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CITY OF KELOWNA  
MEMORANDUM

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**Date:** October 18, 2006  
**File No.:** OCP06-0019/Z06-0050  
**To:** City Manager  
**From:** Planning & Development Services Department

<b>APPLICATION NO.</b>	OCP06-0019 Z06-0050	<b>APPLICANT:</b>	Neil Denby Runnalls Denby & Associates
<b>AT:</b>	2750 Shayler Court 2880 Shayler Court 2930 Shayler Court 3025 Shayler Court 3099 Shayler Court 3135 Shayler Court 3185 Shayler Court 3215 Shayler Court 3255 Shayler Court	<b>OWNERS:</b>	Steven & Bonnie Cloutier Erwin Braun/Ercon Holdings Ltd. Dave & Moyra Skoglund Leslie Gardner/Klista Redfield Ralph & Tanis Rubini Clark Smith Shane Ginter/Shirley A. Ginter Bob Gruber/616507 B.C. Ltd. Clark Smith/616507 B.C. Ltd.

**PURPOSE:** To amend the Official Community Plan Future Land Use designation from Future Urban Reserve to Rural/Agricultural and to rezone the subject property from the A1 – Agriculture 1 zone to the RR1 – Rural Residential 1 zone to allow a subdivision to create additional rural residential single family lots.

<b>CURRENT OCP DESIGNATION:</b>	<b>PROPOSED OCP DESIGNATION:</b>
Future Urban Reserve	Rural/Agricultural

<b>EXISTING ZONE:</b> A1 – Agriculture 1	<b>PROPOSED ZONE:</b> RR1 – Rural Residential 1
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**REPORT PREPARED BY:** Corine (Cory) Gain, MCIP, CPT

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## 1.0 RECOMMENDATION

THAT OCP Bylaw Amendment No. OCP06-0019 to amend Map 19.1 of *Kelowna 2020* - Official Community Plan Bylaw No. 7600 by changing the Future Land Use designation of Lot 2 Plan KAP70569 Except Plan KAP70818; Lots 6, 7, 10, 13, 14, 15 & 16 Plan KAP70569 and Lot A Plan KAP76182, Sections 20 and 29 Township 23, ODYD, located on Shayler Court, Kelowna, B.C. from Future Urban Reserve to Rural/Agriculture be considered by Council;

AND THAT Rezoning Application No. Z06-0050 to amend the City of Kelowna Zoning Bylaw by changing the zoning classification of Lot 2 Plan KAP70569 Except Plan KAP70818; Lots 6, 7, 10, 13, 14, 15 & 16 Plan KAP70569 and Lot A Plan KAP76182, Sections 20 and 29 Township 23, ODYD, located on Shayler Court, Kelowna, B.C., from the A1 – Agriculture 1 zone to the RR1 – Rural Residential 1 zone be considered by Council;

AND FURTHER THAT OCP Bylaw Amendment No. OCP06-0019 and the Zone Amending Bylaw be forwarded to a Public Hearing for further consideration.

## 2.0 SUMMARY

The applicant is proposing to amend the Official Community Plan (OCP) Future Land Use designation of the subject property from Future Urban Reserve to Rural/Agricultural and to rezone to the RR1 – Rural Residential 1 zone in order to facilitate a proposed 18 lot rural residential subdivision (9 new lots proposed to be created).

## 3.0 BACKGROUND

### 3.1 The Proposal

The applicant is requesting an amendment to the OCP Future Land Use designation of Future Urban Reserve for the subject property, as the owner feels there is limited future urban development potential for the subject property. The applicant indicates the properties have limited building and septic disposal sites due to the steep topographic conditions and as a result, urban densities may not be achievable in this area. However, the applicant further feels that densities in keeping with the proposed Rural/Agricultural Designation could be achieved. The proposed 9 additional lots would be a minimum of 1.0 ha.in area.

The applicant has provided a preliminary plan of subdivision, for reference with this OCP/Zone amendment request, which is based on the RR1 – Rural Residential 1 zone. The subject properties will ultimately contain one single family dwelling on each property.

The proposed application meets the requirements of the RR1 – Rural Residential 1 Zone, in terms of lot area, width and depth.

### 3.2 Site Context

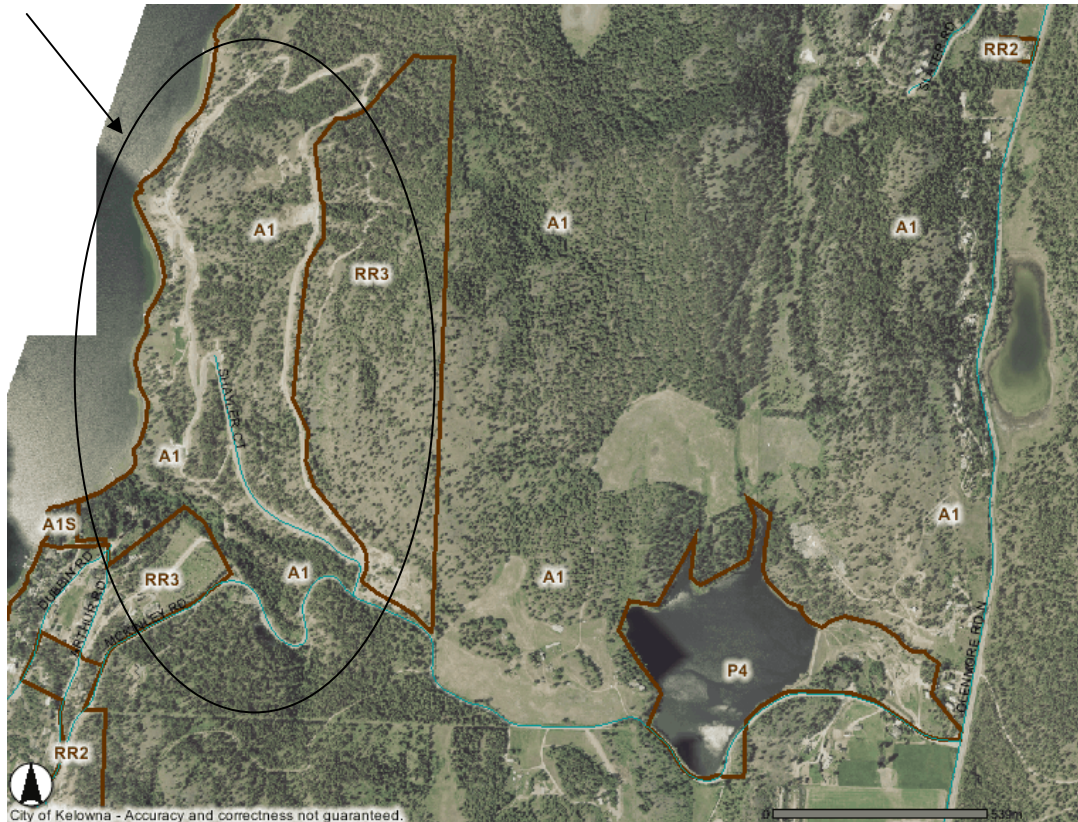
The subject property is located in McKinley Landing in the North Glenmore area. This application is being referred to as Phase 3 of the overall subdivision of the parent parcel. The site plan submitted shows both those lots left as A1 (Lots 3, 4, 5, 8 and 9, all of which have possible future higher density potential hence they are being preserved as future urban reserve) and Lots 11 and 12, both of which are too steep for further subdivision development. Lots 2, 6, 7, 10, 13, 14, 15 and 16 of Plan 70569 and Lot A Plan 76182 are being proposed to be redesignated on the OCP from Future Urban Reserve to Rural Residential and rezoned from A1 Agriculture 1 Zone to RR1 – Rural Residential 1 Zone to permit subdivision to create lots with a minimum lot size of 1.0 ha.

The surrounding area has been developed primarily as a single-family neighbourhood. More specifically, the adjacent land uses are as follows:

	<i>OCP Designation</i>	<i>Zoning Designation</i>
North-	Future Urban Reserve/A1	Agriculture 1 Zone
East	Agriculture/RR3	Rural Residential 3 Zone
South	Future Urban Reserve/A1	Agriculture 1 Zone
West	Future Urban Reserve/A1	Agriculture 1 Zone

### 3.3

Site Location Map: Subject property: Shayler Court, McKinley Landing



### 3.4 Existing Development Potential

The purpose of the RR1 zone is to provide a zone for proposed single detached housing in a rural setting on lots with a minimum lot size of 1.0 ha. Each of the lots included in the current application has subdivision potential if the OCP/Zoning Amendment application is approved.

### 3.5 Current Development Policy

#### 3.5.1 CITY OF KELOWNA STRATEGIC PLAN 2004 EDITION

The Strategic Plan objectives relating to development are:

- Manage human impacts on our natural environment, including Okanagan Lake and the surrounding hillsides.
- Sensitively integrate new development with heritage resources and existing urban, agricultural and rural areas.

#### 3.5.2 KELOWNA 2020 – OFFICIAL COMMUNITY PLAN

- The Official Community Plan future land use designation of the subject properties is Future/Urban Reserve as per Map 19.1 of the OCP. As stated in the OCP, this designation is for:

*Land that has some development potential but is not projected for development within the Official Community Plan 20-year time horizon. There is potential for the reconsideration of the status of these lands as part of a future review and updating of the Official Community Plan. These boundaries are schematic in nature, and include lands that may remain within the ALR. Lands within this designation will not be supported for any further parcelization.*

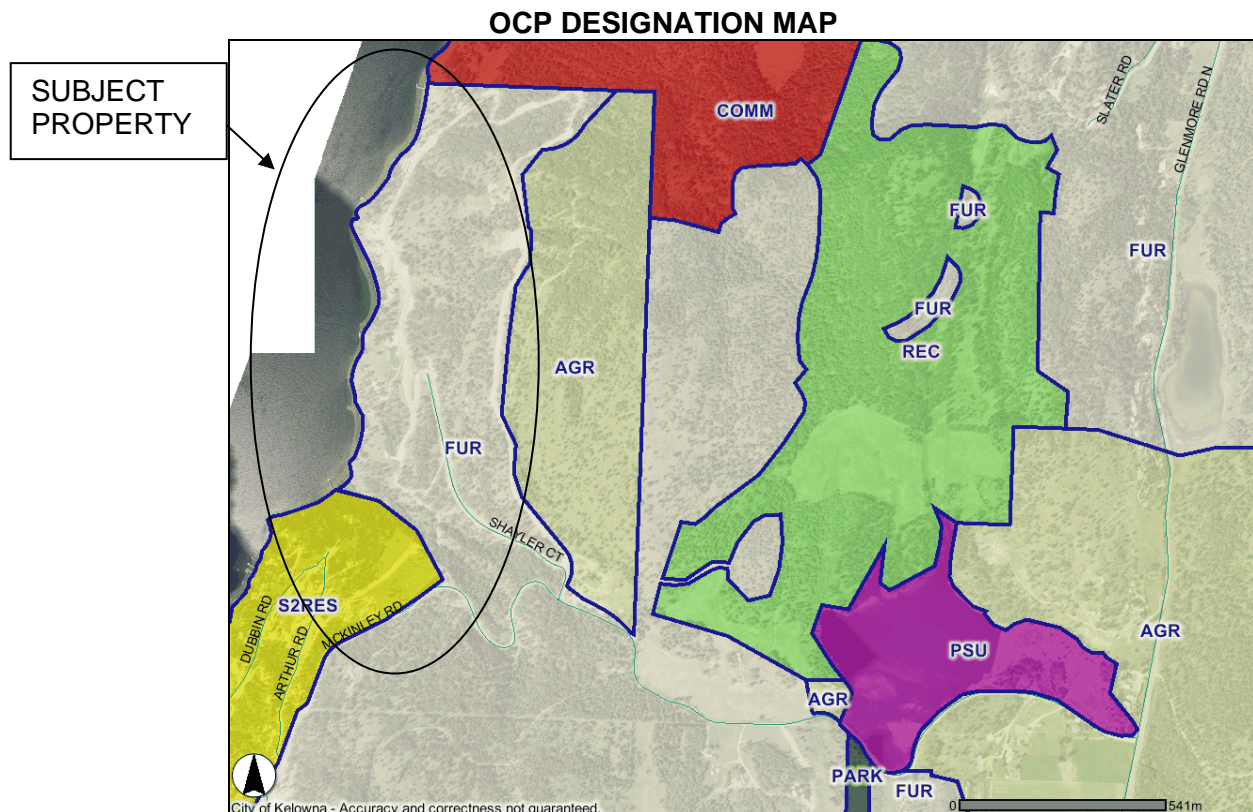
- The proposed future land use designation of Rural/Agriculture is for:

*Land within the Agricultural Land Reserve and other rural farm and non-farm lands where natural physical constraints or lack of services and utilities limit land use intensification. Non-ALR lands will generally not be supported for development to parcel sizes less than 4.0 ha (10 acres).*

- *Natural Environment/Hazardous Condition/Wildland Fire Hazard Development Permit Area Designation* - This development is subject to the Development Permit Guidelines for each of the referenced issues.
- Staff has reviewed this application, and it may move forward without affecting either the City's financial plan or waste management plan.

### 3.6 Proposed Development Policy

The applicant has submitted a plan of proposed subdivision based on the RR1 – Rural Residential zone. The purpose of the RR1 zone is to provide a zone for country residential development, and complementary uses, on larger lots in areas of high natural amenity and limited urban services.





## 4.0 TECHNICAL COMMENTS

### 4.1 Community Planning Manager

Section 7.1 of the OCP includes the following sentence: “The intent is to minimize the effects of development on the natural environment of hillside areas, defined as lands in their natural state that have a slope of 10% and greater for a minimum height of 6 metres while preserving areas with slopes of 30% and greater.” This application includes areas where the majority of the land features slopes exceeding 45%. Aside from the environmental concerns, locating homes in areas of such steep slopes can isolate and exclude people with disabilities. It is physically impossible for them to move around the neighbourhood unless there are paths that feature slopes of less than 10%, preferably less than 5%. This affects residents of the property who may be permanently or temporarily dealing with physical disabilities as well as anyone with these issues who wishes to visit the area. This is one further reason why it is not a wise use of land on steep hillsides located a significant distance from any of the services in the urban area (e.g. transit, health services, etc.) Minimum requirements would be provision of level passenger loading areas in accordance with the Subdivision Bylaw.

### 4.2 Environment Manager

These properties contain exceptionally steep slopes that would require extensive earthworks to create suitable and safe access and buildings sites. The impacts of these disturbances and likely disruption to wildlife habitats and important wildlife linkages may compromise these values to the point where they cannot be maintained at a functional level.

An environmental assessment is required to determine the potential environmental impacts associated with the proposed development. The assessment report will evaluate natural values of both aquatic and terrestrial ecosystems, identifying environmentally sensitive areas, including those habitats critical for rare and endangered species of fish, wildlife and vegetation. The environmental assessment must be prepared by a Qualified Environmental Professional (QEP).

It is anticipated that other enviro-technical reports will be part of the Preliminary Layout Review for subdivision (geotechnical, site areas for septic disposal, fuel reduction plan).

Investigative Works associated with septic site evaluation or other technical – geo work will require application for a Development Permit Waiver.

A Development Permit for approved development will be necessary at time of development.

### 4.3 Fire Department

Fire Department access, fire flows and hydrants as per BC Building Code and City of Kelowna Subdivision Bylaw. Roads should provide an alternate means of egress/access and should be looped when possible. Engineered fire flows

are needed to determine hydrant requirements. Rudimentary Fire Department access to wild land areas should be provided.

#### 4.4 Glenmore Ellison Improvement District

The District approves the above applications subject to the developer providing a Right-of-Way to the District for a water supply main for our proposed Okanagan Lake Intake. The Right-of-Way shall be located within the existing Road Reserve on the property.

Additional notes regarding issues such as water system upgrades and servicing option area provided in correspondence from Agua Consulting Inc. dated September 28, 2006. [Note: A copy is attached to this report for reference].

#### 4.5 Inspection Services Department

A geotechnical review to soil conditions and determine whether or not there are sulphate issues is required. Steep slope building platforms/lots should be reviewed by a Structural Engineer for slope protection. Foundation and roof drainage should be connected to storm sewer or rock pits.

#### 4.6 Works and Utilities

The following Works & Services are required for the associated subdivision:

##### **.1 Geotechnical Report**

- a) Provide a comprehensive geotechnical report (3 copies), prepared by a Professional Engineer competent in the field of hydro-geotechnical engineering to address the items below: **NOTE: The City is relying on the Geotechnical Engineer's report to prevent any damage to property and/or injury to persons from occurring as a result of problems with soil slippage or soil instability related to this proposed subdivision.**

The Geotechnical reports must be submitted to the Planning and Development Services Department (Planning & Development Officer) for distribution to the Works & Utilities Department and Inspection Services Division prior to submission of Engineering drawings or application for subdivision approval.

- (i) Area ground water characteristics, including any springs and overland surface drainage courses traversing the property. Identify any monitoring required.
- (ii) Site suitability for development.
- (iii) Site soil characteristics (i.e. fill areas, sulphate content, unsuitable soils such as organic material, etc.).
- (iv) Any special requirements for construction of roads, utilities and building structures.

- (v) Suitability of on-site disposal of storm water and sanitary waste, including effects upon adjoining lands.
- (vi) Slope stability, rock fall hazard and slippage including the effects of drainage and septic tank effluent on the sites.
- (vii) Identify slopes greater than 30%.
- viii) Top of bank assessment and location including recommendations for property line locations, septic field locations, building setbacks, and ground water disposal locations.
- ix) Recommendations for items that should be included in a Restrictive Covenant.
- x) Any special requirements that the proposed subdivision should undertake so that it will not impact the bank(s). The report must consider erosion and structural requirements.
- xi) Any items required in other sections of this document.
- xii) Recommendations for erosion and sedimentation controls for water and wind.
- xiii) Recommendations for roof drains and perimeter drains.
- xiv) Recommendations for construction of detention or infiltration ponds if applicable

## **.2 Water**

- a) The property is located within the Glenmore Ellison Improvement District (GEID) service area. Provide a pre-design report addressing how water will be provided to this subdivision.
- b) Provide an adequately sized domestic water and fire protection system complete with individual lot connections. The water system must be capable of supplying domestic and fire flow demands of the project in accordance with the Subdivision, Development & Servicing Bylaw. Provide water calculations for this subdivision to confirm this. Ensure every building site is located at an elevation that ensures water pressure is within the bylaw pressure limits. Note: Private pumps are not acceptable for addressing marginal pressure.
- c) Design drawings must be reviewed by GEID prior to the City issuing the drawings for construction. Confirmation of their review must be provided to the City.

## **.3 Sanitary Sewer**

- a) Sanitary sewage is to be handled by an on-site sewage disposal system for each lot subject to approval of the Public Health Officer in

accordance with the Subdivision, Development and Servicing Bylaw Schedule 4 “Sanitary” Section 2.18. Preliminary approval by the Public Health Officer is required for each individual lot, prior to subdivision approval. Please contact the Public Health Officer.

#### **.4 Drainage**

- a) The Subdivision, Development and Servicing Bylaw requires that each lot be provided with an individual connection; however, the City Engineer may permit use of individual ground water disposal systems, where soils are suitable. For on-site disposal of drainage water, a hydrogeotechnical report will be required complete with a design for the disposal method (i.e. trench drain / rock pit). The Lot Grading Plan must show the design and location of these systems for each lot.
- b) Provide the following drawings:
  - i) A detailed Lot Grading Plan (indicate on the Lot Grading Plan any slopes that are steeper than 30% and areas that have greater than 1.0 m of fill);
  - ii) NOTE: A detailed Stormwater Management Plan is **not required** for this subdivision per S.D.S. Bylaw schedule 4 item B; and,
  - iii) An Erosion and Sediment Control Plan.
- c) Show details of dedications, rights-of-way, setbacks and non-disturbance areas on the lot Grading Plan.
- d) Where ditches are provided they must be adequately lined and protected for the design flows.

#### **.5 Roads**

- a) The fronting Road (currently a private driveway) must be fully dedicated and constructed to a Rural Collector class 1 standard in accordance with standard drawing SS-R5 with minimum 20m dedication and 10m asphalt width. Provide an asphalt cul-de-sac at the end of the road with a paved radius of 12.50m. (being completed as part of file # S05-0030)
- b) Provide traffic control and street name signs where required. The City will install all signs and traffic control devices at the developer's expense.
- c) Provide a Street Sign, Markings and Traffic Control Devices Drawing.
- d) Major cut/fill slopes must start at the property lines.
- e) Verify that physical driveway access will satisfy City requirements for all lots. For steeper lots (15% and greater), show driveways on the lot grading plan with grades or profiles. Where lots are serviced by onsite sewage disposal systems, show limits of cut and fill lines.



- f) Where a common driveway access is proposed, a reciprocal access agreement must be registered against those properties for vehicular access. The agreement must set down arrangements for maintenance and must include a clause to the effect that it is not to be cancelled without the consent of the Approving Officer for the City of Kelowna. This agreement must be registered as a priority charge.
- g) Private access roads must be constructed and paved to City standard SS-R2. Turn around are to be to the satisfaction of the Fire Department and the Approving Officer.

#### **.6 Power and Telecommunication Services and Street Lights**

- a) Overhead wiring is permitted for this subdivision although underground installation is recommended.
- b) Street lights are required at intersections including at private driveway accesses.
- c) Make servicing applications to the respective Power and Telecommunication utility companies. The utility companies are required to obtain the City's approval before commencing construction.

#### **.7 Design and Construction**

- a) Design, construction supervision and inspection of all off-site civil works and site servicing must be performed by a Consulting Civil Engineer and all such work is subject to the approval of the City Engineer. Drawings must conform to City standards and requirements.
- b) Engineering drawing submissions are to be in accordance with the City's "Engineering Drawing Submission Requirements" Policy. Please note the number of sets and drawings required for submissions.
- c) Quality Control and Assurance Plans must be provided in accordance with the Subdivision, Development & Servicing Bylaw No. 7900 (refer to Part 5 and Schedule 3).
- d) A "Consulting Engineering Confirmation Letter" (City document 'C') must be completed prior to submission of any designs.
- e) Before any construction related to the requirements of this subdivision application commences, design drawings prepared by a professional engineer must be submitted to the City's Works & Utilities Department. The design drawings must first be "Issued for Construction" by the City Engineer. On examination of design drawings, it may be determined that rights-of-way are required for current or future needs.

**.8 Servicing Agreements for Works and Services**

- f) A Servicing Agreement is required for all works and services on City lands in accordance with the Subdivision, Development & Servicing Bylaw No. 7900. The applicant's Engineer, prior to preparation of Servicing Agreements, must provide adequate drawings and estimates for the required works. The Servicing Agreement must be in the form as described in Schedule 2 of the bylaw.
- g) Part 3, "Security for Works and Services", of the Bylaw, describes the Bonding and Insurance requirements of the Owner. The liability limit is not to be less than \$5,000,000 and the City is to be named on the insurance policy as an additional insured.

**.9 Other Engineering Comments**

- h) Provide all necessary Statutory Rights-of-Way for any utility corridors required, including those on proposed or existing City Lands.

**5.0 ADVISORY PLANNING COMMISSION**

"The above-noted applications were reviewed by the Advisory Planning Commission at the meeting of September 26, 2006 and the following recommendations were passed:

THAT the Advisory Planning Commission supports the Official Community Plan Amendment Application No. OCP06-0019 for 2750 Shayler Court; Lot 2 Plan KAP70569 Except Plan KAP70818; Lots 6,7,10,13,14,15,16, Plan KAP70569 and Lot A, Plan KAP76182, Sec 20 and 29, Twp 23, ODYD to amend the OCP future Urban Reserve land use designation to Rural/Agriculture.

AND THAT the Advisory Planning Commission supports the Rezoning Application No. Z06-0050 for 2750 Shayler Court; Lot 2 Plan KAP70569 Except Plan KAP70818; Lots 6,7,10,13,14,15,16, Plan KAP70569 and Lot A, Plan KAP76182, Sec 20 and 29, Twp 23, ODYD to rezone the subject properties from the A1 – Agriculture to RR1 – Rural Residential zone."

The Advisory Planning Commission seemed satisfied with the explanations provided by the application with respect to road access, sewage disposal capability, park dedication through a previous subdivision application and that more detailed study of the area has shown the capability for the proposed subdivision.

**6.0 PLANNING AND DEVELOPMENT SERVICES COMMENTS**

A very high percentage of the lands have slopes well over 30% (see the attached topographical comparison and slope analysis maps) and as such are not conducive for urban types of development. The OCP discourages development on lands with a slope over 30%. Given the topographic conditions of the site, urban densities would generally not be possible other than at the southern most portion of the property.

The subject property is designated as Future Urban Reserve, which does not provide for the further subdivision of these areas, intended for future urban development. A new policy in the OCP Growth Management Chapter (5.1.11 Future Urban Reserve) indicates that an owner of such lands may apply to change the designation to Rural/Agricultural if it can be demonstrated that a rural use of the land, such as the rural lot subdivision, is the highest and best use. Such a proposal may be supported where the land is not deemed to have the potential to be developed as part of a comprehensive urban development in the future.

The above noted OCP policy only supports the designation of Rural/Agricultural. The Rural/Agricultural designation is not specific about which zones would typically be included as rural agricultural although historically, we have included rural residential lots in the rural/agricultural designation where there is no future potential for servicing with sanitary sewer.

Although the applicant has demonstrated that the subject property is generally inappropriate for significant urban style and density of development, the proposed development still raises significant concerns regarding potential environmental impact. While staff can support the concurrent OCP amendment and RR1 rezoning application further environmental impact and mitigation assessments will need to be addressed by way of a Development Permit before any subdivision approval will be considered.

R. G. Shaughnessy  
Subdivision Approving Officer

Approved for inclusion

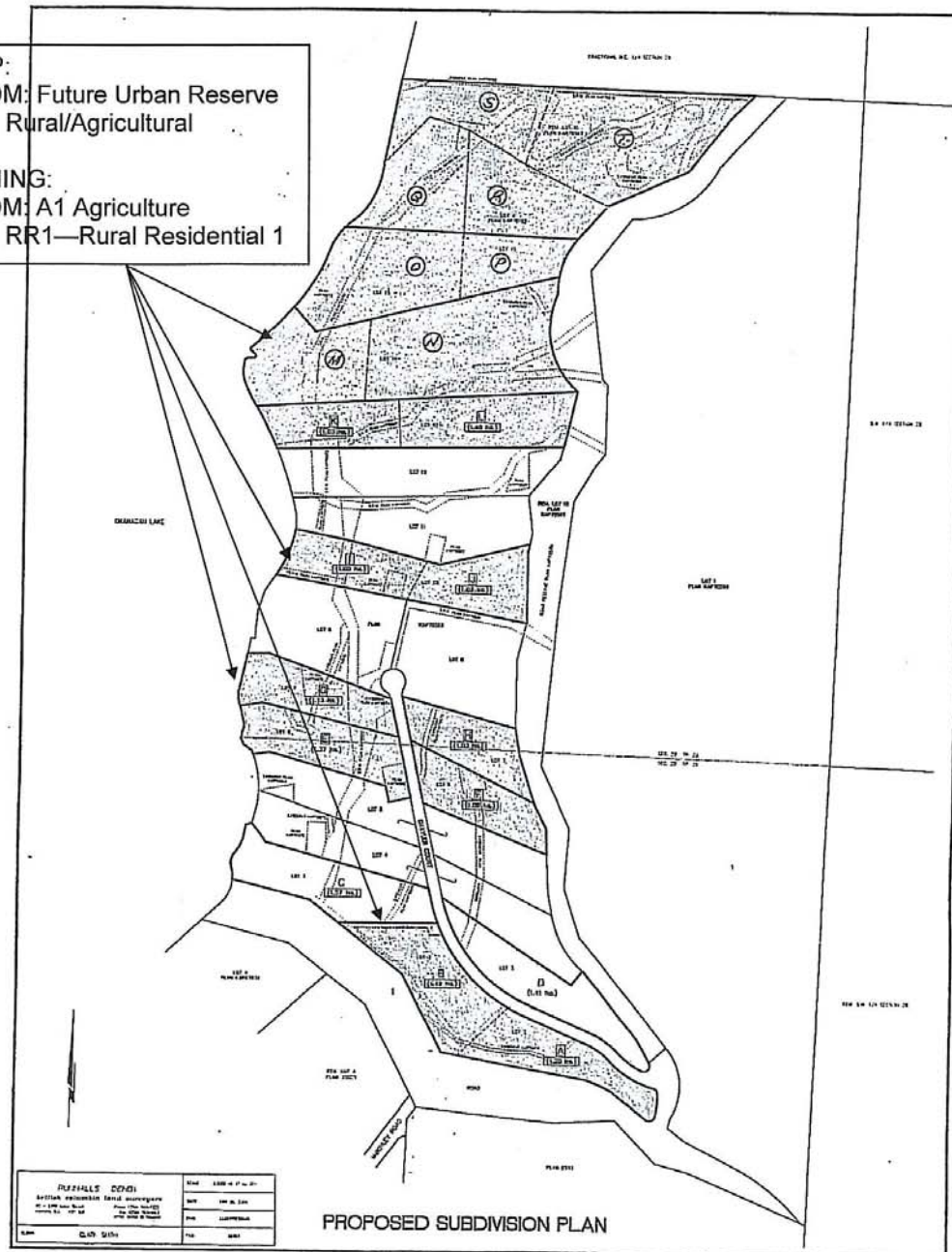


Mary Pynenburg, MRAIC MCIP B.Arch M.Pl.  
Director of Planning and Development Services

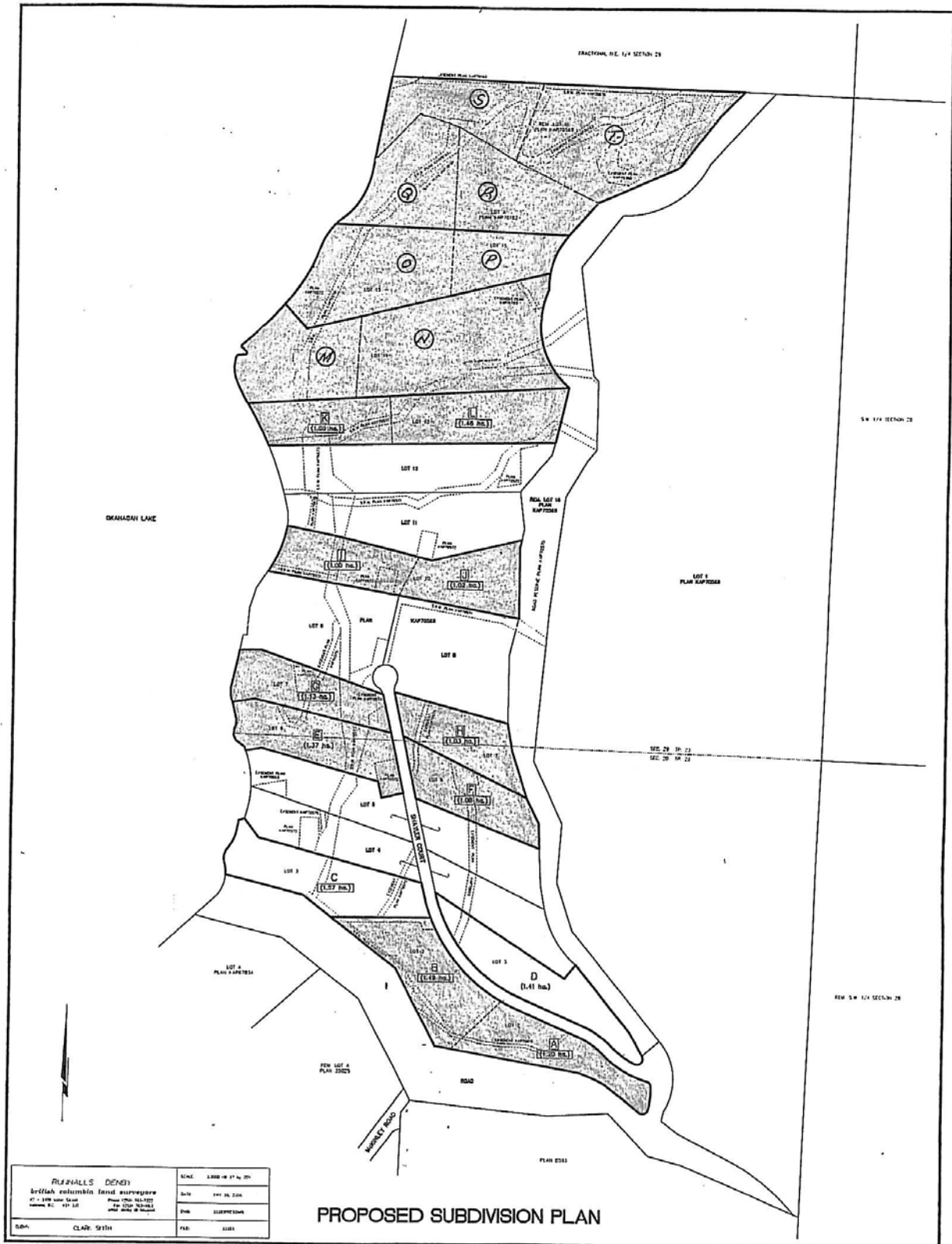
RGS/cg

**ATTACHMENTS**  
**Subject Property Map**  
**Proposed Rezoning/Subdivision Site Plan**  
**Topographical Comparison Plan**  
**Slope Analysis**  
**Correspondence from Agua Consulting Inc.**

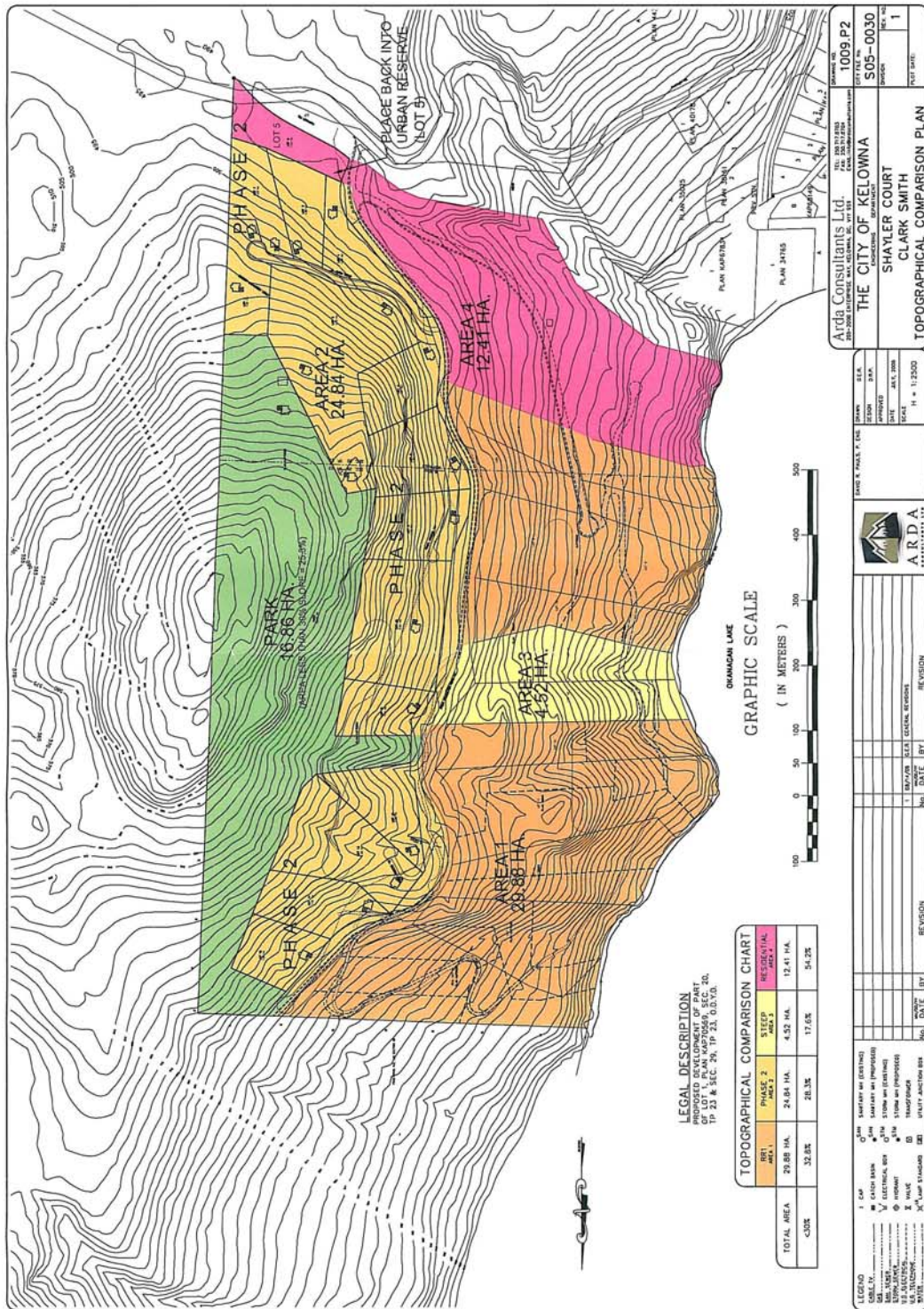
ZONING:  
FROM: A1 Agriculture  
TO: RR1—Rural Residential 1



# PROPOSED REZONING/SUBDIVISION SITE PLAN

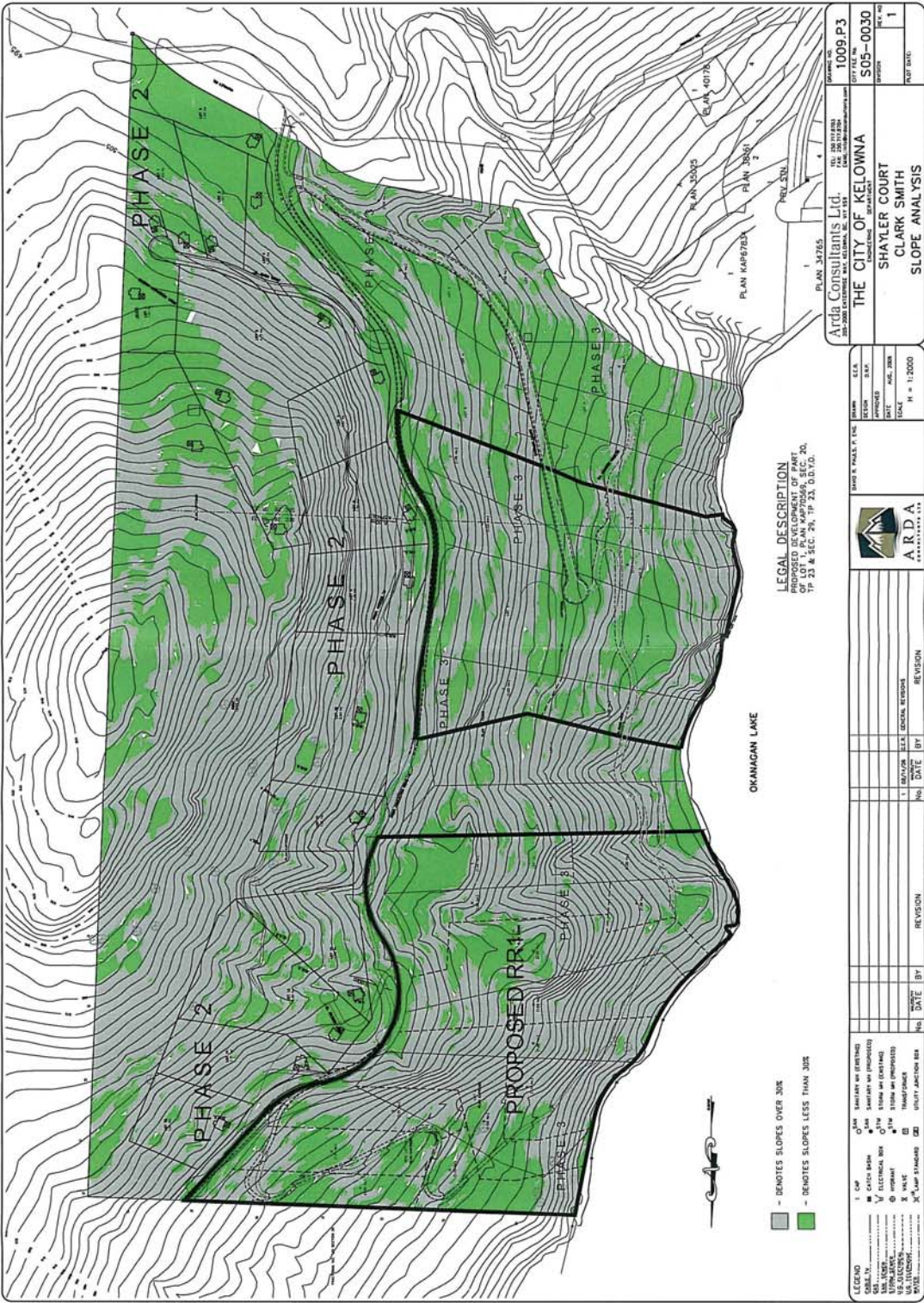








SLOPE ANALYSIS





September 28, 2006

Glenmore Ellison Improvement District  
445 Glenmore Road  
Kelowna, BC  
V1V 1Z6

Attention: Mrs. Nancy Howlett, General Manager

Dear Nancy:

**RE: Water Servicing Requirements – Shayler Court**  
Lot 1, Plan 70569, Section 20, Twnshp 29  
City File No. OCP06-0019, Z06-0050

## **1.0 INTRODUCTION**

This letter provides our technical review of the recommended water servicing requirements for Lot 1, Plan 70569. The property owners have applied to the City of Kelowna for rezoning and an OCP amendment as per the application received by Glenmore-Ellison Improvement District dated August 24<sup>th</sup>, 2006.

The application and following documents were reviewed in the preparation of this letter

- Drawings and correspondence from D.Pilling & Associates dated May, 2002;
- McKinley Waterworks Capital Works Program, dated Jan. 2002 by Mould Engineering Ltd;
- 2004 Capital Plan Update by Agua Consulting Inc.
- May 18<sup>th</sup>, 2005 Agua Consulting Inc. letter report to GEID regarding this development property;
- Correspondence and mapping received from Arda Consultants and C. Smith, August, 2006.

From the current information submitted, it is difficult to determine the exact number of lots that will be requiring water service. This assessment is based on up to 20 additional single family lots being developed. More importantly, the water servicing concepts for the development are set out within this letter.

## **2.0 BACKGROUND**

From earlier reviews, the proposed development is to consist of 20 rural residential lots 2.0 ha. in size and larger. The lots will be located above and below Shayler Court and the designated road reserve that bisects the property. Presently there is a narrow paved access road located on the Road Reserve.

From the May 18<sup>th</sup>, 2005 letter, the recommended Hydraulic Grade Line for servicing lots along the proposed road reserve is 540 metres (geodetic elevation). This hydraulic grade line matches in with future pressure zone settings and provides adequate pressures to potential lots on both sides of the proposed roadway.

**Agua Consulting Inc. "Engineered Water Solutions"**  
o 3349 East Kelowna Road, Kelowna, BC, V1W 4H3  
o Phone: 250.860.1222 Facsimile: 250.860.1254 Cellular: 250.212.3266

Glenmore Ellison Improvement District  
Shayler Court  
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To provide water to this hydraulic grade line, a booster station is recommended off the existing McKinley Waterworks system below Shayler Court. This station is to service up to 20 single family lots with water for peak hour demands, fire protection and emergency supply.

In addition to the applicant's subdivision, the adjacent lands to the north and east are also requesting to be included within the GEID boundaries. The owner of these lands is putting in place an agreement for cost-sharing of a new water intake on Okanagan Lake to feed to the GEID McKinley Reservoir.

As part of this development, a right-of-way is required for a large 750mm diameter water from the north property through this land to McKinley Landing. This right-of-way is required in the very near future and GEID will require an alignment through the road reserve.

### 3.0 CRITERIA

This analysis is consistent with City of Kelowna Subdivision Bylaw criteria and that of the Glenmore-Ellison Improvement District.

Because of the steep topography, amount of rock outcrop, and low density development, the water that is equivalent to that for a SF lot is provided for each lot. This means that only sufficient water for a 1/3 acre lot will be provided in accordance with GEID land use designations. Irrigation is not to be provided to any large extent from the existing water system. If additional water is required for certain lots, then the design and capacity of the water system must be addressed at the design stage.

The criteria followed in this analysis included both that of the GEID and the City of Kelowna Subdivision Bylaw. Design criteria to be used for design of water supply is listed below.

#### Demands

- Average Day Demand (ADD) 900 L/capita/day
- Maximum Day Demand (MDD) 2,400 L/capita/day
- Peak Hour Demand (PHD) 4,000 L/capita/day

#### Population Density

- 3.0 persons per dwelling unit

#### Pump Station Capacity

- Pumping capacity to meet MDD with the largest pump in the station out of service, provided balancing storage is available. If balancing storage is unavailable, then peak hour must be capable by either pump plus a fire pump must be installed along with emergency power.

#### Fire Protection

- Provide a minimum of 60 L/s or in accordance with FUS guidelines;
- Fire storage in accordance with FUS guidelines;

#### Reservoir Storage

- Sum of
  - Balancing storage
  - Fire protection storage, and
  - Emergency storage ( 25% of balancing and fire storage).

Agua Consulting Inc.  
"Engineered Water Solutions"

Glenmore Ellison Improvement District  
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#### **GEID Capital Charges**

The GEID updated their Capital Plan in late 2004. CEC's would be payable for the proposed lots in accordance with the CEC Bylaw. A copy of the current CEC bylaw is available at the GEID website at; [www.glenmoreellison.com](http://www.glenmoreellison.com).

#### **4.0 ENGINEERING ANALYSIS**

The engineering review conducted and summarized in the Agua Consulting May 18<sup>th</sup>, 2005 letter is still applicable.

##### **Boosted Pressure Zone - Servicing Concept**

The recommended servicing concept is to allow up to 20 lots to be serviced through the creation of a new pressure zone with a HGL of 540 metres. To achieve the required water system redundancy, sufficient capacity would be provided at the new pump station located at an elevation of approximately 410 metres. The recommended booster station components are as follows:

- Two VFD duty pumps, ( 5.0 to 7.5 hp pumps) each capable of providing Peak Hour demand with 40 psi residual pressure throughout the service area;
- One fire pump (100 to 125 hp pump) with VFD motor capable of providing Max day demand plus a fire flow demand and 20 psi residual pressure throughout the service area. VFD motor is to provide for maximum flow while maintaining adequate suction side pressures;
- Electrical service capacity to provide 3 phase power;
- One genset capable of driving the fire pump (150 kw size range);
- One small VFD flow pump (1/2 hp) to provide low flows and maintain system pressure at low flow times;
- Two (2) 350 litre pressure tanks to allow all pumps to shut off completely during no-flow times;
- Sufficient room for all components (genset can be situated in protected area outside of the building.

##### **Pressure Zone Layout**

The pressure zone layout is consistent with the August 18<sup>th</sup> letter. It can be modified if the developers engineer can show good reason for modification in relation to the regional pressure zone set-up.

##### **Distribution System**

Distribution system watermain are to be located in public right-of-way. The watermain to service the lots would be located in the road reserve which we understand will become road Right-of-Way. GEID also requires this road Right-of-Way for a 750mm diameter transmission main to convey water from Okanagan Lake to McKinley Reservoir.

##### **Fire Protection**

It was previously estimated that the flow available at the suction side of the pumps for the proposed pump station would be between 68 to 72 L/s. The maximum available flow from the McKinley water system is estimated to be 68 L/s of which 2 L/s is for maximum day demands and 66 L/s is for fireflow. This is marginally above the minimum recommended flows as set out in the City of Kelowna Subdivision Bylaw. The area is rural in nature and development density is low. For this reason, the 66 L/s fireflow may be considered adequate. The fire pump would be sized to convey this flow to the upper 540 m pressure zone.

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Agua Consulting Inc.  
"Engineered Water Solutions"



Glenmore Ellison Improvement District  
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#### Lake Pumping Upgrades

The existing Okanagan Lake pump station building houses two 50-hp pumps and chlorination equipment. According to the circular flow charts, each pump has a capacity of 17.5 L/s ( 277 USgpm). The MDD for 243 SF lots is estimated to be 20.25 L/s. This is greater than the capacity of either pump in the station. In review of the data provided from the McKinley Waterworks lake pump station, the existing capacity of the station is committed to the existing lots. The addition of another 20 SF lots will increase the MDD by 1.67 L/s with a resulting system design flow of approximately 22 L/s. It is required that the lake pumps be upgraded to suitable capacity and horsepower to provide the design flow plus at least 15%. The horsepower capacity should be increased from 50 hp to 75 hp. With an increase to 75 hp, it is likely that the flow generated from each pump will be sufficient to service all of the Clark Smith development plus additional lots in the McKinley service area. The estimated pump upgrade should provide for a flow increase from an existing rate of 17.5 L/s to 27 L/s. The lake pump station upgrade is eligible for Capital Expenditure Charge credits as the work is considered part of the source water development for GEID.

#### McKinley Utility Reservoir Storage

There are two options available to the developer to deal with reservoir storage requirements. Based on the required volume of storage required for this development, and the necessity to upgrade the existing McKinley water system, it is more cost effective to add storage to the existing McKinley Reservoir than to build new storage. This item is presented in detail in the May, 2005 letter. The recommended volume for the development area is summarized below.

##### Clark Smith Plus McKinley Service Area

Required Balancing storage - 6 hours of MDD for (243+20) SF units	473 m <sup>3</sup>
Fire Storage (FUS requirement for typical home size 66 L/s for 1.67 hrs)	324 m <sup>3</sup>
<u>Emergency Storage ( 25% of the first two components)</u>	<u>199 m<sup>3</sup></u>
<b>TOTAL STORAGE</b>	<b>996 m<sup>3</sup></b>
<u>Existing Storage</u>	<u>795 m<sup>3</sup></u>
<b>MINIMUM REQUIRED STORAGE</b>	<b>201 m<sup>3</sup></b>
<b>TOTAL VOLUME ( 199 m<sup>3</sup> OVERBUILD)</b>	<b>400 m<sup>3</sup></b>

The reservoir expansion works should follow GEID design guidelines. Typical requirements are for a buried concrete reservoir, sufficient mixing built into the design, allowance for possible re-chlorination and consideration for future expansion cells.

#### Alternate Option to Reservoir Storage Expansion

In lieu of reservoir storage upgrades, a diesel generator can be provided at the lake pump station to reduce the storage requirements. The generator will offset the emergency storage component of reservoir storage. The reservoir storage capacity would have the capacity to supply one of the upgraded pumps with sufficient power in the event of a major power failure. A genset in the 100kw range is required.

Glenmore Ellison Improvement District  
Shayler Court  
September 28<sup>th</sup>, 2006

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## 5.0 SUMMARY

The proposed development can be provided with water service from GEID providing the following requirements are met. Based on our review, we have the following conclusions and recommendations.

- A statutory right-of-way in favour of GEID is provided for the watermain to service the development;
- GEID will require a Statutory Right-of-Way access to install and maintain a large diameter pipe (750mm diameter) from the Vintage Landing development lands to the north, to McKinley Reservoir. It is foreseen that this watermain would be located within the existing Road Reserve;
- Capital Charges for water would apply in conformance with GEID Bylaw No. 84;
- The McKinley Waterworks Okanagan Lake Pump Station must be upgraded before additional lots are approved for construction on the McKinley water system. The existing pumps would likely be upgraded from 50 hp to 75 hp. Pumps in the 75 hp size range would likely have spare capacity and would benefit future development. CEC credits would be available on this component of the required system upgrades;
- The McKinley Utility Reservoir would require upgrades in the amount of 400 m<sup>3</sup> to provide sufficient balancing and fire storage for the proposed lots. In addition to the 201 m<sup>3</sup> required specifically for the Clark Smith property, It is recommended that there be 199m<sup>3</sup> assigned to future development so that the reservoir cell constructed is of sufficient size for expansion. Latecomers fees would be collected on the 199m<sup>3</sup> of the reservoir expansion overbuild;
- An alternate option to concrete reservoir storage is to install a genset in the size range of 100kw;
- It is estimated that the local watermain in the McKinley water system can deliver 68 L/s to the suction side of a pump station located below Shayler Court. Of this amount, 2 L/s is for maximum day demands and 66 L/s is for fire protection.
- A new pump station to service 20 lots by C. Smith would require two duty pumps, an electric fire pump, a small low flow pump for low flow periods, a pressure tank system, and a standby generator. Some of the larger pieces of equipment can be moved to other locations within the GEID system when the larger water storage is constructed at higher elevations in the future in this region.

We would recommend that GEID support the applications, providing the developer allow the SRW or road ROW for a 750mm watermain along the existing Road Reserve and that the servicing as stated is carried out as set out in this letter. We trust that this letter addresses your technical issues at this time. Please contact us if you have further questions regarding this information.

Yours truly,  
Agua Consulting Inc.



Bob Hrasko, P.Eng.  
Principal  
RJH/rh

Agua Consulting Inc.  
"Engineered Water Solutions"