



# TWIN VALLEY RESORT



## AREA STRUCTURE PLAN

**LEE MAHER**  
ENGINEERING ASSOCIATES LTD.



**AREA STRUCTURE PLAN**  
**FOR**  
**TWIN VALLEY RESORT**  
**M.D OF WILLOW CREEK No. 26, ALBERTA**

**Ptn. Of W ½ Section 13-15-26-W4M**

**E ½ section 14-15-26-W4M**

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**Prepared for:**

**TWIN VALLEY RESORT LTD.**

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# TWIN VALLEY RESORT AREA STRUCTURE PLAN

## **1 INTRODUCTION**

### **1.1 Purpose**

The purpose of this area structure plan ("ASP") is to provide the statutory framework for the subdivision and development of Twin Valley Resort in accordance with:

- 1.1.1 Part 17 of the Municipal Government Act
- 1.1.2 The Land Use Policies
- 1.1.3 The Little Bow River Project Intermunicipal Development Plan, and

be implemented by way of the Municipal District of Willow Creek #26 Land Use Bylaw (No. 1250)

### **1.2 Location**

- 1.2.1 Twin Valley Resort consists of approximately 555 acres located on the west side of Twin Valley Reservoir, 13 kilometres east of Parkland, Alberta.

See Figures 1 and 2

- 1.2.2 Twin Valley Resort contains approximately 235 acres adjacent to the reservoir and a further 320 acres to the west of and adjoining the 235 acres. The lands are legally described as:

NW 1/4 Section 13 Township 15 Range 26, W4M
SW 1/4 Section 13 Township 15 Range 26, W4M
NE 1/4 Section 14 Township 15 Range 26, W4M
SE 1/4 Section 14 Township 15 Range 26, W4M

See Figures 3 and 4

### **1.3 The Planning Framework**

- 1.3.1 Municipal planning is authorized and required by Part 17 of the Municipal Government Act. The purpose of Part 17 is stated in section 617 as:  
"617 The purpose of this Part and the regulations and bylaws under this Part is to provide means whereby plans and related matters may be prepared and adopted  
(a) to achieve the orderly, economical and beneficial development, use of

- land and patterns of human settlement, and
- (b) to maintain and improve the quality of the physical environment within which patterns of human settlement are situated in Alberta, without infringing on the rights of individuals for any public interest except to the extent that is necessary for the overall greater public interest."

### 1.3.2 Exceptions to Part 17

#### Division 1

#### Other Authorizations, Compensation

#### NRCB, ERCB, AEUB authorizations

- 619(1) A licence, permit, approval or other authorization granted by the NRCB, ERCB or AEUB prevails, in accordance with this section, over any statutory plan, land use bylaw, subdivision decision or development decision by a subdivision authority, development authority, subdivision and development appeal board, or the Municipal Government Board or any other authorization under this Part.
- (2) When an application is received by a municipality for a statutory plan amendment, land use bylaw amendment, subdivision approval, development permit or other authorization under this Part and the application is consistent with a licence, permit, approval or other authorization granted by the NRCB, ERCB or AEUB, the municipality must approve the application to the extent that it complies with the licence, permit, approval or other authorization granted under subsection (1).
- (3) An approval of a statutory plan amendment or land use bylaw amendment under subsection (2)
- (a) must be granted within 90 days after the application or a longer time agreed on by the applicant and the municipality, and
- (b) is not subject to the requirements of section 692 unless, in the opinion of the municipality, the statutory plan amendment or land use bylaw amendment relates to matters not included in the licence, permit, approval or other authorization granted by the NRCB, ERCB or AEUB.
- (4) If a municipality that is considering an application under subsection (2) holds a hearing, the hearing may not address matters already decided by the NRCB, ERCB or AEUB except as necessary to determine whether an amendment to a statutory plan or land use bylaw is required.

#### **1.4 Natural Resources Conservation Board Decision**

- 1.4.1 On May 7, 1995, Alberta Public Works Supply and Services filed an application, #9601, with the Natural Resources Conservation Board to obtain approval pursuant to the Natural Resources Conservation Board Act for the construction of a water management project to convey and store water diverted from the Highwood River. The project consisted of four components including the Little Bow River Dam and Reservoir in the Municipal District of Willow Creek No. 26 and County of Vulcan No. 2 (the "Project").
- 1.4.2 The Project was the subject of a joint federal-provincial review under the Canada-Alberta Agreement for Environmental Assessment Cooperation (the "Joint Review Panel Decision").
- 1.4.3 Hence, to the extent that the NRCB determined any matter related to the Little Bow dam and reservoir, that decision prevails over local planning jurisdiction.

#### **1.5 Canada-Alberta Agreement for Environmental Assessment Cooperation - Joint Review Panel Decision (1998)**

The Joint Panel Review, which was conducted by a panel established pursuant to both the Provincial Natural Resources Conservation Board Act and the Federal Canadian Environmental Assessment Act in accordance with the Canada-Alberta Agreement for Environmental Assessment Cooperation, determined, amongst other matters:

##### **1.5.1 Section 8.7.4 *Prairie Environment Vegetation and Wildlife***

"... it [*the panel*] does not believe it is feasible to mitigate loss of habitat... with habitat reclaimed from cultivated land."

##### **1.5.2 Section 8.8.3 *Water Supply and Use***

"...development of the project would have a positive long term impact on recreation in the region resulting in improvements in the quality of life and providing opportunities for economic diversification."

"...the Panel believes it is in the public's interest to develop day-use facilities on the new reservoir. This should allow safe access to the reservoir and could minimize potential impacts on adjacent landowners by concentrating activities at one or two locations on the reservoir."

"...The Panel recognizes at some time in the future more intensive recreational facilities may be developed on the reservoir."

“...The Panel concludes that it would be appropriate for the private sector to seek approval and pay for any shoreline modifications needed to support future recreational development,”

“...The Panel fully expects that the reservoir would receive recreational use that is likely to increase over time due to the relative scarcity of water based opportunities in the basin. The Panel concludes that it would be prudent to anticipate the need to accommodate various recreational uses in the planning for future land uses adjacent to the reservoir.”

“...The Panel requires APWSS prepare an area structure plan for lands in the immediate vicinity of Little Bow River Reservoir,.. Matters to be considered should include the following:...recreational and country residential development.”

## **1.6 Provincial Land Use Policies**

1.6.1 Section 622 of the Municipal Government Act provides that the the Lieutenant Governor in Council (Cabinet) may establish land use policies. Cabinet has established land use policies for the Province by Order in Council as OC 522/96.

1.6.2 The following provisions of the Land Use Policies are relevant to this area structure plan:

### **1.1 Implementation**

Each municipality is expected to incorporate the *Land Use Policies* into its planning documents and planning practices. Section 622(3) of the Municipal Government Act requires that municipal statutory plans, land use bylaws, and planning decisions and actions be consistent with the *Land Use Policies*. Section 680(2)(c) requires a subdivision and development appeal board and the Municipal Government Board<sup>1</sup> to be consistent with the *Land Use Policies* in determining a subdivision appeal. Section 687(3)(a) requires a subdivision and development appeal board to comply with the *Land Use Policies* in determining a development appeal.

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<sup>1</sup> The wording of the *Land Use Policies* is oriented towards municipalities. Municipal Government Board decisions pursuant to Part 17 of the Municipal Government Act are also required to be consistent with their spirit, intent, and direction.

### 3.0 Planning Cooperation

2. In particular, adjoining municipalities are encouraged to cooperate in the planning of future land uses in the vicinity of their adjoining municipal boundaries (fringe areas) respecting the interests of both municipalities and in a manner which does not inhibit or preclude appropriate long term use nor unduly interfere with the continuation of existing uses. Adjoining municipalities are encouraged to jointly prepare and adopt intermunicipal development plans for critical fringe areas; these plans may involve lands which are in both of the adjoining municipalities.

5. Where two or more municipalities are located on the shores of the same lake, and development is anticipated, the municipalities are encouraged to prepare, adopt, and implement an intermunicipal development plan to jointly address lake planning issues.

6. Municipalities are encouraged to coordinate their planning activities and development approval processes with provincial resource and land management policies, such as integrated resource plans, and with provincial leasing mechanisms, such as the Alberta Tourism Recreational Lease Process.

7. Municipalities are encouraged to work directly with provincial land and resource management agencies in the development of plans and policies on issues of mutual interest. Decisions and approvals affecting land use and development on, near, or with potential to impact provincial resources<sup>2</sup> should be coordinated between these levels of government.

### 4.0 Land Use Patterns

1.4.2 Municipalities are encouraged to establish land use patterns commensurate with the level of infrastructure and services which can be provided, regardless of whether the infrastructure and services are provided municipally, communally, individually, or by a utility company. Municipalities are encouraged to coordinate the provision of infrastructure and services with neighbouring municipalities.

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<sup>2</sup> "Provincial Resources" include water, air, provincially-owned mineral resources, fish and wildlife, beds and shores of provincially-owned water bodies and watercourses (pursuant to section 3 of the Public Lands Act), provincially-owned lands, and timber resources on provincial lands.

## **5.0 The Natural Environment**

1. Municipalities are encouraged to identify, in consultation with Alberta Environmental Protection,<sup>3</sup> significant ravines, valleys, stream corridors, lakeshores, wetlands<sup>4</sup> and any other unique landscape area, and to establish land use patterns in the vicinity of these features, having regard to their value to the municipality and to the Province.
2. If subdivision and development is to be approved in the areas identified in accordance with policy #1 municipalities are encouraged to, within the scope of their jurisdiction, utilize mitigative measures designed to minimize possible negative impacts.<sup>5</sup>

## **6.0 Water Resources**

**Goal:** To contribute to the protection and sustainable utilization of Alberta's water resources, including lakes, rivers, and streams, their beds and shores, wetlands, groundwater, reservoirs, and canals.

### **Policies**

1. Municipalities are encouraged to identify, in consultation with Alberta Environmental Protection, significant water resources within their boundaries.
2. Municipalities are encouraged to determine appropriate land use patterns in the vicinity of the resources identified in accordance with policy #1, having regard to impacts on an entire watershed as well as local impacts.

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<sup>3</sup> Pursuant to section 3 of the Public Lands Act, the ownership of public lands including permanent and naturally occurring water bodies and water features rests with the Minister of Environmental Protection (AEP). Public Lands of Alberta Agriculture, Food and Rural Development is responsible for the management of these resources in the White Area. In the Green Area, the Land and Forest Service (AEP) is the management authority. Please note that throughout this document Alberta government departments are referred to by the name in common usage rather than the legal name (e.g., Alberta Environmental Protection not Department of Environmental Protection).

<sup>4</sup> Wetland areas are valued for water storage, groundwater replenishment, flow regulation, water quality control, and wildlife habitat. Municipalities should refer to Wetland Management for Alberta, an Interim Policy, 1993, available from the Environmental Protection Information Centre, 9920 - 108 Street, Edmonton, AB T5K 2M4. Telephone: (403) 422-2079.

<sup>5</sup> Municipalities should refer to the Environmental Reference Manual for the Review of Proposed Subdivisions in Alberta, available from the Environmental Protection Information Centre, 9920 - 108 Street, Edmonton, AB T5K 2M4. Telephone: (403) 422-2079.

3. If subdivision and development is to be approved in the vicinity of the resources identified in accordance with policy #1, municipalities are encouraged to, within the scope of their jurisdiction, incorporate measures which minimize or mitigate any negative impacts on water quality, flow and supply deterioration, soil erosion, and ground water quality and availability. Municipalities are also encouraged to facilitate public access and enjoyment of these water features, and to protect sensitive fisheries habitat and other aquatic resources.

## 1.7 Planning Review and Analysis Studies

The Little Bow River Reservoir was created by the Province of Alberta constructing a dam near the confluence of the Little Bow River and Mosquito Creek in 2001 pursuant to the Joint Review Panel Decision.

See Figure 3

Prior to creation of the reservoir, the Province commissioned a series of studies and analysis as required by the Natural Resources Conservation Board Act and the Land Use Policies to ensure that the requirements of the Act and the Goals of the Land Use Policies would be met.

### 1.7.1 Little Bow Reservoir Preliminary Recreation Assessment - Lombard North Group Ltd. (1980).

- 1.7.1.1 The Alberta Government commissioned a recreational assessment as part of its initial analysis of the potential for a water reservoir. The study identified the west side of the reservoir north of RR 152 as one of only 4 potential recreation sites on the reservoir.
- 1.7.1.2 The area rated as having the best potential, has now been developed with a Provincial public campground facility.
- 1.7.1.3 The Twin Valley Resort location was rated second overall in terms of its ability to accommodate a wide variety of land and water based recreation facilities.

### 1.7.2 Alberta Public Works, Supply and Services ("APWSS") Environmental Impact Analysis Summary Record (1995)

- 1.7.2.1 This report concluded, in part, that the following could become positive results for the community if the reservoir were constructed:
  - 1.7.2.1.1 the creation of a new water body with recreation and cottage potential, and
  - 1.7.2.1.2 a positive economic impact consisting of increased regional income resulting from new irrigation, increased recreational opportunities and an increased property, personal and corporate tax base.

1.7.3 Alberta Environment Twin Valley Reservoir Land Use and Reservoir Guidelines.

The land use guidelines include the following policies:

“ . . . the water in the reservoir is used to supply the needs of the farming community, municipalities, industrial users and recreation users.”

“ . . . the shoreline surrounding the reservoir is maintained as public land for the enjoyment of all Albertans. It will be available for unrestricted non-vehicular public access.”

**1.8 Little Bow River Project Intermunicipal Development Plan**

1.8.1 The Little Bow River Project Intermunicipal Development Plan states that the Natural Resources Conservation Board (resulting from the Joint Review Panel Decision) order requires the reservoir to be a multi-use project:

1.8.1.1 that an area structure plan be prepared for the area surrounding the development; and,

1.8.1.2 that among other items; it should take into consideration recreation and country residential development.

1.8.2 In satisfaction of the Joint Review Panel Decision's requirement for a statutory plan and the Land Use Policy's encouragement of intermunicipal cooperation, the County of Vulcan #2 and the Municipal District of Willow Creek #26 jointly adopted the Little Bow River Project Intermunicipal Development Plan.

1.8.3 The overall goals of the Little Bow River Project Intermunicipal Development Plan are:

1.8.3.1 To co-ordinate standards for subdivision and development of land within the boundaries of the plan.

1.8.3.2 To encourage a high level of quality in the subdivision and the development.

1.8.3.3 To ensure water management priorities of the project are unaffected by any development or subdivision.

1.8.4 Issues and opportunities identified in the Little Bow River Project Intermunicipal Development Plan include, amongst others:

1.8.4.1 Balancing the multi-use purpose of the reservoir with other land use and operations issues.

1.8.4.2 Outlining criteria for the development of country residential and recreational opportunities.

1.8.4.3 Creating another water-based recreation and residential area for southwestern Alberta using the new reservoir.

1.8.5 Key policies in the Little Bow River Project Intermunicipal Development Plan related

to this area structure plan include:

General Land Use Policies

- 1.8.5.1 Land within the plan boundary will be designated Reservoir Vicinity
- 1.8.5.2 Applications for proposed uses that are neither permitted nor discretionary, or are prohibited uses in the Reservoir Vicinity district, will require redesignation prior to any decision on a subdivision or development application
- 1.8.5.3 In all cases applications for redesignation or subdivision will require more detailed area structure plans to be submitted and approved.
- 1.8.5.4 The municipal council may require an applicant, as a condition of subdivision or development approval, to enter into a developmental agreement to construct or pay for the construction of additional infrastructure identified in the Municipal Government Act.

Country Residential Use Policies

- 1.8.5.5 A grouped Country Residential subdivision may be approved if:
  - 1.8.5.5.1 Serviced by communal water and sanitary sewer systems,
  - 1.8.5.5.2 Subdivided as a bare land condominium, or
  - 1.8.5.5.3 Designated in the land use bylaw as a land use district that allows for grouped country residential uses.
  - 1.8.5.5.4 An applicant for a Country Residential subdivision or development which proposes access to the reservoir shall be required to obtain the necessary reservoir access agreements from Alberta Environment Protection.
  - 1.8.5.5.5 Only one single-family dwelling shall be permitted on each lot. Guesthouses may be considered but should not be self-contained dwellings.
  - 1.8.5.5.6 Developers are encouraged to make their subdivisions bare land condominium proposals, reducing the long-term commitments of the municipalities.

Crown Lands

- 1.8.5.6 Application for approvals made to the Province for uses on Crown Lands should be circulated to each municipality and adjacent landowners for comment.
- 1.8.5.7 Any development on Crown Lands should be compatible with adjacent private lands to minimize land use conflicts.

**1.9 Consistency**

Pursuant to section 638 of the Municipal Government Act, all statutory plans adopted by a municipality must be consistent with each other.

## **1.10 Compliance and Implementation**

In summary, the Twin Valley Resort Area Structure Plan must comply with the Joint Review Panel Decision in respect of Alberta Public Works Supply and Services application #9601, conform with the Land Use Policies and the The Little Bow River Project Intermunicipal Development Plan, and be implemented by way of amendments to the Municipal District of Willow Creek #26 Land Use Bylaw (No. 1250)

## **2 ADOPTION OF THE PLAN**

The Municipal District of Willow Creek No. 26 hereby adopts the following area structure plan for the Twin Valley Resort to be known as the "Twin Valley Resort Area Structure Plan":

### **2.1 Purpose**

The purpose of the plan is to provide the planning framework within which to implement a residential resort development on lands adjacent to the Little Bow River reservoir in compliance with the Joint Review Panel Decision in respect of Alberta Public Works Supply and Services application #9601 for diversion of water from the Highwood River.

### **2.2 Conformity with other Plans and/or Decisions**

This plan must conform to the provisions of Part 17 of the Municipal Government Act and, in the result, pursuant to:

- 2.2.1 section 619 of the *Municipal Government Act*, the decision of the NRCB in respect of Alberta Public Works Supply and Services application, #9601 prevails over the provisions of this plan.
- 2.2.2 section 622 of the *Municipal Government Act*, this plan is to be interpreted and implements in a manner consistent with the Land Use Policies.
- 2.2.3 section 638 of the *Municipal Government Act*, this plan is to be interpreted and implemented in a manner consistent with the Little Bow River Project Intermunicipal Plan.

### **2.3 The Little Bow River Project Intermunicipal Development Plan**

The Intermunicipal Development Plan states that:

- 2.3.1 a Natural Resources Conservation Board order requires the reservoir to be a multi-use project;
- 2.3.2 an area structure plan be prepared for the area surrounding the development; and,
- 2.3.3 amongst other items; the area structure plan should take into consideration recreation and country residential development.

## **2.4 The overall goals of the Little Bow River Project Intermunicipal Development Plan**

The stated goals of the Intermunicipal Development Plan include:

- 2.4.1 to co-ordinate standards for subdivision and development of land within the boundaries of the plan.
- 2.4.2 to encourage a high level of quality in the subdivision and the development.
- 2.4.3 to ensure water management priorities of the project are unaffected by any development or subdivision.

## **2.5 Issues and Opportunities**

The Little Bow River Project Intermunicipal Development Plan identified the following issues and opportunities, amongst others:

- 2.5.1 Balancing the multi-use purpose of the reservoir with other land use and operations issues.
- 2.5.2 Outlining criteria for the development of country residential and recreational opportunities.
- 2.5.3 Creating another water-based recreation and residential area for southwestern Alberta using the new reservoir.

## **2.6 Key policies**

The key policies of the Little Bow River Intermunicipal Development Plan related to this area structure plan include:

### **2.6.1 General Land Use Policies**

- 2.6.1.1 Land within the plan boundary will be designated Reservoir Vicinity.
- 2.6.1.2 Applications for proposed uses that are neither permitted nor discretionary, or are prohibited uses in the Reservoir Vicinity district, will require redesignation prior to any decision on a subdivision or development application
- 2.6.1.3 In all cases applications for redesignation or subdivision will require more detailed area structure plans to be submitted and approved.
- 2.6.1.4 The municipal council may require an applicant, as a condition of subdivision or development approval, to enter into a developmental agreement to construct or pay for the construction of additional infrastructures identified in the Municipal Government Act.

### **2.6.2 Country Residential Use Policies**

- 2.6.2.1 A grouped Country Residential subdivision may be approved if:
  - 2.6.2.1.1 serviced by communal water and sanitary sewer systems,
  - 2.6.2.1.2 subdivided as a bare land condominium, or
  - 2.6.2.1.3 designated in the land use bylaw as a land use district that

allows for grouped country residential uses.

- 2.6.2.1.4 An applicant for a Country Residential subdivision or development which proposes access to the reservoir shall be required to obtain the necessary reservoir access agreements from Alberta Environment Protection.
- 2.6.2.1.5 Only one single-family dwelling shall be permitted on each lot. Guesthouses may be considered but should not be self-contained dwellings.
- 2.6.2.1.6 Developers are encouraged to make their subdivisions bare land condominium proposals, reducing the long-term commitments of the municipalities.

### 2.6.3 Crown Lands

- 2.6.3.1 Application for approvals made to the Province for uses on Crown Lands should be circulated to each municipality and adjacent landowners for comment.
- 2.6.3.2 Any development on Crown Lands should be compatible with adjacent private lands to minimize land use conflicts.

## 2.7 Area Structure Plan Requirements

Section 633(1) of the Municipal Government Act specifies that an area structure plan:

- “(a) must describe
  - (i) the sequence of development proposed for the area
  - (ii) the land uses proposed for the area, either generally or with respect to specific parts of the area,
  - (iii) the density of the population proposed for the area, either generally or with respect to specific parts of the area, and
  - (iv) the general location of major transportation routes and public utilities and
- (b) may contain any other matters the council considers necessary.”

## 2.8 The Land Use Plan

### 2.8.1 Country Residential Community

- 2.8.1.1 The Area Structure Plan will utilize, in total, approximately 555 acres adjacent to the Twin Valley Reservoir to create a gated recreational-based country residential community.
- 2.8.1.2 There will be 365 units with an anticipated average density of less than 2.5 persons per unit. As a recreational community, it is anticipated that there will be very few permanent residents and therefore few, if any, school age children residing in the project.

## 2.8.2 Area

Of the 555 acres, approximately 112 acres will be dedicated to wetlands and open space while the balance will be used for roads, utilities, a community building, and approximately 367 one acre residential lots and two commercial lots generally as depicted in Figure 5.

## 2.8.3 Phasing

2.8.3.1 The site will be developed in response to market demand with approximately six (6) phases of 50-60 lots each (Figure 6).

2.8.3.2 New phases will be started once there has been sufficient absorption in the prior phase.

2.8.3.3 The water treatment and sewage disposal systems will be initiated with the first phase while the wetlands and open space will be started in conjunction with phase 2. All other services will be developed concurrent with each phase.

## 2.8.4 Site Analysis

### 2.8.4.1 Joint Review Panel Environmental Assessment

2.8.4.1.1 A full environmental assessment of the Highwood Diversion and development of the reservoir was conducted and approved as a result of the Joint Review Panel Decision.

2.8.4.1.2 Multi-use development of the lands surrounding the reservoir was recommended by the Joint Review Panel Decision.

2.8.4.1.3 A Phase One environmental assessment was completed October 22, 2004. Based on the materials and individuals consulted for the investigation there is no evidence of present contamination on the subject property.

### 2.8.4.2 Water Related Recreational Opportunities in Alberta

2.8.4.2.1 A review of the CLI recreation capability analysis indicates that Alberta has the lowest amount of shore line in Canada available for classes 1, 2, 3 which relate to: bathing, lodging, family boating, angling, camping, viewing, wetlands, and wildlife. In addition, when analysing driving distances to these recreational amenities from Canada's 22 major cities, Calgary has, by far, the least amount of amenities and the furthest distances to travel.

2.8.4.2.2 Based on simple supply and demand economics, the foregoing indicates that the Municipal District has had created within it by Alberta Public Works Supply and Services a significant Provincial recreational resource which can economically benefit the municipality.

2.8.4.2.3 As noted in the findings of the Joint Review Panel Decision, the economic benefits from a project like this could be substantial:

- 2.8.4.2.3.1 A study by the Canadian Home Builders' Association indicates that one home produces 2.77 man years of work. Applying this to Twin Valley Resort, some \$47,250,000 in contributions to the local labour economy will be realized.
- 2.8.4.2.3.2 Considering labour accounts for around 50% of the total home costs, an additional \$47,250,000 can be attributed to materials bringing the total contribution to the local economy at completion of build out to approximately \$95,000,000.
- 2.8.4.2.3.3 The foregoing does not include on-going demand for services from the resort residents ranging from: groceries to restaurants; gas to boat accessories; home improvements to landscaping.
- 2.8.4.2.3.4 In addition it is projected that at build-out the Municipal District will receive in the range of \$750,000 dollars per year in taxes in today's dollar.
- 2.8.4.2.4 There are no recreational facilities at this location. In keeping with the findings of the Joint Review Panel Decision and the Lombard North Recreation Assessment, Twin Valley Resort, will provide a developed and maintained second access point to the reservoir as part of a recreational based country residential development.
- 2.8.4.2.5 Should additional development be considered in the immediate vicinity, access remains available without being compromised by the Twin Valley Resort development.

#### 2.8.4.3 Urban Expansion or Resource Development

- 2.8.4.3.1 Twin Valley Resort is 13 km from the closest urban community of Parkland, and across the reservoir from the closest Municipal District of Vulcan. Accordingly, it should have no impact on any future plans of these neighbouring municipalities.
- 2.8.4.3.2 Twin Valley Resort is a self-contained development that is accessed off a dead end road that was previously a paved secondary highway. As such, it should create no obstacles to future resource development on adjacent lands

#### 2.8.4.4 Reservoir Operation

- 2.8.4.4.1 The Joint Panel Review noted:  
  
 "Their [Alberta Public Works Supply and Services] evidence is that in half of the years drawdown [of the reservoir] would be less than 3 metres (10 feet) and would be less than 5 metres (16 feet) in 80 percent of the years."

- 2.8.4.4.2 Alberta Environment establishes setback requirements for the operation of the reservoir as part of its design and acquisition process. Slope stability analyses have confirmed that these setbacks provide substantial allowance for natural occurrences over time.
- 2.8.4.4.3 In the event of the unexpected there are mitigating procedures which have been approved by Alberta Environment and implemented at other reservoirs. The development of Twin Valley Resort will only encroach into the reservoir setback for a water intake, a public boat launch, boat dock and pathway similar to those found currently operating at other Alberta reservoirs.
- 2.8.4.4.4 Once formally approved and licensed by Alberta Environment, these facilities are not deemed to have any anticipated detrimental impact on the operational characteristics of this reservoir.

#### 2.8.4.5 Access

- 2.8.4.5.1 The preferred access route to Twin Valley Resort, which will be reflected in all marketing material and signage, will be via Highway 529, north on Township road 263 and then east for the last 3kms on Township road 152.
- 2.8.4.5.2 This route passes gravel mining, gas extraction and limited cattle grazing operations on an upgraded secondary road bypassing all residential properties except one.
- 2.8.4.5.3 Methods of minimizing the impact will be extended to the one resident and implemented as part of the first phase of development.
- 2.8.4.5.4 Should short cutting from Highway #2 along Township Road 152 become an issue, it can be curtailed by a variety of simple and effective traffic control measures which, in conjunction with using Township Road 263, should provide a reasonable level of safe and efficient use of the available roadways.

#### 2.8.4.6 Topography

- 2.8.4.6.1 The topography of the easterly two quarters is generally flat, gently rising from the northeast toward the southwest, forming a plateau in the central portion before descending to a lower wetland area and then rising some 18 metres to the high point of the site.
- 2.8.4.6.2 Slopes range from 2% at the north end to 10% along the southern edge of the site. The elevation of the site varies from 974 metres on the east high point to 966 metres within the

central low area to 984.5 metres on the west high point.

2.8.4.7 Soils

- 2.8.4.7.1 Test wells six metres deep indicate that an average of 300 mm of topsoil overlays dense to very dense silty sands, clay, till, and bedrock of siltstone.
- 2.8.4.7.2 Review of the CLI agricultural land classifications for soils within the ASP boundaries show they range from class 3 through class 6 with the majority being class 4 and higher. In addition, subclass limitations related to slope conditions and low water holding ability of the soils result in the classifications being downgraded by at least one (1) level meaning the agricultural capabilities of these lands are very severely limited.
- 2.8.4.7.3 The Little Bow River Reservoir Preliminary Recreation Assessment analysis of the shoreline noted that the south end of the site consists of colluvial slopewash, while the north end consists of outwash veneer over moraine, which is projected to develop a beach formation in the reservoir drawdown zone.

2.8.4.8 Slope Stability

2.8.4.8.1 The Little Bow River Reservoir Preliminary Recreation Assessment analysis of the reservoir shoreline adjacent to the ASP lands, provides the following characterizations:

	South End	North End
Offshore	Steep (15-20%)	Moderate (5-10%)
Beach	Minimal	Fair to Good
Onshore	Steep (15-20%)	Moderate (5-10%)

- 2.8.4.8.2 Two slope stability tests were conducted within the reservoir setback lands at the top of the slope as it enters the reservoir.
- 2.8.4.8.3 The first analysis was conducted at the southeast corner of Twin Valley Resort where the slope ranges between 15 -20%. The test indicates that a setback of 19 metres is required under the worst case condition of saturated soils. The Twin Valley Resort property line is approximately 80 metres from the test site.
- 2.8.4.8.4 Similarly, the second slope analysis was conducted approximately mid point along Twin Valley Resort lands where the slope ranges between 5-10%. In this case the test indicated that no setback is required under the worst case scenario.
- 2.8.4.8.5 This remains the same for the balance of the adjacent property to the north, where once again setbacks to the Twin Valley

- 2.8.4.8.6 Resort property line are between 23-75 metres from the slope. In both cases it can be shown that the development of the Twin Valley Resort lands will have no negative impact on the slope stability and ultimately on the operation of the reservoir.

#### 2.8.4.9 Soil Erosion

- 2.8.4.9.1 Twin Valley Resort has been designed to utilize the natural contours (Figure 5) of the site combined with landscaping intended to minimize soil erosion.
- 2.8.4.9.2 During construction, stripping, grading and excavating as well as on-site drainage must be managed to ensure compliance with the Federal Fisheries Act which prohibits the discharge of deleterious substances, including silt, into waters frequented by fish.
- 2.8.4.9.3 Upon completion, the condominium corporation will be responsible to ensure ongoing compliance with the Fisheries Act and thereby ensure soil erosion is minimized.

#### 2.8.4.10 Water Table

Groundwater levels were found to be between 2.64 metres and 5.9 metres below the existing ground level.

#### 2.8.4.11 Water Diversion

- 2.8.4.11.1 Alberta Environment has frozen all applications for water diversions in the South Saskatchewan River Basin (which includes the Bow River and its tributaries including the Highwood River).
- 2.8.4.11.2 Twin Valley Resort holds a pre-existing license to divert water with a 1978 priority.

#### 2.8.4.12 Water Quality

- 2.8.4.12.1 Ground water quality in the area is frequently poor in relation to potable water requirements.
- 2.8.4.12.2 Water quality concerns related to this development must also be considered in context of the surrounding agricultural uses. For example, in the US Department of Agriculture- NRCS -Animal Manure Management Issue Brief 7, Dec 1995, it was noted that a herd of 200 cows creates more nitrogen from its manure than the sewage from a town of over 5000 residents.
- 2.8.4.12.3 Because the Twin Valley Resort will draw potable water from the reservoir in compliance with the Water Act and discharge treated and sterilized wastewater in compliance with the

Environmental Protection and Enhancement Act (as detailed in section 2.9.4 of this plan), there will be no impact on ground water in adjacent parcels of land.

#### 2.8.4.13 Percolation Rates

Rates of 3.92 and 2.06 minutes per inch were noted, indicating that the *in situ* soils are very porous and will require water storage facilities to be lined and that lawn irrigation should have no impact on slope stability or run-off. This fast rate of absorption should also be noted when considering the amount of potential lawn run-off that could occur from lots backing onto the reservoir given that the grade of the land is 2% (the minimum slope necessary to have water move across a grassed area).

#### 2.8.4.14 Surrounding Agricultural Operations

The lands to the south of Township Rd. 152 adjacent to the Twin Valley Resort consists of a combination of hay crops and native grasslands, while those lands to the north and west are a mixture of native grasses and hay fields. Page wire fencing will be used around the perimeter of Twin Valley Resort to provide a greater separation of uses and thereby reduce or eliminate potential impacts on surrounding agricultural operations.

#### 2.8.4.15 Vegetation

With the exception of very few trees and shrubs in the wetland area, the balance of the lands has been used, where possible, for grazing or hay.

#### 2.8.4.16 Wildlife Habitat

According to the Little Bow Reservoir Preliminary Recreation Assessment, "the area does not have a great diversity of wildlife due to the intensive agricultural usage and lack of natural habitat for foraging or cover". However, the existing wetlands on the property will be enhanced and maintained as natural areas with the aim of attracting more wildlife.

#### 2.8.4.17 Natural Amenities

Natural amenities of the site consist of views of the reservoir to the east and the Porcupine Hills to the west, gentle undulating topography, and a central wetland area.

#### 2.8.4.18 Surrounding Landscape

The surrounding landscape consists of the reservoir surrounded by flat grasslands, small ravines as well as ranching and farming operations typical of the southern prairies.

#### 2.8.4.19 Provision of Utilities

The shallow utility companies (gas, electricity, telephone) have indicated that their respective services, with the exception of cable, can and will be extended to the property at the appropriate time. Deep utility companies (water and sewer) will be built on-site and will be owned and operated by an independent utility company.

#### 2.8.4.20 Flooding and Ground Water Inundation

In addition to geotechnical and stormwater management analyses indicating that no negative conditions will be encountered or created, all low lying lands within the project have been allocated as wetlands or open space.

#### 2.8.4.21 Climate

Meteorological records indicate that mean monthly temperatures within the area vary from +14°C in the summer to -6.5°C in the winter. Annual precipitation is 404.5 mm (15 inches) of which 72 percent falls as rain and 29 percent as snow. The average precipitation during the summer months, June through August, is approximately 54 mm (2 inches).

### 2.8.5 Land Uses

The Land Uses within the area structure plan will consist of:

#### 2.8.5.1 Residential

- 2.8.5.1.1 The land use plan will permit residential uses of land.
- 2.8.5.1.2 When fully implemented, the plan will create approximately 367 one acre residential lots within the re-designation boundaries.
- 2.8.5.1.3 Architectural controls will be implemented through the condominium corporation to:
  - 2.8.5.1.3.1 ensure that development in the Twin Valley Resort conforms to a "cottage country" theme;
  - 2.8.5.1.3.2 encourage water conservation and fire safety.

#### 2.8.5.2 Wetlands

2.8.5.2.1 The existing low wet area will be enlarged and enhanced with additional landscaping to create a riparian environment. This, in turn, will be used as a key amenity within the community and act as part of the overland storm water management plan (Figure 8).

2.8.5.2.2 In addition the low lying area adjacent to RR 152 in the SE 1/4 of 14 will be maintained in a natural state.

#### 2.8.5.3 Open Space

A large central open space will be created by keeping the area north of the wetlands essentially below the contour elevation of approximately 968 meters available for casual recreational pursuits such as, for example, playgrounds, playing fields, a pitch & putt and additional tree planting. In all, between the wetlands and the open space, some 112 acres will act as a central feature of the resort.

#### 2.8.5.4 Linear Pathways

A system of corridors with paths will be created to provide pedestrian linkages within the community. These, along with the wetlands, will form part of the storm water management plan.

#### 2.8.5.5 Commercial

Two commercial lots will be established. A community centre building will be placed on one lot at the main entrance to the community to act as a resort management, sales and information office as well as to provide gate control for people entering the community. The office will also carry basic convenience items requested by the residents for sale.

#### 2.8.5.6 Utility Lots

Land has been allocated in the design for the water and sewage treatment facilities and their distribution systems. In general, the water treatment plant is located central to the project while the sewage treatment is located in the far northwest corner.

#### 2.8.5.7 Municipal Reserve

The area will not contain municipal reserve lands. Cash-in-lieu of dedicating lands for municipal and school reserves will be paid to the Municipal District of Willow Creek No.26.

#### 2.8.5.8 Reservoir Lands

When full at a maximum depth of 69 feet, the reservoir will extend approximately 14 kilometers (8.7 miles) along the Little Bow River and approximately 3 kilometers (1.9 miles) to the west along Mosquito Creek. In total it will cover 2,060 acres with a storage capacity of approximately 50,000 acre-feet.

## 2.9 Subdivision and Servicing

### 2.9.1 Bare Land Condominium

- 2.9.1.1 Subdivision shall be by way of a bare land condominium plan or plans, with each condominium corporation to be fully responsible to design, construct, maintain and operate<sup>6</sup> or cause to be designed, constructed, maintained and operated all internal roads and utilities.
- 2.9.1.2 An established utility company will be hired to operate the water and sewer systems in accordance with Alberta Environment standards.
- 2.9.1.3 An application will be made to the Municipality and to the Energy and Utilities Board, sitting as the Public Utilities Board, for a franchise agreement pursuant to section 45 of the Municipal Government Act to ensure a proper supply of utilities in accordance with this area structure plan.
- 2.9.1.4 The Condominium Properties Act requires that condominium corporations establish and maintain a 'sinking-fund' for the repair and replacement of common property. This will ensure that sufficient funds are available to maintain internal roads and utilities.

### 2.9.2 Subdivision Conformity to the Area Structure Plan

The subdivision plan or plans will generally conform to Figures 5, 6 and 7 with such changes or amendments as may be required to implement the plan(s) in accordance with Alberta Regulation 43/2002 Subdivision and Development Regulation.

### 2.9.3 Off-site Levies

If the municipality provides municipal public utilities to the condominiums, the developer may be required to pay off-site levies established pursuant to section 648 of the Municipal Government Act and Alberta Regulation 48/2004 Principles and Criteria for Off-site Levies Regulation.

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<sup>6</sup> The operation of such utilities must be conducted by a person(s) or entity fully qualified pursuant to Alberta Regulations 120/93 Wastewater and Storm Drainage (Ministerial) Regulation and Alberta Regulation 277/2003 Potable Water Regulation.

## 2.9.4 Development Agreement

The developer and condominium corporation shall be required to enter into a development (subdivision servicing) agreement pursuant to section 655 of the Municipal Government Act providing, amongst other matters, for the construction of:

### 2.9.4.1 Roads and Pathways

Roads and pathways within the condominium plan or plans must be suitable for the purpose.

#### 2.9.4.1.1 Design

2.9.4.1.1.1 All roads within the community will be paved over a base designed to meet geotechnical requirements for a residential road.

2.9.4.1.1.2 The carriageway will be seven metres in width with a dished concrete swale in the centre for overland drainage. This, in turn, will allow direct access to individual lots from the road system without the use of drainage ditches and approaches with culverts.

2.9.4.1.1.3 Parking will not be allowed on the streets at any time since there will be adequate space available on each one-acre lot for vehicles.

#### 2.9.4.1.2 Emergency Access

A divided front entry to the community from Township Rd. 152 plus 2 breakaway entries will act as the emergency access.

#### 2.9.4.1.3 Pathways

Pathways 1.5 metres in width will also be provided in the linear green spaces perpendicular to the road system to provide controlled overland drainage and pedestrian linkages throughout the community.

#### 2.9.4.1.4 Lighting

Low-level lights will be provided on both the streets and pathways and will act as ambient lighting.

#### 2.9.4.2 Water Utilities

2.9.4.2.1 The construction and operation of potable water, wastewater and storm water utilities ("water utilities") in Alberta are restricted activities pursuant to the Environmental Protection and Enhancement Act and may only be conducted by licensed persons or entities.

2.9.4.2.2 Water utilities must be designed, approved, constructed, maintained and operated in accordance with the Environmental Protection and Enhancement Act<sup>7</sup> including:

2.9.4.2.3 Alberta Regulation 43/2002 Subdivision and Development Regulation;

2.9.4.2.4 Alberta Regulation 277/2003 Potable Water Regulation;

2.9.4.2.5 Alberta Regulation 119/93 Wastewater and Storm Drainage Regulation;

2.9.4.2.6 "Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems" as published by Alberta Environment from time to time.

#### 2.9.5 Infrastructure

##### 2.9.5.1 Potable Water

###### 2.9.5.1.1 Source

Water for Twin Valley Resort will come from the Twin Valley Reservoir. Twin Valley Resort currently holds a valid license to extract 200 acre feet of water from the reservoir. This license, with a 1978 priority, provides more than an ample supply for the proposed uses within the development. The license will be amended to a municipal designation upon approval of the Area Structure Plan. Extraction of water from the reservoir will be via a buried pipe to the deepest part of the reservoir adjacent to the project as approved by Alberta Environment.

###### 2.9.5.1.2 Treatment and Delivery

A water treatment plant which meets the standards and approved by Alberta Environment<sup>8</sup> will be located centrally within the community. From the treatment centre distribution lines will be extended to all properties within the community.

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<sup>7</sup> As amended or any parallel or replacement statute and regulations.

<sup>8</sup> The operation of such utilities must be conducted by a person(s) or entity fully qualified pursuant to Alberta Regulations 120/93 Wastewater and Storm Drainage (Ministerial) Regulation and Alberta Regulation 277/2003 Potable Water Regulation.

#### 2.9.5.1.3 Low Flow Contingency

Should it be necessary to restrict water usage from the reservoir, a contingency plan acceptable to Alberta Environment and the Calgary Health Region will include the use of ground water wells, water storage reservoir, trucking, a ban on all external irrigation, and a call to use bottled water for drinking and the conservative use of supplied potable water for domestic indoor use.

#### 2.9.5.2 Common Area Irrigation

A secondary line from the water intake main will be extended to the wetlands and other common areas to provide raw water for park irrigation and maintain pond levels.

#### 2.9.5.3 Master Drainage Plan

The design of the stormwater management program will incorporate the following key features:

- 2.9.5.3.1 The proposed wetlands located within in the low area will receive the runoff naturally from the majority of the SE and NE1/4s of 14 and the SW and NW1/4s of 13.
- 2.9.5.3.2 A cutoff ditch will be used to direct the balance of the run off from the NE1/4 of 14 to the wetlands while the remainder of the SE1/4 of 14 will drain to the existing low area at the south end of the quarter.
- 2.9.5.3.3 While the road and pathway systems will be used to direct the majority of the run-off from the balance of the SW and NW 1/4's of 13 to the wetlands, a very limited distributed discharge may occur from those lots backing onto the reservoir.
- 2.9.5.3.4 The enhanced ponds within the open space, will provide water quality enhancement
- 2.9.5.3.5 The runoff resulting from up to a 1:100-year storm will be stored within the wetlands on the adjacent land above the ponds which as been designed as an active dry storage area.
- 2.9.5.3.6 The excess runoff from the active storage area will discharge through the existing culverts at the actual pre-development rates based on the pre-development drainage boundary and the capacity of the existing culvert.
- 2.9.5.3.7 A control structure will be constructed upstream of the existing culvert to restrict the flow to the pre-development flow rate.
- 2.9.5.3.8 All flow depths and velocities will conform to Alberta Environment standards.

## 2.9.5.4 Wastewater

### 2.9.5.4.1 Collection

2.9.5.4.1.1 Sewage disposal will be by means of an Alberta Environment approved system currently in operation in 9 locations in Alberta.

2.9.5.4.1.2 The sewage collection system consists of a primary treatment tank on each lot and a pressurized pipe network which connects each home to a treatment facility.

2.9.5.4.1.3 The primary treatment tank allows the solids and fluids to separate and then sends only the fluid through the pipe network for secondary treatment. The solids are maintained in the tank and then pumped and trucked to a municipal disposal site once every 10-12 years.

### 2.9.5.4.2 Treatment

2.9.5.4.2.1 A secondary treatment facility designed and sized to meet the needs of the community and the standards set of by Alberta Environment, will be located in the northwest corner of the project.

2.9.5.4.2.2 The completely enclosed treatment bins will be set into the ground with only the top edge visible thus eliminating any odours. Once the secondary treatment levels have been achieved, the effluent is circulated through an ultra violet unit, to sterilize it prior to release.

### 2.9.5.4.3 Monitoring

A computerized monitoring program oversees all aspects of the system's operations. It sends continuous information 24/7/365 via satellite to the operator and the manufacturer. In addition an on-site display and alarm system allows the homeowners to also be aware of how the system is working.

## 2.9.5.5 Shallow Utilities

2.9.5.5.1 Natural Gas  
ATCO Gas will supply natural gas.

2.9.5.5.2 Electricity  
Fortis Alberta will provide electrical service.

2.9.5.5.3 Telephone  
TELUS will provide telephone service.

2.9.5.5.4 Cable  
Cable services will not be provided. Homeowners will have the option to use a satellite dish should they wish cable and internet access.

2.9.5.6 Condominium Services

2.9.5.6.1 Fire Protection

2.9.5.6.1.1 While the community may have to call on emergency fire services from the municipalities, it will not be relying on them as a first line of response but rather as a third line back-up.

2.9.5.6.2 A combination of measures will be used as part of a community fire control program. They include:

2.9.5.6.2.1.1 In-house sprinkler systems or no-burn construction.

2.9.5.6.2.1.2 Non-combustible roofing.

2.9.5.6.2.1.3 Fire caddies positioned for easy access

2.9.5.6.2.1.4 A truck fill station provided at the water treatment plant.

2.9.5.6.2.1.5 Ensuring grass is maintained no higher than six inches.

2.9.5.6.3 Solid Waste Removal

Central commercial garbage containers will be located on the site and a contractor will be hired by the condominium board to haul the garbage to a municipal refuse site.

2.9.5.6.4 Snow Removal

Snow removal, when required, will be contracted out by the condominium board of directors.

2.9.5.6.5 Mail

If required, a post office box will be established in the community in conformance with Canada Post requirements.

## 2.10 Development

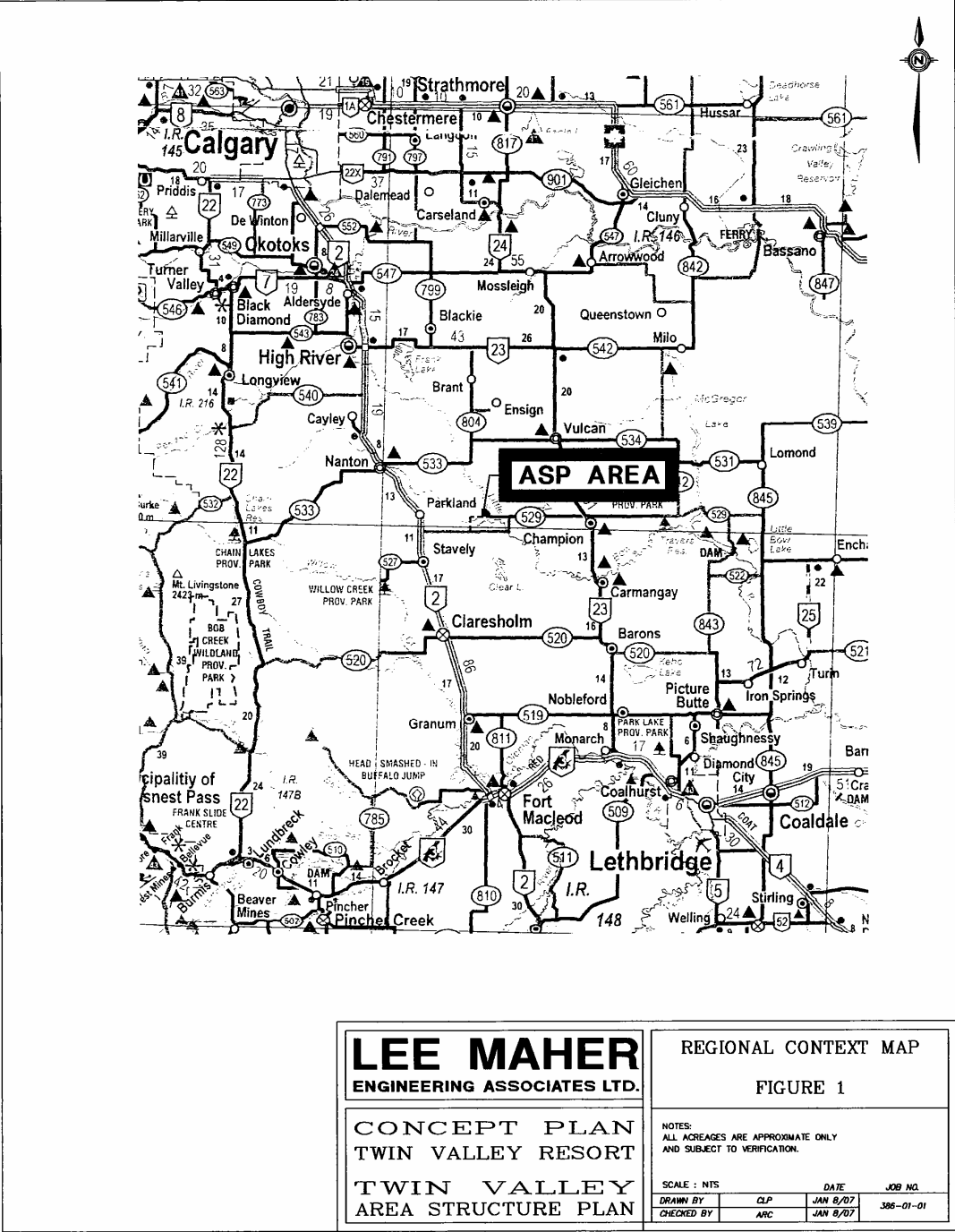
Development shall occur in accordance with the relevant provisions of the Municipal District of Willow Creek No. 26 Land Use Bylaw, as amended.

## **2.11 Implementation**

This Area Structure Plan is to be interpreted by the development and subdivision authorities in a broad and purposive manner so as to achieve the purpose of the plan.

## EXHIBITS

Figure 1	Regional Context Map
Figure 2	Local Area Context Map
Figure 3	Reservoir Context Map
Figure 4	Aerial Photo
Figure 5	Land Use Plan
Figure 6	Phasing Plan
Figure 7	Technical Plan
Figure 8	Master Drainage Plan
Figure 9	Servicing Plan



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REGIONAL CONTEXT MAP  
FIGURE 1

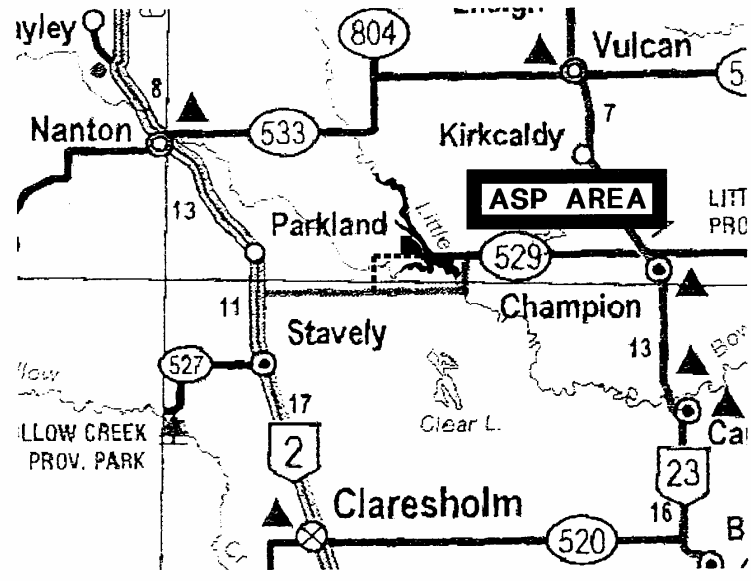
CONCEPT PLAN  
TWIN VALLEY RESORT  
TWIN VALLEY  
AREA STRUCTURE PLAN

NOTES:  
ALL ACREAGES ARE APPROXIMATE ONLY  
AND SUBJECT TO VERIFICATION.

SCALE : NTS

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		JAN 8/07	

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LOCAL AREA CONTEXT MAP  
FIGURE 2

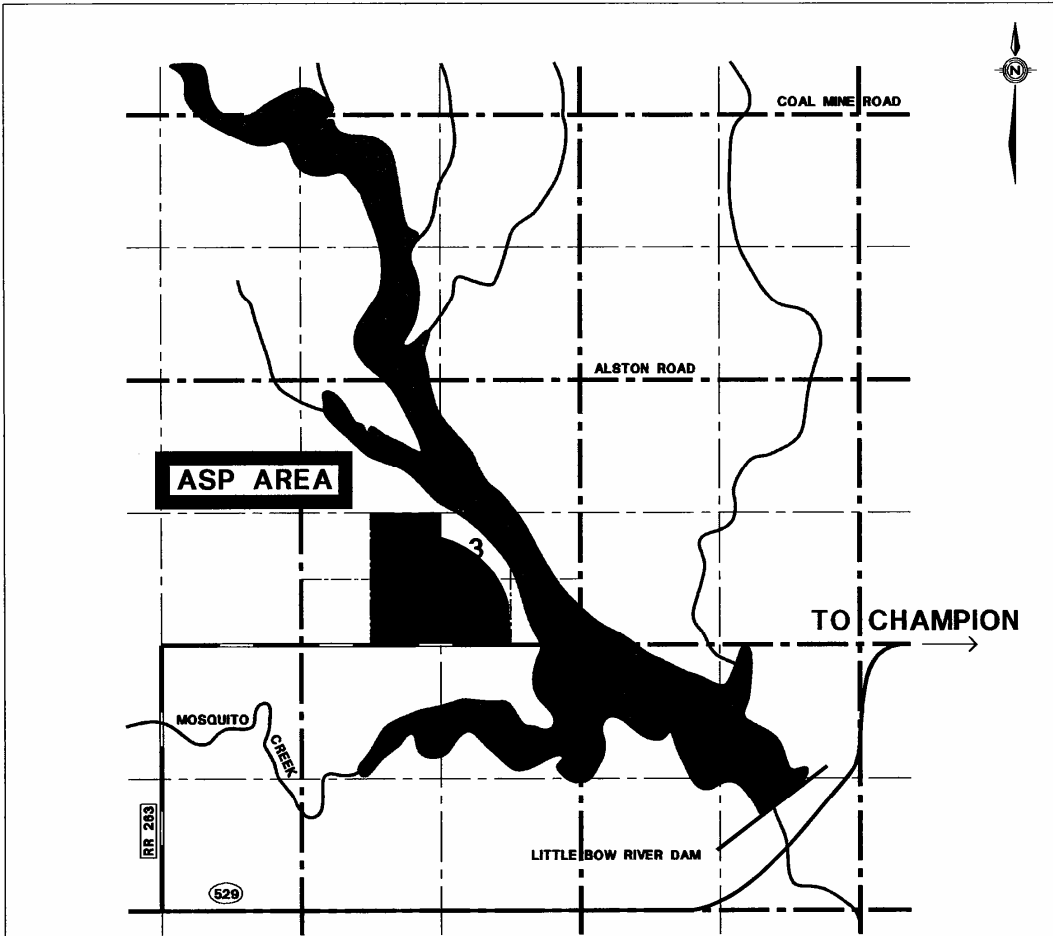
CONCEPT PLAN  
TWIN VALLEY RESORT  
TWIN VALLEY  
AREA STRUCTURE PLAN

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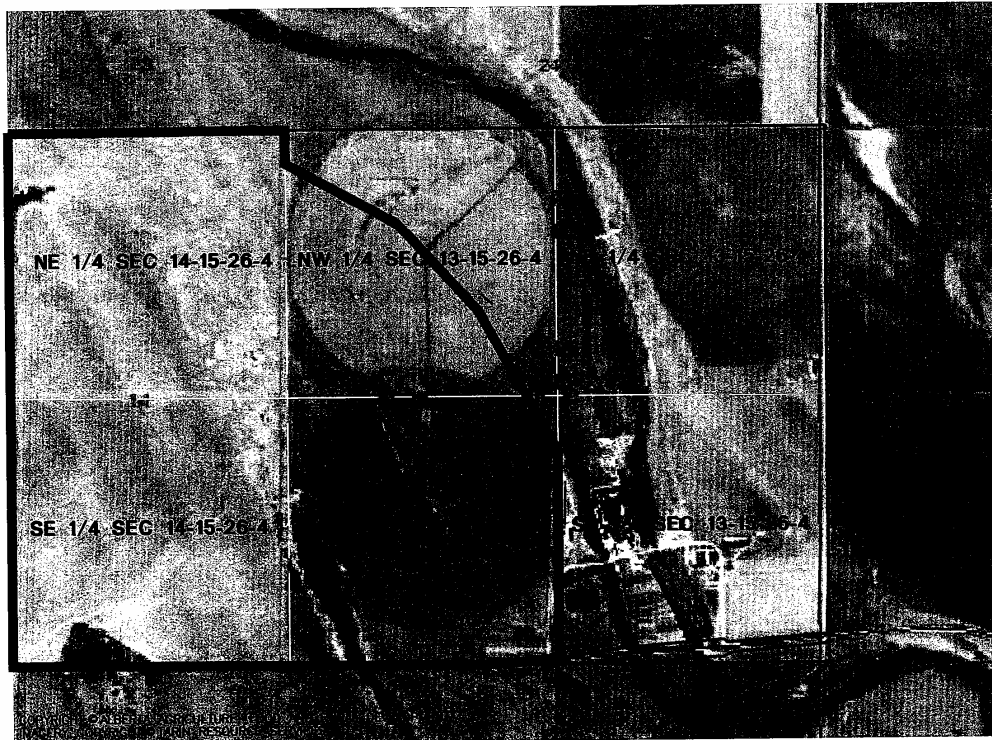
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**LEGEND**

- 1 NE 1/4 SEC 14-15-26-4
- 2 SE 1/4 SEC 14-15-26-4
- 3 NW 1/4 SEC 13-15-26-4
- 4 SW 1/4 SEC 13-15-26-4

<p><b>LEE MAHER</b> ENGINEERING ASSOCIATES LTD.</p>	<p>RESERVOIR CONTEXT MAP FIGURE 3</p>												
<p>CONCEPT PLAN TWIN VALLEY RESORT TWIN VALLEY AREA STRUCTURE PLAN</p>	<p>NOTES: ALL ACRESAGES ARE APPROXIMATE ONLY AND SUBJECT TO VERIFICATION.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">SCALE : NTS</td> <td>DATE</td> <td>JOB NO.</td> </tr> <tr> <td style="border: 1px solid black;">DRAWN BY</td> <td style="border: 1px solid black;">CLP</td> <td style="border: 1px solid black;">JAN 8/07</td> <td style="border: 1px solid black;">388-01-01</td> </tr> <tr> <td style="border: 1px solid black;">CHECKED BY</td> <td style="border: 1px solid black;">ARC</td> <td style="border: 1px solid black;">JAN 8/07</td> <td></td> </tr> </table>	SCALE : NTS		DATE	JOB NO.	DRAWN BY	CLP	JAN 8/07	388-01-01	CHECKED BY	ARC	JAN 8/07	
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AERIAL PHOTO  
FIGURE 4

CONCEPT PLAN  
TWIN VALLEY RESORT  
TWIN VALLEY  
AREA STRUCTURE PLAN

NOTES:  
ALL ACREAGES ARE APPROXIMATE ONLY  
AND SUBJECT TO VERIFICATION.

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