanagan Regional District.

Cumberland Group research and field work.

TABLE 3: PARCEL SIZE DISTRIBUTION OF EXISTING AND POTENTIAL INDUSTRIAL LAND IN THE TOTAL CENTRAL OKANAGAN REGIONAL DISTRICT, 1980

CATEGORY	SIZE IN ACRES					
	0 - 0.99	1.0 - 1.99	2.0 - 4.99	5.0 - 9.99	10+	Total
1. Industrial zoned, vacant, available	35	22	18	7	6	88 parcels
2. Industrial zoned, vacant, not available	9	1	7	4	2	23
3. Industrial reserve, vacant, developable	4	4	6	1	1	16
4. Industrial reserve, vacant, not developable	1	1	1	1	2	6
5. Potential, with City or Regional recognition	-	1	3	3	5	12
Subtotal	49	29	35	16	16	145
6. Potential, no City or Regional designation	-	1	-	-	6	7
Total	49	30	35	16	22	152

SOURCE: Cumberland Group research and field work.

TABLE 3A: CITY OF KELOWNA

CATEGORY	Size in Acres 0. - 0.99	1.0 - 1.99	2.0 - 4.99	5.0 - 9.99	10 +	Total
1. Industrial zoned, vacant, available	34	18	14	5	5	76 parcels
2. Industrial zoned, vacant, not available	9	-	4	2	-	15
3. Industrial reserve, vacant, developable	4	4	6	1	1	16
4. Industrial reserve, vacant, not developable	1	1	1	1	2	6
5. Potential, with City or Regional recognition	-	1	3	3	3	10
Subtotal	48	24	28	12	11	123
6. Potential, no City or Regional recognition	-	1	-	-	4	5
Total	48	25	28	12	15	128

TABLE 3B: REST OF CENTRAL OKANAGAN REGIONAL DISTRICT

	0. - 0.99	1.0 - 1.99	2.0 - 4.99	5.0 - 9.99	10 +	Total
1. Industrial zoned, vacant, available	1	4	4	2	1	12 parcels
2. Industrial zoned, vacant, not available	0	1	3	2	2	8
3. Industrial reserve, vacant, developable	-	-	-	-	-	-
4. Industrial reserve, vacant, not developable	-	-	-	-	-	-
5. Potential, with City or Regional recognition	-	-	-	-	2	2
Subtotal	1	5	7	4	5	22
6. Potential, no City or Regional recognition	-	-	-	-	2	2
Total	1	5	7	4	7	24

SOURCE: Cumberland Group research and field work.

TABLE 4: PARCEL SIZE DISTRIBUTION OF EXISTING AND POTENTIAL INDUSTRIAL LANDS MOST ABLE TO MEET NEAR FUTURE INDUSTRIAL LAND NEEDS IN THE CENTRAL OKANAGAN REGIONAL DISTRICT, 1980

		SIZE IN ACRES					
	Category	0 - 1	1 - 2	2 - 5	5 - 10	10+	Total
1.	Industrial zoned, vacant, available	35	22	18	7	6	88 parcels
3.	Industrial reserve, vacant, developable	4	4	6	1	1	16
5.	Potential, with City or Regional recognition	-	1	3	3	5	12
	TOTAL	39	27	27	11	12	116

SOURCE: Cumberland Group research and field work.

These tables, looked at collectively, show the following:

- the City of Kelowna has the majority of the industrial land that is actually available in the near future (370 of 473 acres, or 78%). (Table 2).

- most of the inventory of industrial sites (categories 1-5) is likely to be available or is developable (based on information available). 473 of the full inventory of 605 acres, or 78%, are usable if the City converts industrial reserve lands to industrial zoned lands. (Table 1)

- most of the developable, available sites are small. There are 116 sites in the three prime categories (Table 4). Of these, 66 (57%) are two acres or less in size. 23 parcels (20%) are greater than 5 acres.

- The sixth category, sites that we identified as worthy of consideration for increasing the inventory of industrial land, can substantially improve the inventory. We identified 7 sites, totalling 467 acres, that could be added to the inventory. Of these, 6 are greater than 10 acres. (Table 3).

This overview of the current inventory leans, in one way, to the optimistic side. Since we define "parcel size" by the size of contiguous properties, some of the larger sites require assembly before they could actually be developed for large - site industries.

In another way, our inventory is conservative. We have not included any of the region's gravel extraction sites, many of which have been worked out or abandoned. These sites represent a potential source of industrial land, that we discuss in the "industrial development strategy" of this report.

The tables summarize information that is presented in more detail in a set of maps and lists that identify each individual parcel, its area, its access to services and its category in our range of 6 types. These maps and lists are a "one only" set, because the Regional District intends to transfer the information to the new metric series of maps and update the maps annually. The lists of sites could easily be transferred to a computer or word processor for easy access and easy updating. This would also allow more information to be added to each site's "file" - the Regional District could try to learn more about each site's ownership and the owner's plans. Ultimately, the Regional District could have a full referral system to direct prospective industries to any sites meeting prescribed criteria. For example, if an industry required 2 acres with good highway access, the Regional District would be able to provide a list of all sites meeting these criteria and known to be currently available.

The next major stage in this study is to forecast the demand for industrial land (how much land? in what parcel sizes?) in the region. The projected requirement for industrial sites can then be compared with the available inventory. That's the key point in the analysis, because it will show whether or not the present inventory of industrial land is adequate to meet future needs.

Before getting into demand forecasts, though, it is important to see how the Central Okanagan's supply of industrial land fits in the context of the whole Okanagan Valley. Demand for industrial sites is influenced by the availability of sites - if the Regional Districts to the north and south of the Central Okanagan have shortages of industrial land, the Central Okanagan could receive greater demand; if the flanking regions have better quality or significantly lower priced industrial land, some industrial demand could be shifted away from the Central Okanagan.

3. INDUSTRIAL LAND IN THE OKANAGAN VALLEY

Three Regional Districts make up the Okanagan Valley - to the south, the Okanagan-Similkameen Regional District, in which the largest city is Penticton; in the centre, the Central Okanagan Regional District, with Kelowna its largest city; and in the north, the North Okanagan Regional District, where Vernon is the principal city.

Each Regional District has its own planning and economic development programs and its own current and planned inventory of industrial land. Our terms of reference are to project demand for industrial land in the Central Okanagan, not the whole valley, but this demand will be influenced by the future distribution of developable industrial land among the Regional Districts.

Our data for the Central Okanagan allows us to separate "vacant, industrial zoned" into "currently available" and "currently not available". We can also separate the industrial reserve lands into "developable" and "not developable". We don't have data to the same level of detail for the two flanking Regional Districts, so to compare their inventories we must use common categories -- total supply of zoned vacant industrial land not in the Agricultural Land Reserve and total industrial reserve or designated potential industrial land not in the Agricultural Land Reserve.

Tables 5 and 5A show the inventory of industrial land in the North Okanagan; Tables 6 and 6A show the inventory in Okanagan - Similkameen. Table 7 compares the three Regional Districts.

The zoned, vacant, exempt from A.L.R. industrial land is fairly evenly distributed throughout the Valley, but the Central Okanagan falls behind in designated reserves or designated potential industrial lands.

Looking at the combined totals of zoned and potential industrial land (in Table 7), the Central Okanagan has only one-quarter of the Valley's inventory, while Okanagan -Similkameen has almost half. This is not necessarily a problem now because the total supply considerably exceeds near-future demand. However, the flanking regional districts have done more to ensure a long term industrial land supply than the Central Okanagan has. Unless this is altered, the Central Okanagan will be less ready to offer sites to prospective industries.

In our inventory, we listed sites that the City of Kelowna and the Regional District were considering designating industrial reserve; we also indicated additional sites that should be considered for industrial designation, which total 613 acres. In order to keep its longer term inventory of sites at about one-third of the Valley's supply, the Central Okanagan needs to designate about 260 acres of new industrial reserve land.

Of the Regional District of North Okanagan's 307 vacant acres (Table 5), about 250 are served with water and about 100 are served with water and sewer. All of the vacant industrial sites in Okanagan-Similkameen are capable of being served with water. All of the sites in the Central Okanagan can be served with water.

Within the Okanagan Valley, zoned vacant industrial land is fairly evenly distributed among the three regions. The availability of water does not significantly alter this distribution in terms of servicable sites. Given this even distribution and the total size of the inventories, the near-future distribution of demand for sites within the valley should not be heavily influenced by the distribution of the supply of sites. However, the flanking Regional Districts have done more than Central Okanagan has to identify new industrial lands. In 5 to 10 years, the Central Okanagan could be at a disadvantage in trying to attract new industry unless new industrial reserves are designated.

TABLE 5: SUMMARY OF INDUSTRIAL LAND INVENTORY
REGIONAL DISTRICT OF NORTH OKANAGAN, JUNE 1979

	Acres
Total zoned	1,884
Total occupied by industrial uses	1,275
Total vacant and not occupied by non-conforming use	472
Total zoned, vacant, available and not in A.L.R.	307
Proposed industrial land not in A.L.R.	270

Source: Industrial Land Inventory, Regional District of North Okanagan, 1979.

TABLE 5A: DETAILED INVENTORY OF INDUSTRIAL LAND
REGIONAL DISTRICT OF NORTH OKANAGAN, 1979

Muncipalities	Total Zoned	Total Occupied	Total Vacant	Total Vacant Not in A.L.R.	Total Proposed Outside A.L.R.
Armstrong	19.93	12.97	6.96		
Coldstream	386.96	258.19	118.16		
Enderby	25.42	10.57	12.76		
Lumby	240.67	204.07	36.04		
Spallumcheen	651.59	406.60	165.76		
Vernon	241.87	123.68	86.20		
Total Mun.	1566.44	1016.08	425.88		
A	52.31	52.31	-		
B	74.37	40.04	24.66		
D	98.51	83.24	15.27		
F	92.68	83.45	6.23		
Total of Electoral Areas	317.87	259.04	46.16		
Total of Electoral & Municipality	1884.31	1275.12	472.04	307	270[1]
Total of Vernon Sub-Region	755.51	474.22	229.02		

1. Mostly located in the north or south parts of the City of Vernon. Also in Electoral Area "B" parcel adjacent to city boundaries.

SOURCE: Industrial Land Inventory, Regional District of North Okanagan, 1979.

TABLE 6: SUMMARY OF INDUSTRIAL LAND INVENTORY
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN, 1979

	Acres
Total zoned	2,542
Total occupied	1,630
Total vacant, not including Princeton Mine tailings	517
Total vacant, zoned, available, not in A.L.R., and not including Princeton Mine tailings	429
Proposed industrial land not in A.L.R.	459

Source: P.S. Ross & Partners, "Inventory and Overview of Resources for the Regional Districts of North Okanagan, Central Okanagan, Okanagan-Similkameen", 1979.

TABLE 6A: DETAILED INVENTORY OF INDUSTRIAL LAND REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN, 1979

Muncipalities	Total Zoned	Total Occupied	Total Vacant	Total Vacant Not in A.L.R.	Total Proposed Outside A.L.R.
Penticton	560	405	155	155	33
Summerland	120	65	55	25	15
Oliver	99	58	41	41	-
Osoyoos	9	9	-	-	170
Princeton	575	180	395[1.]	395[1.]	
Keremeos	80	27	53	33	-
Total Mun.	1443	744	304	259	218
Electoral Areas					
A	67	49	18	3	-
B	10	10	-	-	-
C	155	135	20	20	1
D	245	192	53	46	64
E	4	3	1	-	1
F	200	80	120	100	40
G	85	85	-	-	-
H	333	332	1	1	135
Total of Electoral Areas	1099	886	213	170	241
Total of Electoral & Municipality	2542	1630	517	429	459

1. This land is actually covered with mine tailings, so is deleted from totals.

SOURCE: P.S. Ross & Partners, "Inventory and Overview of Resources for the Regional Districts of North Okanagan, Central Okanagan, Okanagan-Similkameen", 1979.

TABLE 7: SUMMARY OF INDUSTRIAL LAND INVENTORY IN OKANAGAN VALLEY REGIONAL DISTRICTS (1979, 1980)

	Zoned, Vacant Not in A.L.R.	%	Proposed Industrial or Industrial Reserve Not in A.L.R.	%	Total	%
Central Okanagan	351 (acres)	32	118	14	469	24
North Okanagan	307	28	270	32	577	30
Okanagan-Similkameen	429	40	459	54	888	46
TOTAL	1087	100%	847	100%	1934	100%

SOURCE: P.S. Ross & Partners, "Inventory and Overview of Resources for the Regional Districts of North Okanagan, Central Okanagan, Okanagan-Similkameen", 1979.

Industrial Land Inventory, Regional District of North Okanagan, 1979.

Cumberland Group research and field work.

4. ESTIMATING DEMAND FOR INDUSTRIAL LAND IN THE CENTRAL OKANAGAN REGIONAL DISTRICT

"Industrial land" is a fairly general label. Specifically, in this study we are projecting the requirement for land for uses including manufacturing, distribution, assembly of components, packaging, and warehousing. These uses are generally characterized as "light industry", although some manufacturing uses (sawmills, shake mills for example) are heavier industries.

There are many ways to forecast demand for industrial sites. Past demand trends can be projected; economic trends can be projected; growth in employment can be estimated and, in turn, translated to growth in industrial development; and government incentive programs can be monitored for effects on industrial growth.

The best approach is one that combines different projection techniques. This approach makes use of all available data and allows a comparison of the results of coming at the problem from different directions.

4.1 Industrial Demand Based On Population and Labour Force Growth

Our first approach is to estimate industrial land needs by projecting growth in population and labour force. A basic point in this approach is that light industry serves a population base. As the population grows, so does the need for industrial land. Obviously this technique assumes there will not be a major "out of the blue" industrial boom prompted by new resource discoveries or radical changes in Kelowna's role in the province's industrial network.

This method of projecting land needs follows these steps:

1. Forecast population growth for the study period;
2. Forecast labour force during the study period by estimating the percentage of the population that would legally be able to work (over 15 years of age), and the labour participation rate;

3. Estimate the proportion of industrial labour force with respect to the total labour force;
4. Estimate the employment density for industrial land;
5. Calculate the land requirement for the study period by dividing the increase in industrial labour force by the employment density.

Some terms should be defined at the outset. "Labour force" means the population over 15 years of age times a participation rate. "Participation rate" is the proportion of these people who will actually enter the labour force; it is affected by trends such as numbers of women entering the labour force, length of time people spend in school, numbers of people who are unable to work, and numbers of people who are retired. The participation rate we use is calculated for the Central Okanagan, so it takes into account the Region's particular age and labour force characteristics.

The "industrial labour force" is made up of workers in the manufacturing, construction and wholesale sectors. Manufacturing includes resource based manufacturing (like sawmills) and non-resource based manufacturing (like steel fabrication or recreational vehicle production). "Employment density" means the number of employees occupying an acre (or a hectare) of industrial land. This density varies from industry to industry, but it is possible to apply an overall average.

4.1.1 Historic Population and Labour Force Growth

Population in the Regional District of Central Okanagan increased by approximately 21,000 between 1971 and 1976 (from 50,225 to 71,180) which is an average annual growth rate of 7.2%. During the same period, total labour force in the Regional District grew at an average annual rate of approximately 8.6% from 19,770 to 29,870 (Table 8). This fast pace of growth in population and labour force can be attributed to a number of factors, including a healthy provincial economy at the time, the

TABLE 8

POPULATION AND LABOUR FORCE GROWTH
IN THE OKANAGAN REGION, 1971 - 1976

Central Okanagan	1971	1976	1971-1976 Annual Increase
Population	50,225	71,180	7.2%
Labour Force	19,770	29,870	8.6%
North Okanagan			
Population	33,909	46,599	6.6%
Labour Force	13,415	20,495	8.8%
Okanagan - Similkameen			
Population	42,765	51,385	3.7%
Labour Force	17,720	22,375	4.8%
Okanagan Region			
Population	126,899	169,164	5.9%
Labour Force	50,905	72,740	7.4%

Source: Census of Canada, 1971, 1976.

attractiveness of the Okanagan Valley as a place of residence, and an increase of employment opportunities due to growth in the service and industrial sectors. Non-resource based manufacturing, particularly, experienced an unprecedented boom, probably as a result of the Federal Area Development Incentive Act (ADIA) in effect from 1965 to 1969, which encouraged manufacturing firms to locate in the region.

In the eight years between 1971 and 1979, total manufacturing employment increased at an average annual rate of 7.6%, or an average of 246 persons per year. However, the labour force in non-resource based manufacturing contributed to most of this growth, expanding at an annual rate of 9.9%, compared to only 2.5% in the resource based manufacturing sectors (Table 9). Employment in both wholesale and construction trades increased by 7% per year in the same period. In 1971, the industrial sectors comprised 30% of the total labour force, while in 1979, this proportion had increased to 32%.

The relatively high growth rate in the industrial labour force continued even after the federal ADIA program was terminated. This is probably partly due to some time lag between the award of incentives and the achievement of maximum potential employment in the industries that located in the Okanagan and also in part due to spinoff effects - other industries following the original recipients of incentives into the region.

4.1.2 Projected Population and Labour Force Growth

The rate of population growth is closely related to the rate of growth in employment opportunities. The momentum generated by the Federal ADIA program has contributed much to the economic expansion of the region, but the significant portion of this impact appears to have passed, and economic growth is expected to be slower during the early 1980's. Similarly, population growth should be lower than that experienced by the Regional District during the 1970's. This observation is reflected in projections of

TABLE 9

INDUSTRIAL LABOUR FORCE IN CENTRAL OKANAGAN REGIONAL DISTRICT AND THE OKANAGAN REGION BY SECTORS, 1971, 1979

	1971		1979		1971-1979 Annual Increase
Central Okanagan	#	% of Total Labour Force	#	% of Total Labour Force	
Manufacturing	2,480	12.6%	4,450	13.4%	7.6%
Resource Based	900	4.6	1,100	3.3	2.5%
Non-resource Based	1,580	8.0	3,350	10.1	9.9%
Construction	2,280	11.5	3,950	12.0	7.1%
Wholesale Trade	1,225	6.2	2,100	6.4	7.0%
Total Industrial Labour Force	5,985	30.3%	10,500	31.8%	6.6%
Okanagan Region					
Manufacturing	6,240	12.2%	9,950	12.7%	6.0%
Resource Based	2,815	5.5	3,500	4.5	2.8%
Non-resource Based	3,425	6.7	6,450	8.2	8.2%
Construction	4,575	9.0	7,400	9.5	6.2%
Wholesale Trade	3,000	5.9	4,725	6.0	5.8%
Total Industrial Labour Force	13,815	27.1%	22,075	28.2%	6.0%

Source: 1971 Census
1979 total and distribution estimated by D.M. Roussel, Employment and Immigration Canada, Economic Services Branch

lower population growth by all agencies, including B.C. Research, local and regional government and the Okanagan Basin Board (see Table 10). The observation that the bulk of the impact of the ADIA program has passed is borne out by a decline in the number of new, large industrial developments locating in the Central Okanagan.

Population forecasts for the Region, made by various agencies, do not all agree, but they cluster in the range of 3% to 4% for the period 1981 to 1986. For estimating purposes, we have used an annual growth rate range of 3% - 4%. Applying this range to the Regional District's 1976 population, the Central Okanagan should have between 93,000 - 101,000 people by 1985 (the end of our projection period). Population over 15 years of age should range between 75,000 - 82,000, based on B.C. Research's estimate that approximately 81% of the population would be in this age group.

Between 1971 and 1976, the labour participation rate in the regional district increased from 54.8% to 55.4%, a growth of about one tenth of a percent per year.(1) We anticipate that between 1976 and 1985, the labour participation rate would continue to increase at least at this rate as more women enter the work force. Total labour force in the Cental Okanagan Regional District should reach 42,000 - 46,000 by 1985, assuming a participation rate of 56%. (Table 11). To check this projection, we can compare it to overall provincial trends. In 1971 and 1976 B.C.'s participation rates were 58.3% and 61.3% respectively. The province's rate grew much more quickly than the Regional District's over that period (by 0.6 percentage points per year versus 0.1). B.C.'s rate is forecast to grow by about the same rate (.6 pecentage points per year) over the period 1976 - 1985, so an assumption of constant growth in the Regional District seems reasonable.

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(1) 1971: Population 15 years and over = 36,055
Labour Force = 19,770
Participation Rate: 19,770 ÷ 36,055 = 54.8%

1976: Population 15 years and over = 53,900
Labour Force = 29,870
Participation Rate: 29,870 ÷ 53,900 = 55.4%

TABLE 10

COMPARISON OF PROJECTED CENTRAL OKANAGAN POPULATION GROWTH RATES

	PROJECTED AVERAGE ANNUAL GROWTH RATES				
	1976-1981	1981-1986	1986-1991	1991-1996	1996-2001
1. City of Kelowna Planning Services Department (Projection for City Only)	3.2%	3.8%	3.5%	3.1%	2.8%
2. Central Okanagan Regional District	4.4%	3.5%			
3. B.C. Research	4.5%	3.4%	2.0%	1.4%	1.0%
4. Okanagan Basin Update	3.1%				

SOURCES:
1. City of Kelowna Planning Services Department, 1980.
2. Regional District of Central Okanagan Planning Department, 1980.
3. British Columbia Population Projections 1979 - 2001, B.C. Research, 1979.
4. Report to Update Okanagan Basin Study, Inland Waters Directorate, 1978.

TABLE 11

PROJECTED GROWTH IN LABOUR FORCE TO 1985
IN CENTRAL OKANAGAN REGIONAL DISTRICT

1985	3% Population Growth Scenario	4% Population Growth Scenario
Total Population	92,874	101,311
Population Over 15 years of age	75,228	82,062
Participation Rate	56.0%	56.0%
Total Labour Force	42,128	45,955
Industrial Labour Force @ 30.8% of Total	12,976	14,154
Manufacturing @ 13.0% of total	5,477	5,974
Construction @ 11.8% of total	4,971	5,423
Wholesale Trade @ 6.0% of total	2,528	2,757
Increase in Industrial Labour Force over 1979	2,476	3,654
	say: 2,500	say: 3,650

SOURCE: Cumberland Group research and analysis.

Our research into the economic outlook of the early 1980's shows that the largest growth opportunities are likely to occur in the service industries, with the tourism sector being the most predominant. As the City of Kelowna grows and fulfills the role of a regional centre in the Okanagan, the labour force in sectors such as retail trade, finance, insurance and real estate, education, accommodation and food services, personal and business services is expected to increase as a proportion of the total work force, while the primary industries such as agriculture, logging and mining are likely to decrease in importance. The industrial sectors of manufacturing, construction and wholesale trade are not anticipated to grow at the same pace as they did during the 1970's. We estimate that, by 1985, these sectors will comprise a slightly lower percentage of the total labour force than in 1979. Industrial employment is projected to make up about 30.8% of the total labour force, or approximately one percentage point lower than that of 1979, but 0.5 percentage point higher than that of 1971 (see Table 9 for 1971 and 1979 ratios). Manufacturing's share of the regional district's work force is estimated to decrease from 13.4% to 13.0%, construction from 12% to 11.8%, and wholesale trade from 6.4% to 6.0%. Total employment in the industrial sectors should reach 13,000 - 14,000 by 1985, an increase of between 2,500 and 3,650 from 1979 (Table 11), or an average annual increase of 3.4% - 5.1%.

4.1.3 Industrial Employment Density

In 1979, about 885 acres of land in the Central Okanagan were occupied by industrial uses.(1) 678 of these acres (77%) were in the City of Kelowna. These figures do not include land used for gravel extracting, log sorting or outside storage because these uses have very low employee densities, and are not expected to increase significantly in the Central Okanagan.

The 1979 industrial labour force in the Regional District was about 10,500 (Table 9). This yields an overall industrial employment density of 10,500 ÷ 885 = 11.9 workers per acre.

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(1) Employment density is calculated for 1979 because that is the most recent year for which detailed labour force estimates are available.

4.1.4 Industrial Land Requirements to 1985 Based On Labour Force Growth

In the previous subsections we projected growth in industrial employment and calcuated an overall average of industrial employees per acre. These two numbers allow us to forecast the need for industrial land.

An important assumption in this projection is that no major governmental intervention takes place to change industrial planning policy or to stimulate demand above levels associated with current population trends. If government incentives, for example, encourage employment-intensive industries (electronics, clothing) over employment-extensive industries (metal fabricating), less land would be required to accommodate a similar labour force. Similarly, if zoning regulations change and encourage more intensive industrial development, land requirements would be smaller.

The industrial labour force in the region is estimated to increase by 2,500 - 3,650 people between 1979 and 1985 (Table 11). If the 1979 employment density (11.9 workers per acre) remains constant, the industrial land requirements for the six years would be about 210 - 310 acres, an average of say 35 to 50 acres per year.

This projection includes 1979 because that is the last year for which we have labour force estimates. This gives us the opportunity to check the projected land requirement with actual recent industrial land absorption.

4.2. Recent Trends in Industrial Land Absorption

Checking recent industrial land absorption is the second approach we can use to estimate near-future requirements. The City of Kelowna has kept records of the amount of occupied industrial land for 1978 and 1979. The Regional District has kept records of the amount of occupied industrial land outside the City for the period 1974 to 1979. Combined, these figures give us actual industrial land absorption in the region for two years.

This isn't a long enough period to enable us to make accurate forecasts, but it does give us a check on the labour force based projections in the previous section.

During the 2 year period February 1978 to March 1980, in the City of Kelowna, about 52 acres of zoned vacant industrial land became occupied. This is an average absorption of 26 acres per year. In the rest of the Regional District, 57 acres of land were occupied by industrial uses over the period 1974 - 1979, yielding an average absorption of just over 11 acres per year. Roughly, then, over the period 1978 - 1979 the Regional District had an average industrial land absorption rate of about 37 acres per year.

This absorption rate is within our projected rate of 35 to 50 acres per year for the period 1979 - 1985; this isn't absolute confirmation, but it does show that recent industrial absorption is behaving as projected based on labour force growth.

5. LOT SIZES IN DEMAND

So far we've concentrated on estimating overall requirements for industrial land, and we've projected a need for 35 - 50 acres per year. Obviously there's a big difference between 20 two-acre parcels and two 20-acre parcels, even though they both add up to 40 acres, so we need to factor total land need into land need by parcel size.

Scott's Industrial Directory of Western Manufactures (1978 edition) indicates that there were 89 manufacturing firms in Kelowna, Oyama, Winfield, Westbank and Rutland (all the centres in the Central Okanagan). Table 12 shows the distribution of these firms by number of employees, and indicates that 60% of the firms had fewer than 15 employees. Only 7 firms (8%) had more than 100 employees.

If we assume that these manufacturing firms are representative of the size distribution of all industrial companies in the Regional District, and that the average employee density applies (11.9 workers per acre), we can translate the information into a distribution of firms by land requirement. This distribution shows that about 70% of all firms need sites of about 2 acres or smaller, that about 17% of all firms need sites of 2 acres to 8 acres, and 8% of all firms need sites larger than 8 acres.

Since the termination of the Federal Area Development Incentive Act program in 1969, other provincial and federal programs have been put in place to help foster industrial development in B.C. These programs include the Assistance to Small Enterprise Program (ASEP), and the Low Interest Loan Assistance (LILA) program. Not all of these programs make their grant or loan assistance awards public, and not all programs give out even general information on numbers or characteristics of applicants. We contacted the administrators of the programs directly and could not obtain information on whether or not there was a trend to smaller or larger industries (requiring smaller or larger sites) actively seeking government assistance in the Okanagan.

TABLE 12

NUMBER OF MANUFACTURING FIRMS BY SIZE OF WORK FORCE, 1978

CENTRAL OKANAGAN REGIONAL DISTRICT

	Total	1-5	6-14	15-24	25-49	50-99	100-199	200+
Kelowna	78	24	23	13	8	6	1	3
Westbank	4	1	2	0	0	0	1	0
Oyama	1	0	1	0	0	0	0	0
Winfield	4	0	1	0	1	0	1	1
Rutland	2	2	0	0	0	0	0	0
Total	89 (100.0%)	27 (30.3%)	27 (30.3%)	13 (14.6%)	9 (10.1%)	6 (6.7%)	3 (3.4%)	4 (4.5%)

Source: Scott's Industrial Directory of Western Manufacturers, 1978.

The Central Okanagan Regional District's own file of contacts made by industries seeking assistance shows that most of the recent contacts have been from industries already in the area that would like to improve or expand their facilities. Of the contacts from prospective new industries, very few expressed the need for sites larger than 5 acres.

New industrial park projects now on the market have been designed to provide sites predominantly less than 2 acres, with a very few lots in the 2 to 5 acre range.

Now, this is where the problem can become "chicken and egg". Are the new industries coming to the Okanagan mainly small-site users because there is limited availability of large parcels; or, are industrial subdivisions being designed with small lots because that is the strongest market?

Recognizing that, of all manufacturing firms in the region in 1978, fewer than 10 companies required sites in the 10 acres or larger category, and that some of these (e.g. the Hiram Walker distillery) were attracted by an incentive program no longer operating, the demand for larger industrial sites will probably not be very strong. In terms of proportion of businesses, the greatest need for sites is in the 2 acres or smaller range.

Clearly, there will always be a need for some large available vacant industrial sites, so that industries choosing to locate in the Okanagan can be accommodated.

The demand does not appear to be strong enough, though, to have attracted a private industrial park development including large sites (say greater than 5 acres) on a speculative basis. The holding period, waiting for the relatively rare large site users, may be making it uneconomic to do this type of development.

6. SUMMARY OF THE CURRENT INDUSTRIAL DEVELOPMENT SITUATION

The Central Okanagan Regional District will need about 35 - 50 acres per year of industrial land over the period 1980-1985.

Most of the land required will be for firms needing sites of less than 2 acres, although there will be a few users needing sites in the 5 acres and up range.

The current inventory of vacant industrial sites in the Regional District indicates that there are about 274 acres of zoned, vacant industrial land and a further 53 acres of developable industrial reserve for a total of 327 acres. (Table 1). This land includes individual properties that could be assembled into 8 parcels of 5 - 10 acres and a further 7 parcels of 10 acres or more. (Table 3). This land also includes a wide variety of sites of less than 5 acres, some of which are in industrial park developments.

In terms of gross acreage, there is plently of land available to meet the region's needs for the period 1980 - 1985 and beyond. In terms of the need for a range of parcel sizes, there are sites available that could be assembled into larger parcels if the demand were strong enough to pay the cost of assembly.

The only "shortage" that exists at present is a limitation on "off-the-shelf" developed parcels larger than 5 acres - and a major reason for the shortage is the apparently limited need. Is this a problem? A new industry requiring a location in Kelowna would, with the present inventory, be able to purchase one or more properties to meet its site requirements (assuming that owners are prepared to sell at market rates). An industry needing a large parcel, but with several alternative locations throughout the Okanagan, may be discouraged from selecting Kelowna because of the extra time and money required to get a large enough site. How many of these potential industries will be looking for sites in the Kelowna area over the period 1980 - 1985?

We have no firm way of knowing because we do not know who has been applying for government assistance. However, it is safe to say that there will be some - although obviously not enough to, as yet, entice the private sector into developing speculative large site industrial parks.

There are two "proposals" for industrial park development that have been talked about. Indian Reserve No. 9, near Westbank, has been suggested as the location for a 150 acre industrial park. A development of this scale would have to be phased and could easily include provision for industries needing larger sites. In addition, the approximately 60 acre Inland Natural Gas site, at the north end of Kelowna, has been considered for industrial development. A developent of this size would preserve the option of accommodating large-site industries.

This is the industrial development situation facing the Regional District. This study began with the concern that there was a chronic shortage of industrial land, particularly in large parcels. Based on the analysis of supply and demand, though, the shortage is probably less severe than it was originally thought to be. That is not to suggest that there is no problem at all - there is a need for a few more larger industrial parcels if the Regional District wants to be able to accommodate any prospective industry on short notice.

The next major question is - what to do about it? Our study began with the governmental expectation that a new industrial park should be sponsored. We would like to suggest that there are several options open to the Regional District (one of which is building an industrial park) that should be considered.

7. AN INDUSTRIAL DEVELOPMENT STRATEGY FOR THE REGIONAL DISTRICT OF CENTRAL OKANAGAN

Let's assume that the Regional District's objective is to have enough land, in a wide enough range of parcel sizes, that any prospective desirable industry could find a site. The only problem in meeting this objective during the study period of 1980-1985 is that no one is marketing vacant industrial sites in the 5 - 10 or greater than 10 acre range. There aren't many industries looking for these parcels, but there is an advantage in being able to accommodate new ones when they come to check out Kelowna or to enable existing industries to expand.

A somewhat longer term concern is that the inventory of industrial zoned and industrial reserve land (a total of 327 acres) will last about 6 to 10 years. New land will be needed to maintain this inventory and keep available a wide range of choices for prospective industries.

The Regional District, therefore, needs to do two things - get additional larger parcels available in the short term, and maintain the total inventory in the longer term. What options are open to achieve these?

1. Encourage the assembly of sites already zoned industrial, so that several small parcels are combined to accommodate a larger industry.

2. Encourage increased efficiency in existing developed industrial areas.

3. Encourage people already contemplating industrial park development to proceed, and to design industrial parks with the potential for a range of parcel sizes.

4. Require that gravel pits, when abandoned, be graded to provide potential industrial sites.

5. Designate industrial reserve lands, to preserve the few large suitable sites for future industrial use.

6. Build, or sponsor, an industrial park.

Each of these alternatives can contribute to maintaining a high quality inventory of industrial land. We suggest that the Regional District consider all of these alternatives, not just the last one, and that the Region adopt an industrial development strategy aimed at providing an adequate supply of land and encouraging new industries. This strategy, or co-ordinated program, will achieve far more than could be accomplished by simply going out to build an industrial park.

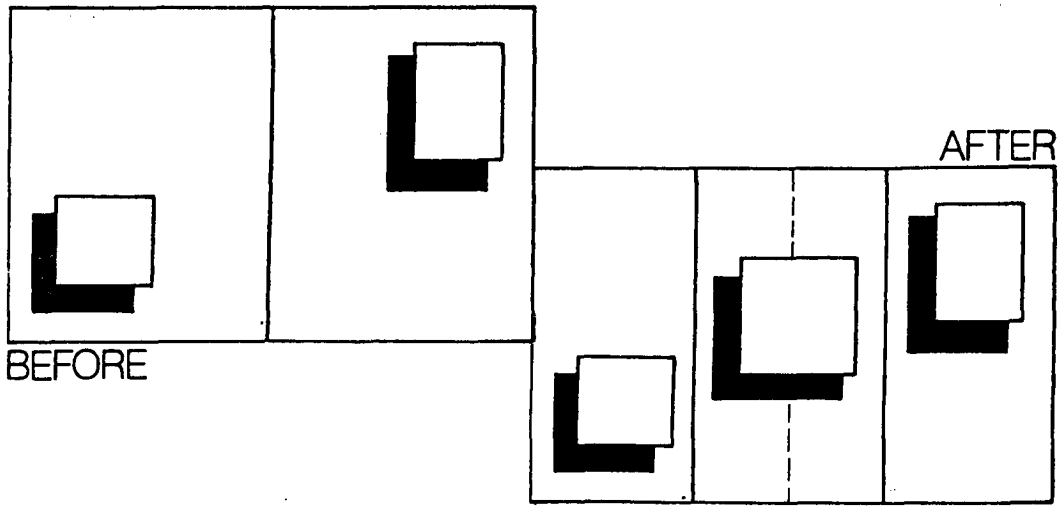
The six options mentioned above fall into two categories - the first three are indirect actions (encouraging) and the next 3 are direct actions (regulations and expenditures).

1. Encourage the assembly of sites already zoned for industrial use.

Our inventory maps and acreage tabulations indicate that there are several potentially good industrial sites that could be created if individual, adjacent parcels were assembled. There are two things the Regional District and the City of Kelowna could do to encourage assembly. First, the owners of the respective sites could be contacted to make sure they realize they have "neighbours" who also have vacant, industrially zoned sites. Second, when people come to the Regional District looking for larger industrial parcels, the staff could direct them to the owners of the properties with potential for assembly. One disadvantage of assembling smaller sites is that it removes them from the market for small sites - a market that appears to be quite strong. Land assembly could, however, make these locations more efficient as industrial areas.

2. Encourage increased efficiency in existing developed industrial areas.

We saw many examples of properties that were not developed to capacity. Some of these are presumably occupied by industries that are reserving extra site area for possible expansion, but there are others that just appear to be inefficiently used. The Regional District and the City of Kelowna can do two things to encourage increased efficiency. First, they can encourage subdivision of sites where the present use is not occupying a significant part of the site. This can be particularly advantageous when two adjacent industries are both using sites inefficiently.



Second, the city and the region can examine site coverage provisions in industrial zoning categories to see if these requirements are encouraging too low a density.

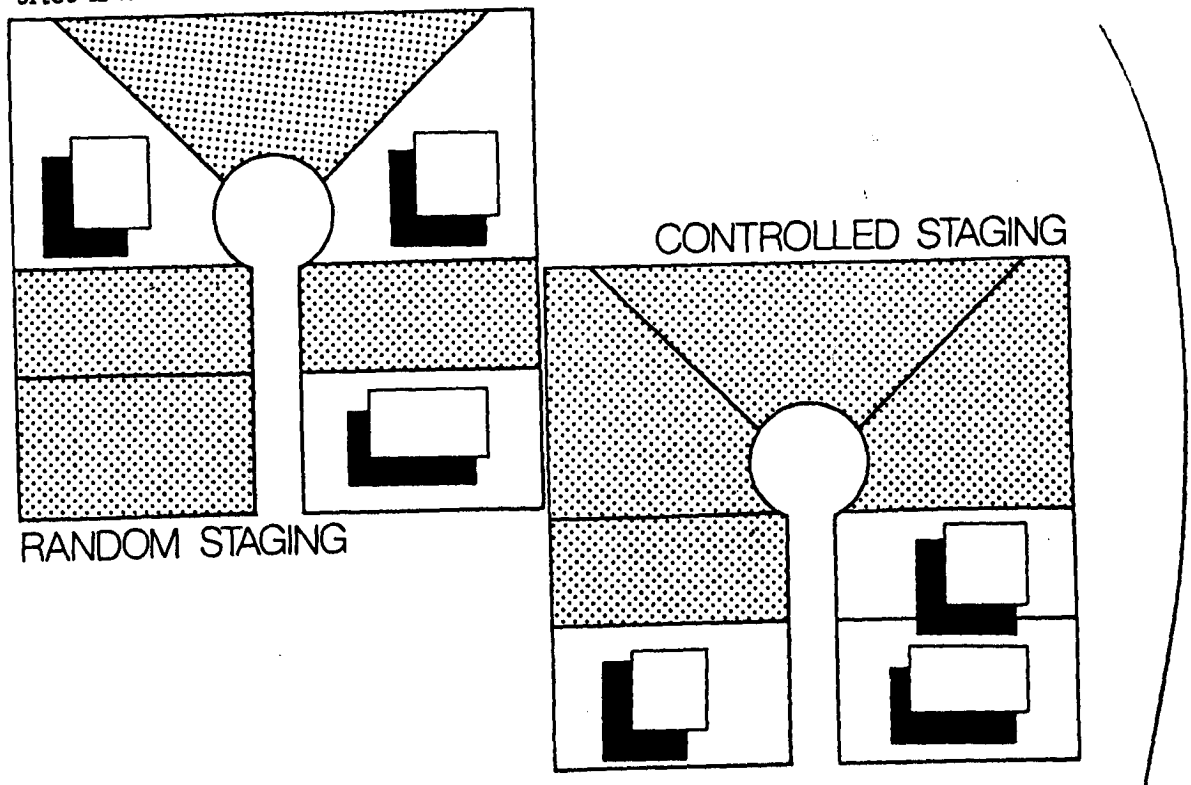
3. Encourage people already contemplating industrial park development to proceed and to design industrial parks with the potential for a range of parcel sizes.

We encountered two specific proposals (specific in terms of site, but still only in the preliminary stage) for industrial parks - the roughly 60 acre Inland Natural Gas site and a 150 acre portion of Indian Reserve No. 9, near

Westbank. The addition of both of these sites to the inventory of industrial land would give the Regional District in total more than enough land, in an adequate range of parcel sizes, to meet needs for 10 to 15 years at present absorption rates.

The two developments together would bring the total inventory of vacant, industrial land to a total of 527 acres (including developable industrial reserve). At 50 acres per year, our upper estimate of demand, this inventory would last until 1990. The Westbank proposal, in particular, could be staged in a way that would preserve for several years the ability to supply enough sites of 5 acres, 10 acres or more to meet the Region's needs.

This staging is important. If the whole industrial park is subdivided into 2 acre parcels at the outset, and then sold in a random lot-by-lot fashion, there is no flexibility to save larger parcels, even if the project takes 10 years to fill up. On the other hand, a staged sequence of subdivision and sales can meet short term needs and maintain the ability to provide larger sites if needed.



4. Require that gravel pits, when abandoned, be graded to provide potential industrial sites.

There are about 370 acres of land that are designated as gravel pits. Most of this land is in locations that would be very suitable for industrial use (good access, near industrial areas). There do not appear to be any enforced requirements that abandoned gravel pits be regraded to provide useful sites instead of useless "holes". By requiring gravel pit owners to grade the site on completion of gravel extraction, the Regional District could add substantially to the inventory of industrial land.

5. Designate lands with industrial potential as industrial reserve, to preserve the few large sites that are suitable for industrial development.

One task in our terms of reference was to identify sites that have good potential for industrial park development that could be added to the inventory of industrial land.

These sites should be designated as industrial reserves, or zoned industrial, to make sure that they are not developed with another use.

The first task in identifying sites is to select criteria -- the features that make a site suitable for industrial park development. We looked for sites that are:

(i) not in the Agricultural Land Reserve. This criteria is important for two reasons. First, the Regional District has a policy of preserving agricultural land. Second, recent applications for excluding sites from the Agricultural Land Reserve in the Kelowna area have not been very successful.

(ii) generally level.

(iii) well served by major road, and in some cases, rail access.

(iv) not likely to cause land use conflicts with present or probable future surrounding land uses. Ideally, new industrial development should be near existing industries and in locations where residential, recreational or important natural features are not likely to be negatively affected.

Our method for finding potential sites was to tour the entire Regional District, find candidate sites, and then check Agricultural Land Reserve and zoning boundaries. The Regional District is not very large, and there is not much level undeveloped land outside the Agricultural Land Reserve, so it is not surprising that we found only a handful of sites. It is also not surprising that the sites with the most potential have, at one time or another, been suggested for industrial development by other people thinking about the problem.

We found 7 parcels altogether, and one of these was very small.

The 6 key sites we identified are:

1. Lot 5, Plan 23061, District Lot 2602, on Bartley Road in Westbank. This parcel has about 50 acres near an existing industrial area. There is a gravel pit nearby and a small sawmill has opened nearby recently on a 10 acre site. The site has access to water, but has some physical constraint because of a creek bed running through it. This site has already been designated industrial (<u>but not zoned</u>) in the Region's Westside Industrial Study.

2. a 150 acre site on Indian Reserve No. 9 near Westbank. The Indian Band is apparently already doing some detailed work on development planning and feasibility studies.

3. a 35 acre parcel between Highway 97 and the C.N. Railway with frontage on Dilworth Crescent. The site is presently designated for service commercial use, although some light industrial uses could be included.

4. a triangular portion of Indian Reserve No. 7, bounded by Beaver Lake Road, Jim Bailey Road and the Canadian National Railway. Part of this site is already developed with industry, but there are about 55 vacant acres.

5. a large parcel immediately north of the Hiram Walker distillery. There are about 110 vacant acres which are apparently being held by the distillery company for possible future expansion.

6. the 60 acre Inland Natural Gas site, to the north of the distillery. There is more land to the north of the Inland Natural Gas site, that could be a later stage in development. Some of the land to the north, according to the Regional District, is currently being considered for residential use. Given the limited availability of land for industrial use, we advise the Regional District to give careful consideration to the industrial potential of this site.

These 6 sites total about 460 acres. About 210 acres are in the Westbank area and about 225 are clustered around the existing Hiram Walker distillery. The 35 acres near Dilworth are a "long shot" because the area is definitely developing as the service commercial centre of the region. The locations of the sites are shown in the map on the next page.

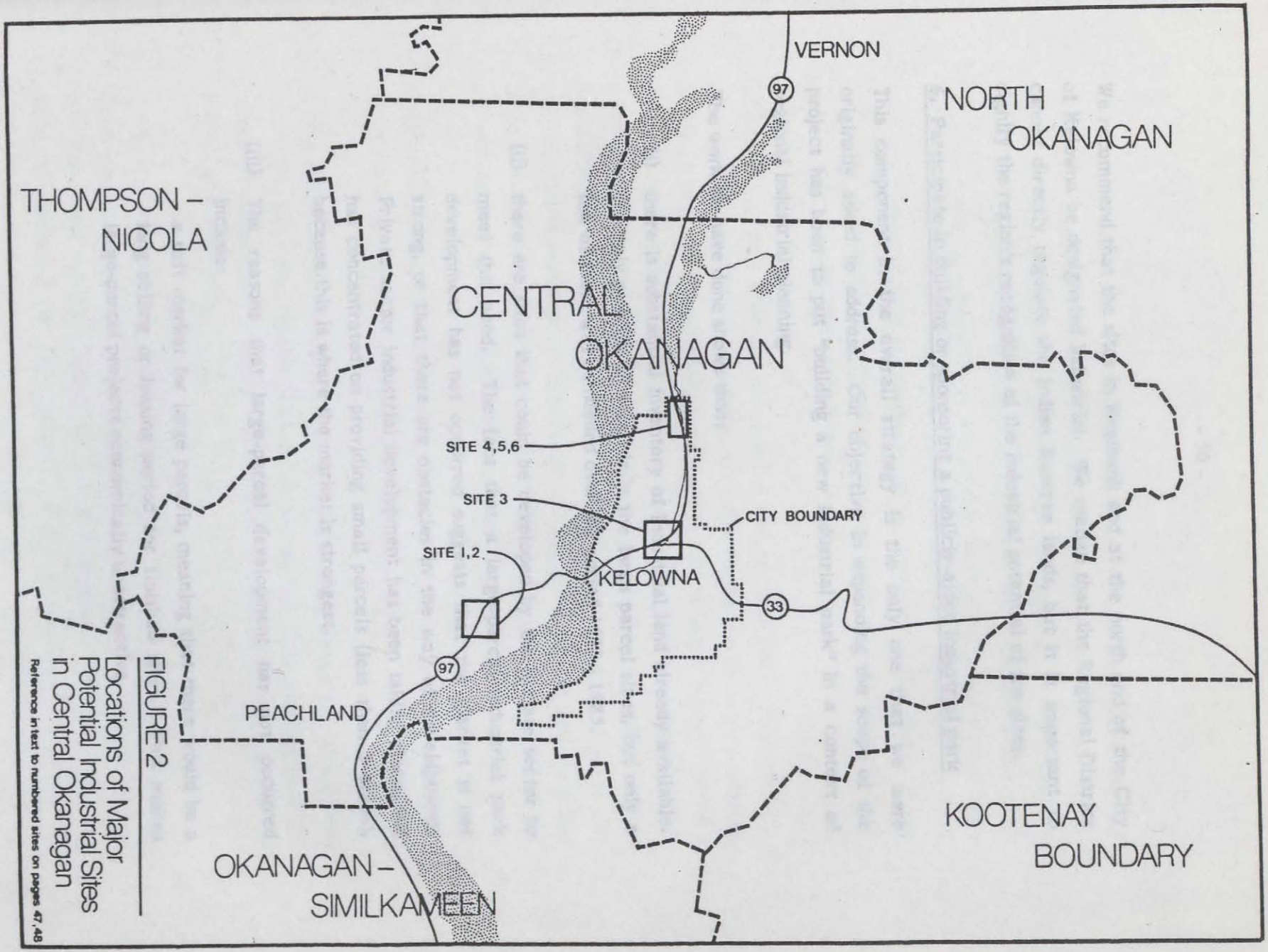


FIGURE 2

Locations of Major Potential Industrial Sites in Central Okanagan

Reference in text to numbered sites on pages 47, 48

We recommend that the sites in Westbank and at the north end of the City of Kelowna be designated industrial. We realize that the Regional District cannot directly regulate the Indian Reserve lands, but it is important to signify the region's recognition of the industrial potential of the sites.

6. Participate in building or sponsoring a publicly-aided industrial park

This component in the overall strategy is the only one that we were originally asked to address. Our objective in expanding the scope of the project has been to put "building a new industrial park" in a context of regional industrial planning.

The work we have done shows that:

(i) there is substantial inventory of industrial land already available. The only possible shortfall is in the large parcel sizes, but only a few of these will be needed over the period 1980 - 1985.

(ii) there are sites that could be developed by the private sector to meet this need. The fact that a large-parcel industrial park development has not occurred suggests that the market is not strong, or that there are obstacles in the way of development. Private sector industrial development has been taking place, but has concentrated on providing small parcels (less than 5 acres), because this is where the market is strongest.

(iii) The reasons that large-parcel development has not occurred include:

- a soft market for large parcels, meaning that there would be a long selling or leasing period for finished sites. This makes large-parcel projects economically unattractive.

- holding this soft market condition to one side, other reasons may apply to specific sites. The Inland Natural Gas site is known to be difficult to serve with water. The two sites on Indian Reserves (No. 9 in Westbank; No. 7 near the distillery) are not available to the private market on a fee simple basis but joint venture projects including the Band and private development companies could be considered. The Indian Bands apparently have development plans for the sites, but there is no publicly known time frame.

Given this context, what are the benefits and costs of public investment in an industrial park? The benefit is that the region would have a greater supply of larger industrial sites, to be held in case a larger industry seeks a Kelowna-area location. The cost is that the development would proceed in a soft market on a site that the private sector presumably currently views as uneconomical to develop. Note the tradeoff here - building a large-site industrial park provides the flexibility to accommodate the few potential large-site industries that might come to Kelowna, but at a cost that the private sector is apparently unwilling to bear.

Obviously, making a decision requires more information about costs and about the alternatives for developing an industrial park.

A new industrial park could be built on land already zoned for industry but vacant, on industrial reserve land, or on one of the sites we suggested for industrial designation. There are many sites to chose from, but the list can quickly be pared down.

First, we rule out any industrial sites less than 20 acres, so that the development can provide at least two large parcels. Next, we rule out any site that would require a major land assembly program. We eliminate these from consideration for two reasons. First, consolidating small parcels

removes them from the inventory of small sites - and these are the sites most in demand. Second, major land assembly is very costly and takes time. Imposing these minimum size and land assembly criteria reduces the eligible sites to a handful - the ones described in the previous subsection.
By concentrating on these few sites, we are looking at the properties where there is an advantage to the public sector getting involved. The advantage is in providing a large block of land, with maximum flexibility for parcel size, in an area where the private sector has been unable or unwilling to do so. Buying 20 acres in the heart of Kelowna's zoned industrial area and holding the site for a potential large industry would not add to the inventory and would not deal with any problem that the private sector is facing. The site is already available and serviced and could be purchased by an industry needing a site now. We're looking for sites that, with government assistance, can make a significant new contribution to the inventory, in size and flexibility.

The alternatives are very limited.

We suggest that the only sites worth consideration are:

(i) the Indian Reserve No. 9 site in Westbank.

(ii) the site on Bartley Road in Westbank.

(iii) the Indian Reserve No. 7 site near Winfield.

(iv) the Inland Natural Gas site near Winfield, and possibly additional land to the north.

(v) the Hiram Walker expansion area.

We can narrow the range further, though. To provide maximum flexibility, an industrial park for large-site users should have rail access. Proximity to the airport is also a major advantage. There is only one area in the Regional District that has these advantages -- the area that includes Indian Reserve

No. 7, the distillery and the Inland Natural Gas site. These sites can access the rail line and the airport without moving industrial truck traffic through central Kelowna. This location is already established as an industrial area, has excellent topography and is well served by major roads. It has the major advantage of combining three potential industrial sites (Indian Reserve No. 7, Hiram Walker expansion and the Inland Natural Gas site). Any infrastructure upgrading (better road access, rail spur, water or sewer improvements) done for any one site can be designed to accommodate the needs of all three. This is the only area where a public investment to directly improve one site will also benefit others.

While industrial development could proceed on any of the three sites, they are not equally suited to an industrial park project in the short term. The distillery apparently wants to hold on to its expansion area. The Indian Reserve site would require special arrangements and negotiations that a private market site would not.

Our conclusion is that the only site in the Regional District worth considering as a government funded industrial park in the immediate future is the Inland Natural Gas site, plus possibly some additional land to the north. Any servicing or access improvements will benefit Indian Reserve 7 for possible development, and a strong case could be made for cost sharing. If Hiram Walker benefits from improvements (either for its own expansion or, conceivably, a future alternative industrial use for its expansion reserve), again a case can be made for cost sharing. Eventually the entire area should develop as an industrial district. However, recognizing that the demand for larger sites is not that strong, it would be expensive to bring on stream too much land in the short term.

In the next section we present detailed information on a possible industrial park development on the recommended site.

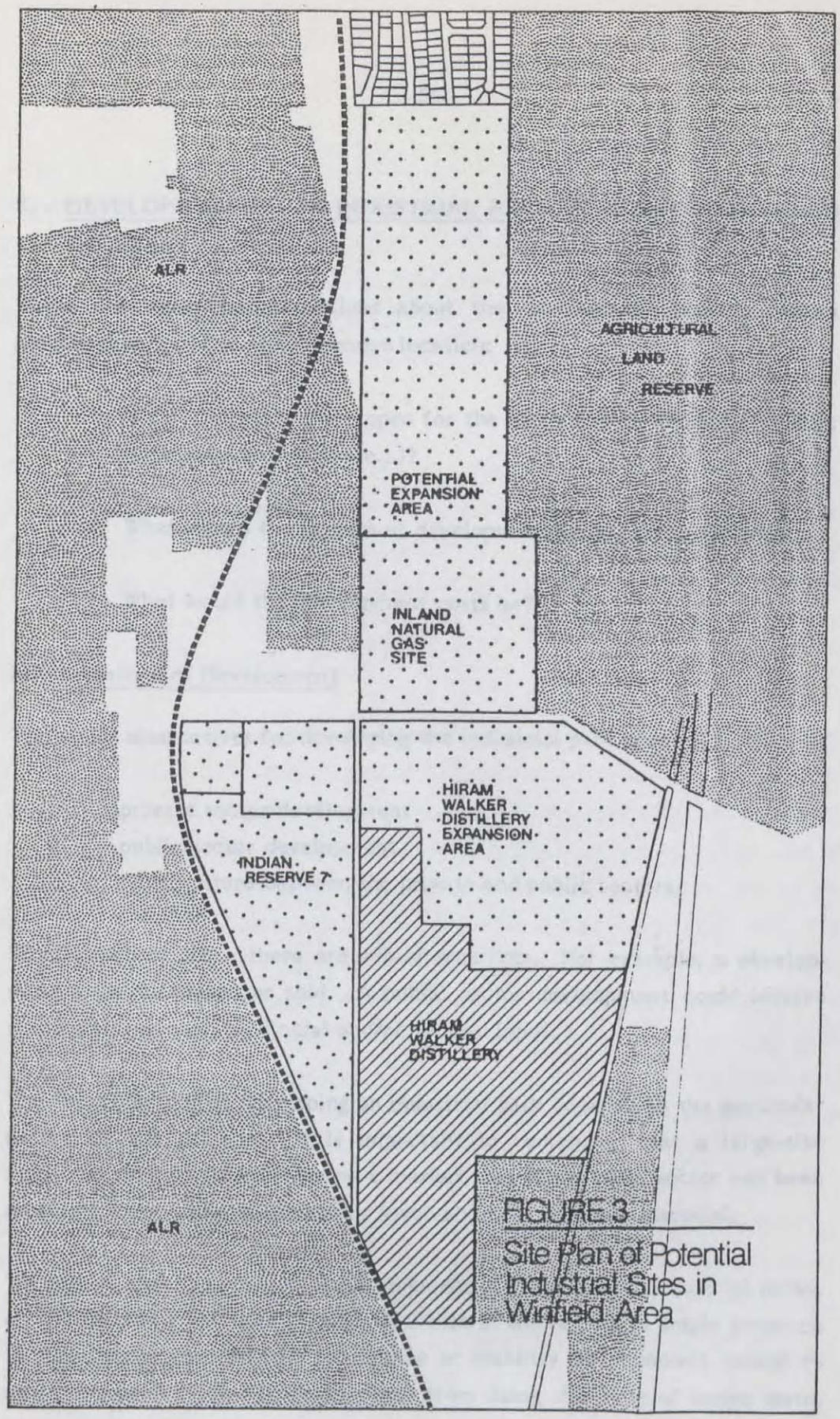


FIGURE 3

Site Plan of Potential Industrial Sites in Winfield Area

8. DEVELOPMENT OF AN INDUSTRIAL PARK IN THE RECOMMENDED LOCATION

There are three main questions about the development process for an industrial park in the recommended location:

1. What alternatives are open for the method of development (public or private, sale or lease...)?

2. What should the pattern of development be (lot sizes, staging)?

3. What would the development costs be?

8.1 Method of Development

The major alternatives for developing the industrial park are:

- private sector development
- public sector development
- joint venture between the private and public sectors.

Within each of these there are sub-alternatives. For example, a development could be leased or sold. A public sector development could involve municipal, regional, provincial and/or federal input.

The "best" method of developing an industrial park depends on the particular nature of the project. It is important to remember that a large-site industrial park would be entering a market that the private sector has been unwilling to, so some public sector involvement is probably essential.

We believe that the absence of development of large-parcel industrial parks, on the recommended site or anywhere else in the region, is ample evidence to show the private sector's reluctance or inability (in economic terms) to meet this need. The economic return from doing this type of longer term,

large-parcel development is not as strong as a shorter-term, smaller-site project, and the indirect benefits (industrial opportunity, employment growth) accrue to the region, not to the developer. Therefore, if the desired large-parcel development is going to proceed in the short-term, (that is, rather than waiting until market conditions change), the public sector is going to have to get involved.

The basic choice for the public sector is whether or not to directly develop the project or to participate in a joint venture. This choice is influenced by: the kinds of government programs available; the level of funding available; the expertise of the government level or agency that would be responsible; and the political preference of those making the decision (e.g. pro-government involvement).

The region wants large sites available to accommodate possible industries. The region must want this potential because of jobs, investment and tax revenue that would result. However, there will be a cost attached to having this flexibility and this cost will show up principally as the carrying cost of developing the site and then holding sites exclusively for larger industries. A private sector developer would have objectives that were quite different from the region's. In a joint venture arrangement, the private developer would require compensation to offset the holding costs of keeping large sites available. This suggests the difficulty there would be in structuring a joint venture relationship -- there would be a need for very special financing and profit sharing arrangements that would amount to a direct subsidy of the private developer's holding costs.

We think that these factors suggest that direct government effort to develop the project is the only way that a large-site industrial park is likely to be built in the short-term. Deciding which level or levels of government should be involved depends on funding availability and probably on detailed negotiations between levels of government.

The City of Kelowna is already active in developing and marketing industrial sites. The British Columbia Development Corporation, at the provincial level, is also active in building industrial parks. Given that the Regional District has no direct development experience, close co-operation, or even complete management, by the City and/or the province would be a major asset.

On balance, we suggest that the preferred sequence in the development process is:

(i) designate the site, and potential expansion area to the north, as industrial reserve.

(ii) identify the level, or combination of levels, of government that would fund, own, develop and market the project.

(iii) purchase the Inland Natural Gas site and obtain a longer term option on the potential expansion area to the north.

(iv) develop and market the Inland Natural Gas site.

(v) depending on the success of this first stage, decide whether or not to exercise the option on the expansion area.

9.2 Pattern of Development

The Inland Natural Gas site can be subdivided to provide these features, as shown in the schematic site plan on the next two pages:

- large parcels (say 5-15 acres each), each of which could be easily subdivided into smaller sites if necessary.

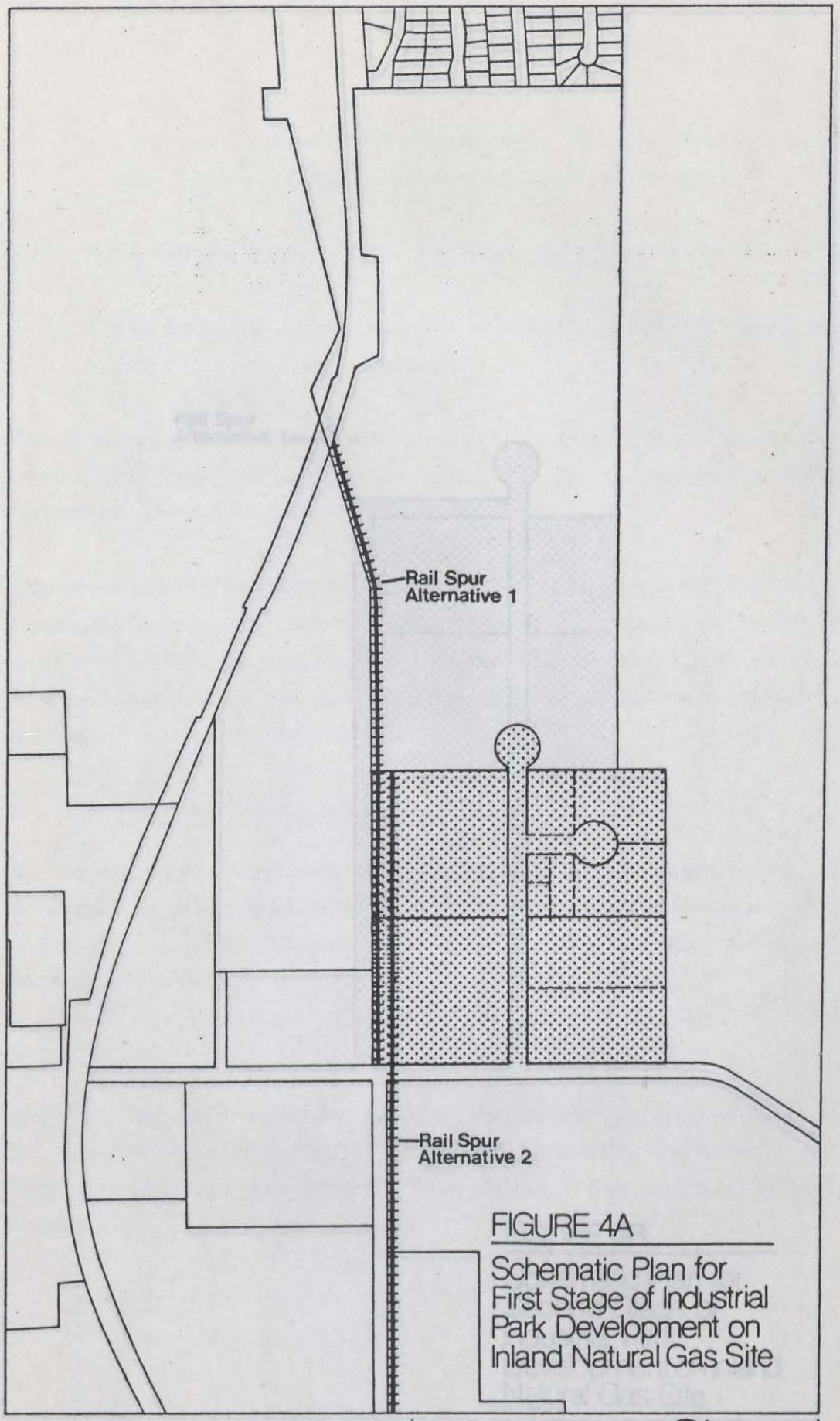


FIGURE 4A

Schematic Plan for First Stage of Industrial Park Development on Inland Natural Gas Site

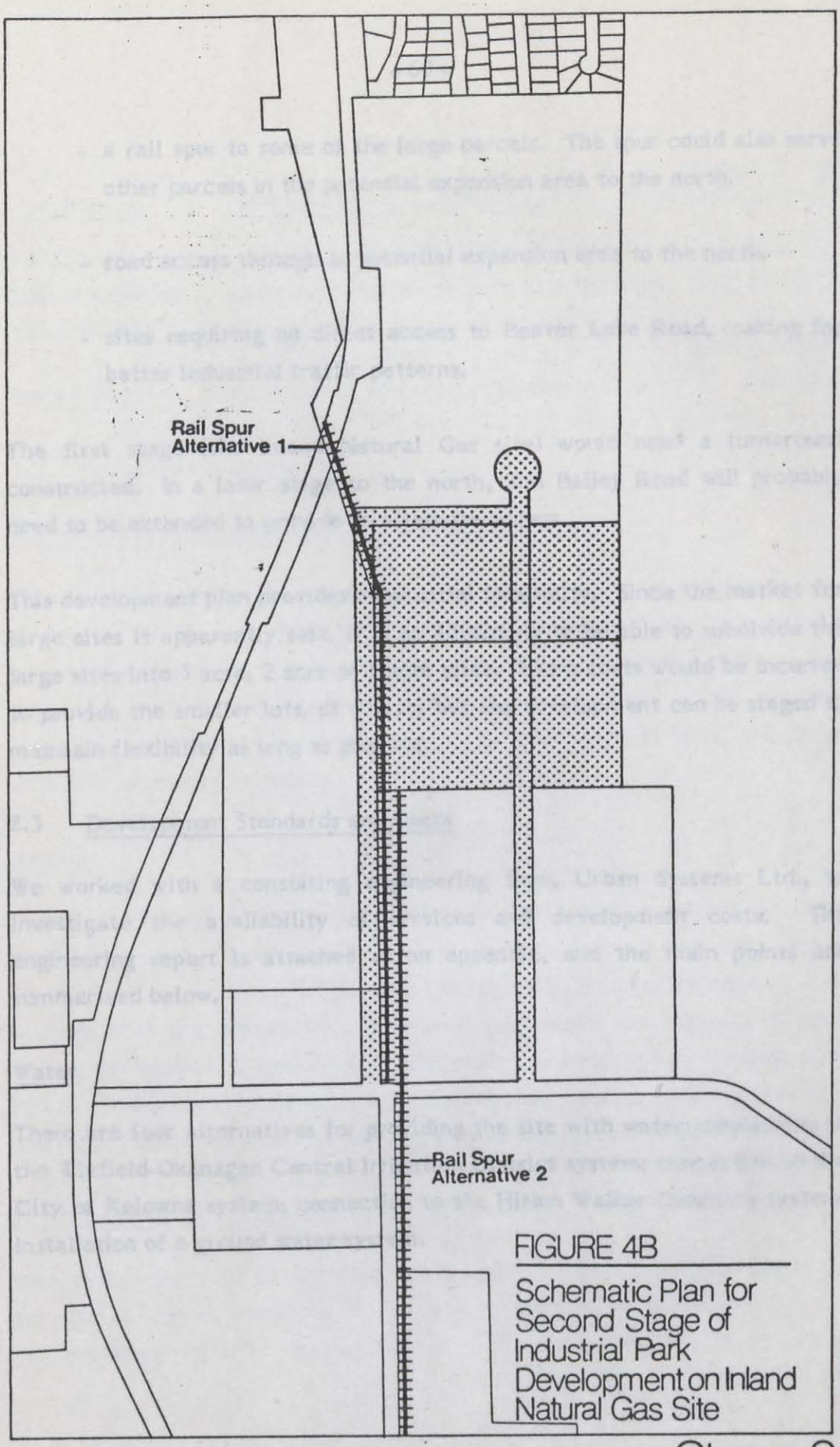


FIGURE 4B

Schematic Plan for Second Stage of Industrial Park Development on Inland Natural Gas Site

- a rail spur to some of the large parcels. The spur could also serve other parcels in the potential expansion area to the north.

- road access through to potential expansion area to the north.

- sites requiring no direct access to Beaver Lake Road, making for better industrial traffic patterns.

The first stage (the Inland Natural Gas site) would need a turnaround constructed. In a later stage to the north, Jim Bailey Road will probably need to be extended to provide an alternate access.

This development plan provides substantial flexibility. Since the market for large sites is apparently soft, it is an advantage to be able to subdivide the large sites into 5 acre, 2 acre or 1 acre sites. Extra costs would be incurred to provide the smaller lots, of course, but the development can be staged to maintain flexibility as long as possible.

8.3 Development Standards and Costs

We worked with a consulting engineering firm, Urban Systems Ltd., to investigate the availability of services and development costs. The engineering report is attached as an appendix, and the main points are summarized below.

Water

There are four alternatives for providing the site with water: connection to the Winfield-Okanagan Central Irrigation District system; connection to the City of Kelowna system; connection to the Hiram Walker Distillery system; installation of a ground water system.

Option	Likelihood of Implementation	Estimated Cost of Construction (1.)
W.O.C.I.D.	Low, but warrants further evaluation	$ 1,800,000
City of Kelowna	Low, due to distance from existing lines	$ 2,500,000
Hiram Walker	Low, due to distillery's reluctance to become a utility	$ 200,000 (plus storage)
Ground water	Fairly good, subject to detailed testing	$ 785,000

(1.) See details in Appendix.

Sanitary Sewer, Industrial Wastes and Storm Drainage:

On-site ground disposal methods are the best way to handle these discharges. The soils in the area drain so well, though, that there is some danger of contaminating ground water sources with industrial wastes. The industrial park development, therefore, would be best suited to light industrial, warehouse or distribution uses that do not generate large quantities of industrial waste.

Roads:

Beaver Lake Road is the main access to the area, and it would have to be upgraded along the frontage that is developed. On- and off-site roads should be 36 feet in width with curb and gutter on developed frontages. It is possible that the intersection of Beaver Lake Road and Highway 97 may need improvement, if industrial development proceeds, but no detailed work has been done on this. The intersection already handles industrial traffic, and a new industrial park may not add a significant proportionate increase.

On-Site Servicing Costs:

Site costs vary with the lot size and overall development size. Since the purpose of the development is to provide large sites for industries, we suggest using costs for development of 5 to 10 acre lots in a total site of

about 60 acres. Some lots may be larger, so this cost estimate may be on the high side. We need to make some assumptions about servicing standards; these are:

i) no sanitary sewer collection or treatment.

ii) 36 foot paved roadways with curb and gutter both sides.

iii) storm sewer collection and disposal to the ground via drywells.

iv) no major site grading is required.

v) construction is to City of Kelowna standards.

vi) lot services are 150 millimeter diameter.

vii) curb costs for underground power and telephone to B.C. Hydro and B.C. Telephone standards. Developer cash-contributions are not included.

viii) ornamental street lights are included.

ix) engineering and contingencies are included.

x) Beaver Lake Road upgrading is included, but not upgrading of intersection of Beaver Lake Road and Highway 97.

xi) power line right-of-way to be re-aligned by others.

xii) property is developed in large sections and,

xiii) 1980 construction costs are utilized.

Based on the above assumptions, the engineers prepared an estimated range of on-site costs, showing how costs would vary with overall development size and individual lot size.

The following chart indicates that development costs, on a per-acre basis, decrease significantly with lot size and with total project size. These costs include the off-site cost of upgrading Beaver Lake Road (but not changes to the intersection of Beaver Lake Road and Highway 97).

Lot Sizes	Per Acre Costs for Total Development of 30 Acres	Per Acre Costs for Total Development of 60 Acres
2 acres	$14,200 - $15,000	$12,500 - $13,800 (per gross acre)
5 acres	$10,500 - $11,300	$ 8,900 - $10,000
10 acres	$ 8,100 - $ 8,900	$ 6,700 - $ 7,900

(Note: These figures are taken from the engineering report in the appendix, in which metric units are used. In this chart, areas are rounded to the nearest acre).

Total Development Costs

Working from the estimates of servicing costs, and estimating other costs using typical development standards, we have prepared an estimated cost of developing the large-site industrial park. This estimate is shown in Table 13.

This is a rough estimate only of the major costs in developing the project. Some costs will require more detailed work before the actual total cost can be calculated. For example, the land cost is shown as a range of $25,000 - $30,000 per acre for raw land, as there is some recent activity in the market that suggests these values. The market for raw land is apparently changing rapidly, though, and the actual price paid to the owner (particularly because this could be some time in the future) may vary significantly from this estimate.

The costs do not include an allowance for financing, sales commissions, or developer's profit. These could be calculated for a private sector development, but a government project would face different costs and different expectations about profit. These additional costs, where applicable, should be added in by the public developer.

One additional cost that warrants careful consideration is the cost of holding the project during the time between completion of construction and sale or lease of sites. The opportunity cost of sitting on the finished industrial park, waiting for large-site users, is about $630,000 (say $3.5 million at 18%) per year.

TABLE 13

ESTIMATED DEVELOPMENT COSTS
FOR POSSIBLE LARGE-SITE INDUSTRIAL PARK ON
INLAND NATURAL GAS SITE, KELOWNA, B.C.

1.	Land [a]	$1,500,000 - $2,000,000
2.	On-site servicing and upgrading Beaver Lake Road [b]	$ 540,000
3.	Rail spur [c]	$ 400,000
4.	Water [d]	$ 785,000
5.	Project management [e]	$ 105,000
6.	Total of major development costs [f]	$3,330,000 - $3,830,000

(a) assuming a range of $25,000 to $35,000 per acre for raw land; based on some recent activity, but apparently market conditions are changing rapidly -- some sales as high as $40,000 per acre have been reported.

(b) including engineering and contingency calculated using engineer's high estimates of $10,000 per acre (for 5 acre lots) over 30 acres plus $7,900 per acre (10 acre lots) over 30 acres. The per acre costs are the engineers high estimates for the respective parcel sizes over a total development of 60 acres. The mix of parcel sizes provides a higher estimate of cost than a straight 10 acre lot subdivision would.

(c) we received estimates ranging from $75 to $100 per lineal foot, depending on construction standards. The length of the spur could vary from about 3,000 feet (coming from the south) to 4,000 feet (coming from the north). We have used the high estimate here (4,000 feet @ $100 per foot).

(d) based on the ground water alternative; it is important to remember that $500,000 could be saved by working out a deal with Hiram Walker.

(e) at 6% of costs other than land.

(f) in 1980 dollars; no allowance for financing, developer's profit, sales commissions or minor costs such as taxes during construction, insurance during construction.

APPENDIX

urban systems ltd.
CONSULTING ENGINEERS AND PLANNERS

December 11, 1980 Our File: KE-80-A532

Cumberland Realty Group Ltd.
1700-650 West Georgia Street
P.O. Box 11543
Vancouver, B.C.
V6B 4N7

Att'n: Mr. J. Wollenberg

Dear Sir:

Re: Preliminary Engineering and Servicing Analysis of C.O.R.D. Industrial Site

Attached herewith, please find enclosed one copy of our report concerning the above noted evaluation.

As discussed, we have not received adequate information on a groundwater source for this area and once received, we will submit further information on the water supply to the site.

Should you have any questions, please contact the undersigned.

Yours truly

URBAN SYSTEMS LTD.

T.W. Gowing, P. Eng.

TWG/fr

Encl.

FOLLOW-UP LETTER ATTACHED.

#214 - 1626 RICHTER STREET, KELOWNA, B.C. V1Y 2M3 TELEPHONE (604) 762-2517

Preliminary Engineering and Cost Evaluation of a Proposed Industrial Site near Winfield, B.C., prepared for the Cumberland Realty Group Limited

Table of Contents

By Urban Systems Ltd.
December, 1980

1) INTRODUCTION

Attached as Appendix 1, is a terms of reference for a preliminary engineering and cost analysis of a potential industrial park development near Winfield. The site is being evaluated by the Cumberland Realty Group Ltd., for the Central Okanagan Regional District.

The following report by Urban Systems Ltd. summarizes the results of the preliminary engineering and cost analysis study. Additional information in the area of a groundwater supply for domestic water is currently being gathered, and once the information is evaluated, we will submit a letter amendment concerning this alternative.

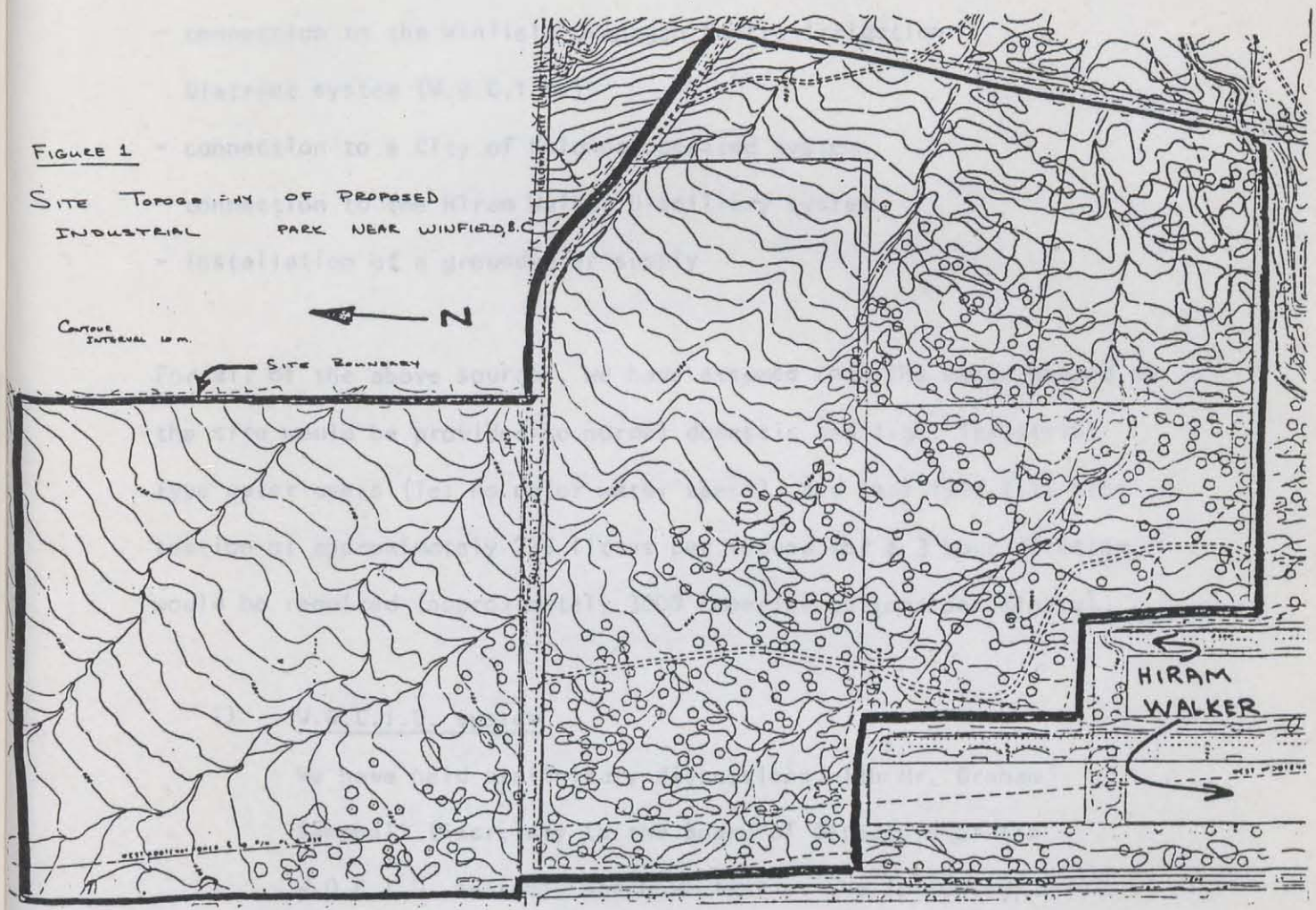
The potential development site is situated on either side of the Beaver Lake Road, located approximately one kilometer east of Highway 97 through Winfield, B.C..

Of the total of sixty-nine (69) hectares of total developable land, twenty-four (24) hectares lie to the north of the Beaver Lake Road, and fourty-five (45) hectares lie to the south. The land is included in the municipal boundaries of the City of Kelowna.

Attached as Figure 1, is a topography map of the site that has been evaluated in this report.

FIGURE 1

SITE TOPOGRAPHY OF PROPOSED INDUSTRIAL PARK NEAR WINFIELD, B.C.



II) WATER SUPPLY

We have investigated four different sources for water supply at the proposed industrial park and these are:

- connection to the Winfield-Okanagan Centre Irrigation District system (W.O.C.I.D.)
- connection to a City of Kelowna operated system
- connection to the Hiram Walker Distillery system
- installation of a groundwater supply

For all of the above sources, we have assumed that the water demand on the site would be provided to normal domestic and light industrial type water users (ie: no major water users), and that full fire protection of approximately 225 litres per second for a 3 hour duration would be required (approximately 3000 Imperial gallons per minute).

i) W.O.C.I.D. system

We have held preliminary discussions with Mr. Graham Campbell (Secretary to the Board of Directors of the W.O.C.I.D. system), and have learned the following:

- That the W.O.C.I.D. currently has requests for water to service approximately 240 hectares of land that is within their existing service boundaries, and that that they have adequate existing capacity on their system to service approximately 60 hectares.

- That the Inland Natural Gas and the Hiram Walker potential industrial sites along Beaver Lake Road, are outside of the W.O.C.I.D. servicing boundary, and that first preference will be given to water users within their boundaries.

- That to service the 240 hectares of land within their boundaries plus the potential industrial sites along Beaver Lake Road, will require a major system expansion. The suggested cost of this expansion would be in the neighbourhood of $3,250,000*, which would provide water for approximately 350 hectares. The portion of this cost that might be attributable to the potential industrial site was suggested at approximately $1,800,000.

*taken from May 1979, report and inflated to current day costs.

- That a 800 millimeter high pressure water main is located on Beaver Lake Road, and is the main W.O.C.I.D. supply line.

- That the Irrigation District would not be interested in selling water to the City of Kelowna, and having them in turn sell the water to the industrial users.

We believe that the W.O.C.I.D. alternative should be evaluated further, and possibly an approach by the Regional District may initiate a more precise direction and cost proposal.

ii) City of Kelowna System

The Beaver Lake Road industrial site lands lie within the municipal boundaries of the City of Kelowna, however the closest point of a City of Kelowna operated water system is approximately 15 kilometers. At least four irrigation districts (not including W.O.C.I.D.) lie closer to the site than the existing City system, but we have not evaluated these systems or inquired as to their ability to service additional lands, due to our understanding of the problems involved with "umbilical cord" type extensions to these water systems.

A very rough estimate of the cost of extending the City of Kelowna system to the Beaver Lake Road industrial site would be $2,500,000, and this would not include any upgrading of the existing infrastructure, nor a reservoir for fire protection at the site.

iii) Connection to the Hiram Walker System

We have had discussions with Mr. M. Sekela (manager) and Mr. B. Davidson (plant engineer), concerning the possible supply of water from the Hiram Walker system for a possible 70 hectare industrial site. Both parties were very negative towards the supply of water for the industrial site, although they were careful to point out that an official statement would have to be requested by letter from their head office. The Hiram Walker water system, pumps water out of Okanagan Lake into a storage reservoir located between the lake and Highway 97, and then supplies the distillery with a 860 millimeter pipeline. The distillery process currently utilizes less than one-half of the system capacity, and there is more than ample water to service the potential industrial site.

The problems and concerns pointed out by the noted officials relate to the following:

- undesirable for a manufacturing company to become a public utility
- labour disputes could possibly result in the erratic operation of the system and would therefore make it impossible for Hiram Walker to guarantee a water supply at all times
- future expansion of the distillery will use up some of the excess capacity that currently exists.

If the Hiram Walker system could be utilized as a source of water for the proposed development, then the costs of extending a main to service the property would be in the order of $200,000. The annual costs for water purchase, plus the possible necessity for a storage reservoir, would have to be negotiated with Hiram Walker.

and iv) Groundwater Supply

Due to the cost and political problems associated with the above, we have decided to investigate a groundwater source for the property in more detail, and as such, we have not yet received adequate information for this report. Once received, we will submit a letter outlining our findings.

III) SANITARY SEWERS, INDUSTRIAL WASTES AND STORM DRAINAGE

We have considered sanitary sewers and storm drainage in the same section of this report, as we believe that both are best handled by on-site ground disposal methods.

The Ministry of Agriculture's "Soil Survey of the Okanagan and Similkameen Valleys of British Columbia", identifies the soil structure of the property in question as "colluvial fan rubble". Colluvial fan rubble consists of angular rock fragments and water-rounded stones and gravel mixed with varying amounts of soil. Natural vegetation on these fans consists of the grasses or trees of the zone in which the fan occurs, and as a general rule, the density of growth is light, which is a result of excessive drainage. There is usually a reduction in the stone content from the valley neck downward on the slope, and an increase in the content of the soil. Therefore the soil percolation rates can vary on the site in question between 0.4 and 4 minutes per centimeter (1 and 10 minutes per inch).

i) Sanitary Sewage/Industrial Wastes

A discussion with the local Health inspector for the Winfield area (Mr. Cawston), has indicated that on-site septic tanks and tile fields for domestic sewage would be permissible for a range of lot sizes between 0.5 hectares and 4 hectares. However, on-site ground

disposal of industrial wastes would not be allowed without some form of acceptable pre-disposal treatment, as problems have surfaced on adjacent industrial properties. It appears as though the industrial waste effluent of a nearby fiberglass manufacturing plant has contaminated private water wells in the area. Apparently the drainage is so good on these "colluvial fan rubble" deposits, that groundwater movement is very direct and very little "natural" treatment occurs to certain types of effluents. For this reason, the suggested mix of "light industrial, warehouse, and distribution uses", appears to be a logical type of development for the property in question, as long as industrial quality wastes requiring disposal to the ground are not generated.

Our cost estimates that are contained in a latter part of this report assume that there will not be a sanitary sewage collection system for this project.

ii) Storm Drainage

As there is no water course nearby that lends itself to an economical gravity storm sewer outfall scheme, and since the on-site soil percolation rates appear satisfactory for ground disposal of surface waters, we

suggest that an internal drainage system complete with curb and gutter be installed. This internal system would be designed for on-site disposal of the accumulated storm waters.

The cost estimates that are included in this report assume City of Kelowna design standards for storm sewer systems.

IV) ROADWAYS

Discussions with the City of Kelowna have concluded that on-site and off-site roadways would require 11 meter carriage ways with curb and gutter on both sides of the road.

The off-site roadway noted above refers to that section of the Beaver Lake Road that divides the "Inland Gas" and "Hiram Walker" properties, and that would require upgrading along the entire property frontage that is developed. Should either half of the site develop (ie Inland Gas side or Hiram Walker side), then the Beaver Lake Road upgrading requirement would be curb, gutter, and storm drainage on one side (development side), and 7.5 meters of roadways paving and upgrading.

Costs for the required on-site and off-site roads have been included in the cost estimates that are in a latter section of the report.

V) ON-SITE COST ESTIMATES

We have based the following cost estimates on typical industrial projects that we have been involved with in the South Central Interial of B.C. in the last two years, plus a unit price servicing analysis of hypothetical 0.8 hectare, 2.0 hectare, and 4.0 hectare industrial layouts on the site.

Similar Projects

Over the past two years our Company has been involved with the followging projects:

1) D.N.D. Industrial Subdivision - Kamloops, B.C. - May, 1979

   Size = 14 hectares (gross) with 25 lots ranging in size from 0.35 hectares to 0.81 hectares.

   Servicing = 11 meter paved roads with curb and gutter, street lighting, underground power and telephone, sanitary sewer, domestic water, storm sewer

   Cost per hectare (on-site) - $40,500 per hectare (May, 1979)

   Comments - have not included site grading costs, water booster station costs, or off-site costs.
   - costs include engineering
   - 10% should be added for current day comparison therefore, equating to a cost of $44,600 per hectare in 1980 dollars.

2) Oliver Industrial Park (Phase 1) - Oliver, B.C. - September, 1980

Size = 4.5 hectares (gross) with 16 lots ranging in size from 0.15 hectares to 0.40 hectares

Servicing = 7.5 meter paved roads with ditch drainage, domestic water, sanitary sewer, overhead power and telephone

Cost per hectare (on-site) = $35,000 per hectare (September, 1980)

Comments - smaller light industrial parcel sizes than those proposed for C.O.R.D. study
- costs include engineering
- servicing not as extensive as required in Kelowna

3) Osoyoos Industrial Park (Phase 1) - Osoyoos, B.C. - November, 1980

Size = 13.4 hectares (gross) with 16 lots ranging in size from 0.60 hectares to 0.81 hectares

Servicing - 7.5 meter paved roads with ditch drainage, domestic water, sanitary sewer, overhead power, underground telephone

Cost per hectare (on-site) = $28,200 per hectare (November, 1980)

Comments - servicing is not as extensive as required in Kelowna
- costs include engineering
- excludes site grading and highway widening costs

and 4) South Kam Estates - Kamloops, B.C. - October, 1980

Size = 12.2 hectares (gross), 36 lots ranging in size from 0.2 hectare to 0.5 hectare.

Servicing = 7.25 meter paved roads with domestic water, ditch drainage, septic tanks, overhead hydro and telephone

Cost per hectare (on-site) = $30,500 per hectare October, 1980)

Comments - excludes site grading and off-site water
- includes engineering costs

The examples given above are based on developments that are smaller than the proposed Beaver Lake Road subdivision, and on an average lot size that would also be much smaller. In order to use the above average development costs as they relate to the proposed development on Beaver Lake Road, we prepared three hypothetical subdivision layouts based on lot sizes of 0.8, 2.0 and 4.0 hectares. We then estimated costs for these layouts assuming:

i) no sanitary sewer collection or treatment

ii) 11.0 meter paved carriage ways with curb and gutter both sides

iii) storm sewer collection and disposal to the ground via drywells

iv) no major site grading is required

v) construction is to City of Kelowna standards

vi) lot services are 150 millimeter diameter

vii) curb costs for underground power and telephone to B.C. Hydro and B.C. Telephone standards. Developer cash-contributions are not included.

viii) ornamental street lights are included

ix) engineering and contingencies are included

x) Beaver Lake Road upgrading is included

xi) Power line right-of-way to be re-aligned by others

xii) that the property is developed in large sections

and xiii) 1980 construction costs are utilized

The alternates and their projected development costs are:

0.8 Hectare Alternate

Gross size is 69 hectares with approximately 70 lots varying in size from 0.8 to 1.5 hectares, with the majority at 0.8 hectare sizing.

Cost per hectare - $32,000

2.0 Hectare Alternate -

Gross size is 69 hectares with approximately 30 lots varying in size from 2.0 to 2.4 hectares with the majority at 2.0 hectare sizing.

Cost per gross hectare = $22,500

4.0 Hectare Alternate -

Gross size 69 hectares with approximately 14 lots varying in size from 4.0 hectares to 4.9 hectares, with the majority at a 4.0 hectare sizing.

Cost per gross hectare = $17,200

From reviewing the above alternates, we suggest the following:

A) That for a development of about 25 hectares in component size, a range for on-site development costs based on the noted assumptions, would be:

0.8 hectare size - $31,000 to $34,000 per gross hectare

2.0 hectare size - $22,000 to $25,000 per gross hectare

4.0 hectare size - $16,500 to $19,500 per gross hectare

and B) For a development of about 12 hectares in component size, that a range for on-site development costs based on the noted assumption, would be:

0.8 hectare size - $35,000 to $37,000 per gross hectare

2.0 hectare size - $26,000 to $28,000 per gross hectare

4.0 hectare size - $20,000 to $22,000 per gross hectare

It should be noted here that the above development scenarios assume that the majority of the lots (90% or better) are at the noted lot size (0.8, 2.0, or 4.0 hectares), and if the average lot size deviates from the scenario size, then the development costs can vary drastically.

An average cost per meter for internal roadway servicing including: 11.0 meter carriage way, curb and gutter both sides, domestic water, storm drainage with drywell disposal, underground power and telephone, and engineering and contingencies, would be $550 per meter.

urban systems ltd.
CONSULTING ENGINEERS AND PLANNERS

January 27, 1981 Our File: KE-80-A532

Cumberland Realty Group
1700 - 650 West Georgia Street
P.O. Box 11543
Vancouver, B.C.
V6B 4N7

Att'n: Mr. J. Wollenberg

Dear Sir:

Re: Preliminary Engineering and Servicing Design Analysis of C.O.R.D. Industrial Site - Water Supply Amendment

Further to our report submission dated December 11, 1980, we wish to advise that we have recently received groundwater log information for the Winfield-Beaver Lake Road area from the Provincial Government, and are now in a position to make our preliminary comments on a groundwater supply for the proposed site. We have also had a brief discussion with a consulting groundwater geologist, in order to confirm and substantiate our preliminary conclusions.

The following are the assumptions that we have used in formulating our groundwater supply alternative:

- Assumed that an average per hectare water requirement based on a 24 hour operating day is 33,700 liters/day (3000 I. gal./acre/day). Industrial land average water supply requirements can range from 11,200 liters/hectare/day to 561,000 liters/hectare/day (1000 to 50,000 I. gal./acre/day), and due to the proposed light industrial use of the noted lands, we have assumed the 33,700 liters/hectare/day figure.

- Maximum day requirements are 50 percent greater than the average day, and peak hour requirements are 50 percent greater than the maximum day.

- Water supply is designed for maximum day flows and peak hour flows are to be stored in a reservoir along with the fire flows. Fire flows are 225 liters/second for a 3 hour duration (3000 I. gal./minute). Therefore the maximum day pump requirement for this site is 40 liters per second (530 I. gal./minute).

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Re: Preliminary Engineering and Servicing Design Analysis
of C.O.R.D. Industrial Site - Water Supply Amendment

- Total site storage requirement is 2730 cubic meters (600,000 I. gal.).

From our discussions with the groundwater geologist, we have deduced that the 40 liter per second maximum day water supply requirement can probably be achieved from two wells on the site. We have assumed that the wells would be constructed at one time, and the following is our estimated spring 1981 construction costs for these wells:

Test hole drilling and well development	-	$ 40,000
Structural components for two wells	-	66,000
Mechanical and electrical components for two wells	-	64,000
Instrumentation and controls	-	10,000
350 meters of watermain interconnection	-	26,000
20% engineering and contingencies	-	41,200
TOTAL		$247,200

In addition to the above and in addition to all water system alternatives, would be the previously mentioned 2730 cubic meter reservoir. The following is a 1981 construction cost estimate for this reservoir, assuming a concrete structure and average soil conditions:

- Site preparation	-	$ 6,000
- 2730 cubic meter concrete reservoir	-	390,000
- Valve chamber and control valving	-	15,000
- 300 meter supply main from development to reservoir site	-	35,000
- 20% engineering and contingencies	-	89,200
TOTAL		$535,200*

*this total does not include land acquisition for reservoir siting, or for supply main easements, nor does it include a legal surveying estimate.

A groundwater supply appears to be the most obvious choice of water supply for the noted industrial development, when all political, technical, and economic concerns are considered. However, the exactness involved with the prediction of groundwater sources and estimated supplies, is not one with a high level of confidence, and we must caution that exploratory drilling should be carried out on the site, to remove any doubts that may exist.

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Re: Preliminary Engineering and Servicing Design Analysis
of C.O.R.D. Industrial Site - Water Supply Amendment

Also, we have not considered the water supply and water storage phases that may accompany a phased industrial development, as this is outside of our terms of reference.

Should you have any questions on the above, please feel free to contact the undersigned.

Yours truly

URBAN SYSTEMS LTD.

T.W. Gowing, P. Eng.

TWG/fr