REPORT TO COUNCIL

City of Kelowna

Date: May 2, 2012

File: 1350-90

To: City Manager

From: Engineering Traffic Technician, Transportation & Mobility

Subject: Update - McKinley Road Safety Improvements (SR #215486)

Recommendation:
THAT Council receives, for information, the report from the Engineering Traffic Technician, Transportation & Mobility, dated May 2, 2012, regarding the Update - McKinley Road Safety Improvements.

Purpose:
To inform Council of the McKinley Road Safety Improvement budget item being submitted for 2012 Final Budget.

To respond to the Council Resolution dated January 9, 2012 (SR #215486).

> "COUNCIL RESOLUTION FROM THE January 9, 2012 REGULAR MEETING: THAT Council directs staff to report back to Council during the 2012 Budget Deliberations with a "walk-in" budget submission for consideration in the 2012 Provisional budget for updating Preliminary Engineering Design of potential improvement options;
>
> AND THAT Council directs staff to report back to Council with the results of the Preliminary Engineering Design Report prior to considering the 2012 Final Budget".

There is a related Service Request #214303, from a citizen requesting that barriers be installed.

Background:
This memo follows on the previous Report to Council date January 4, 2012 being Item 6.2 on the January 9, 2012 agenda.

Following the January 9, 2012 Council meeting and the approval of a $50,000 2012 Provisional Budget for conceptual design options, the City retained a consulting engineer, True Consulting, and two independent road safety auditors, Canadian Highways Institute and Trans Safe Consulting, to assist in completing the preliminary engineering design. Seven options were identified and evaluated against evaluation criteria (Attachment 1). The parameters included financial/economic, environmental, and social/community considerations.

From a technical perspective, Option 1 and 7 are equally preferred, followed by Option 2 and 3 respectively. Options 4, 5 and 6 are not recommended for technical reasons.

Stakeholder Consultation: A technical review has been completed and affected parties are currently being consulted. A meeting was held with a GEID representative and the options were presented. The options were generally accepted by GEID staff but still need to be approved by the GEID Board of Directors.

Staff hand delivered invitations to each McKinley resident on Monday afternoon, April 30 and Tuesday morning, May 1 for an open house on Thursday, May 3, 2012 at the McKinley Fire Hall. An electronic message board announcing the open house was placed on McKinley Road Tuesday morning, May 1. During the open house, Staff will inform residents of the various improvement options, and seek local advice on the evaluation criteria and other considerations pertinent to the final selection of the appropriate engineering option.

A final recommendation for a preliminary engineering design will be confirmed upon completion of the open house, following submission of this Report to Council. The public input and final recommendation will be provided to Council by way of a verbal report to Council on May 7, supplementing this written report submission. This report supports the Final Budget submission that will be considered by Council at the May 7, 2012 meeting.

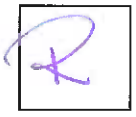
Internal Circulation:
Risk & Claims Analyst
Traffic Technician, Transportation Services

Financial/Budgetary Considerations:
The Final Budget shows a $300,000 budget for the detail design and construction phases, based on high level estimates. This will be adequate to cover any of the options currently under consideration.

Considerations not applicable to this report:
Legal/Statutory Authority
Legal/Statutory Procedural Requirements
Existing Policy
Personnel Implications
External Agency/Public Comments
Communications Comments
Alternate Recommendation

Submitted by:

B. Oliveira, Engineering Traffic Technician

Approved for inclusion:  R. Cleveland, Director, Infrastructure Planning

Attachment 1: McKinley Road Safety Improvement Options, True Consulting

cc: General Manager, Community Sustainability
General Manager, Community Services
Director, Communications
Director, Financial Services
Director, Corporate Services
Director, Civic Operations
Director, Design & Construction

City of Kelowna

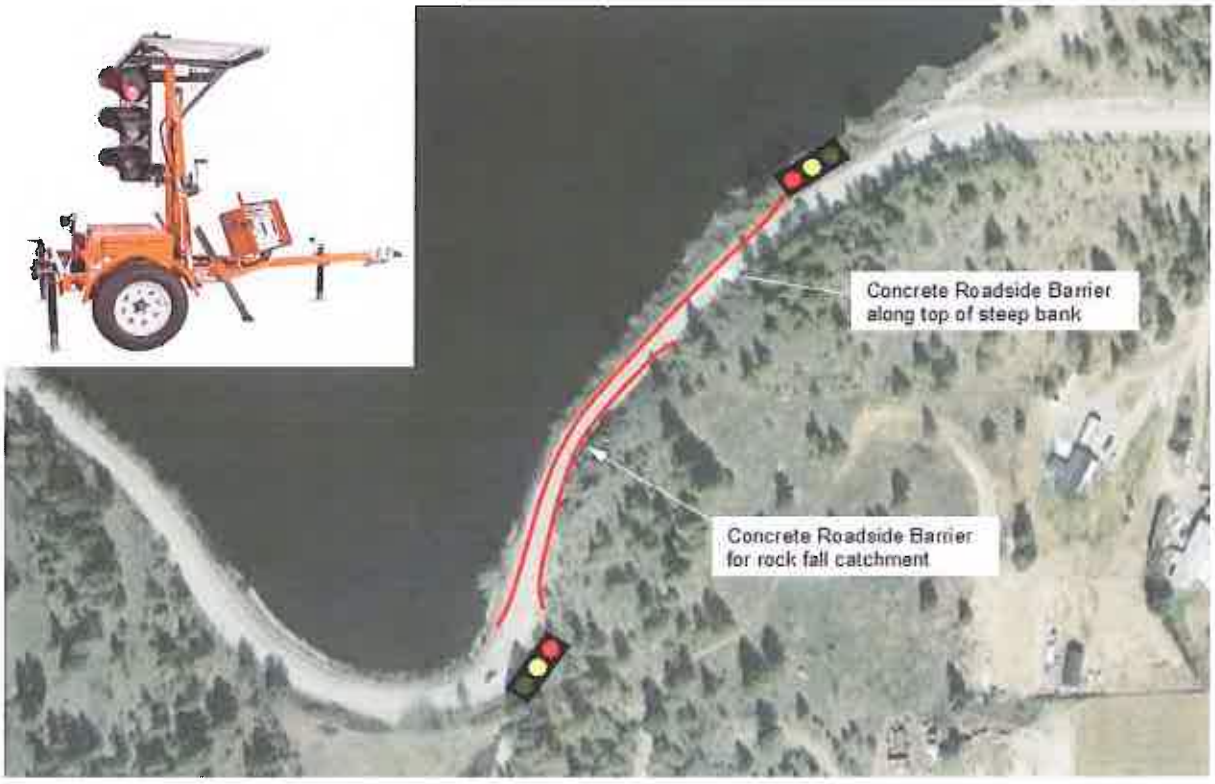
McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 1

ONE-WAY ALTERNATING TRAFFIC

Option Description:

To reduce speed and virtually eliminate the potential for a collision or vehicle leaving the roadway at the narrow section between the reservoir and the rock face, a one-way alternating traffic system could be employed. Such a system would control traffic in each direction with solar powered portable traffic signals. A concrete roadside barrier section would be placed along the rock face to help catch any rock fall and a longer section is recommended along the existing edge of pavement on the reservoir side to prevent any vehicles from leaving the road.



City of Kelowna

McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 2a

ROAD WIDENING BY ROCK EXCAVATION

Option Description:

The narrow road section between the reservoir and rock face could be widened by rock blasting to provide adequate space to install concrete roadside barriers along the reservoir side and a ditch at the base of the rock face to manage runoff and falling rock. Two versions of this option have been considered. This option provides for a standard 1.0m clearance to the barrier as well as a 1.0m paved shoulder with the standard ditch section.

City of Kelowna

McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 2b

ROAD WIDENING BY ROCK EXCAVATION

Option Description:

The narrow road section between the reservoir and rock face could be widened by rock blasting to provide adequate space to install concrete roadside barriers along the reservoir side and a ditch at the base of the rock face to manage runoff and falling rock. This version minimizes the rock excavation and capital cost by providing only 0.3m clearance to the concrete barrier and no additional clearance at the edge of the ditch.

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McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 3

W-BEAM GUARDRAIL INSTALLATION

Option Description:

As an alternative to rock blasting and road widening to accommodate concrete barriers along the reservoir, a steel guardrail could be installed along the edge of the existing pavement. The main benefit of the steel barrier over concrete is that it can be installed without the need for widening the existing driving surface. Strong Post W-Beam Guardrail systems are used in many jurisdictions around the world. One negative aspect is that when they are impacted in an accident they typically require more repair than an equivalent concrete system.

City of Kelowna

McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 4

THREE-WAY STOP INTERSECTION

Option Description:

One option to reduce traffic speed at the critical curve along the reservoir boundary near the rock face would be to construct a three-way stop intersection at the location of the existing driveway to 2105 McKinley Road. This would eliminate the current high rate of speed for many vehicles in both directions, reducing the potential for a serious accident. This intersection could provide for a secondary access to the proposed Regional Park if this property was acquired by RDCO.

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McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 5

ROAD WIDENING BY ROCK FILL IN RESERVOIR

Option Description:

This option is similar to Option 2 but provides for rock infill in the reservoir rather than rock excavation to provide additional road width for the concrete roadside barriers and ditch. In addition to the concerns addressed in Option 2, the placement of the rock infill creates some potentially challenging geotechnical and environmental issues. This would also increase the curvature of the resulting road alignment.

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McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 6

REALIGNMENT THRU McKINLEY RESERVOIR

Option Description:

The best option from an engineering and traffic perspective is to realign this section of McKinley Road to provide a consistent radius and road width to meet current engineering design standards. A new 120m radius curve with standard cross slope will meet 50 km/h design speed requirements. Concrete roadside barriers may be warranted for the outside of the curve for additional safety. Barriers are not necessarily warranted for the inside of the curve but may be included considering the presence of the drinking water reservoir.

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McKINLEY ROAD SAFETY IMPROVEMENTS

IMPROVEMENT OPTION # 7

REALIGNMENT OF COMPOUND CURVE

Option Description:

The next best option from an engineering and safety perspective is to remove the compound curve at the south end of the reservoir and construct a safer curve to current design standards. Minimum radius for a 40 km/h TAC design speed is 60m with 4% super-elevation. The rock fill could be obtained from the rock face to improve the width, drainage and reduce rock fall hazards. This improvement would provide a consistent alignment with good drainage and a safe clear zone on the outside of the curve. Concrete roadside barriers could also be added along the steep bank section for added safety.

McKinley Road Safety Improvement Options

City of Kelowna

Background

- Follows Item 6.2 of January 9, 2012 Council meeting
- Retained True Consulting, Canadian Highways Institute & Trans Safe Consulting
- Seven options identified, three are not recommended for technical reasons
- Remaining evaluated using multiple bottom line criteria
  - Financial / Economic
  - Environmental
  - Social/Community

MULTIPLE BOTTOM LINE EVALUATION MATRIX

Financial / Economic

- Capital Investment
- Cost Recovery Opportunities
- Operations & Maintenance Costs

Environmental

- Construction Impacts
- Environmental Benefits
- Reservoir Protection

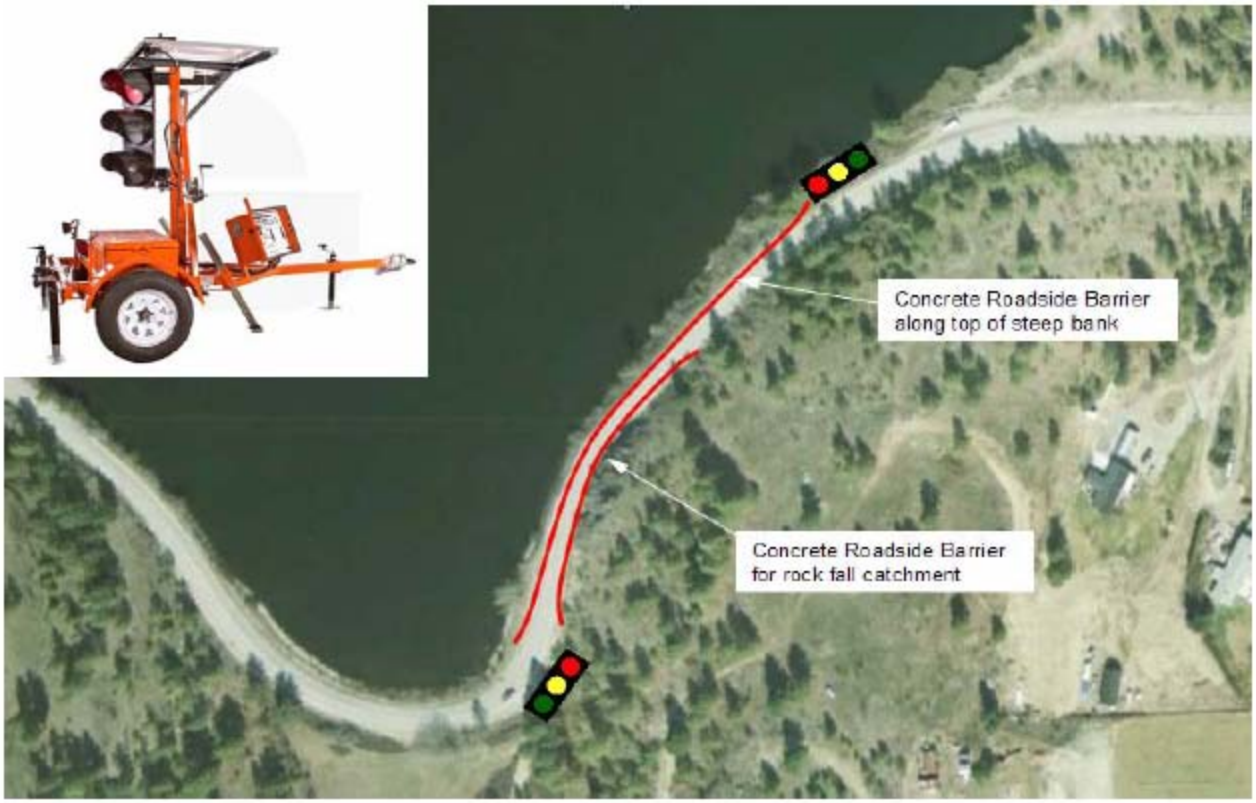
Social / Cultural

- Vehicle Traffic Safety
- Cyclist / Pedestrian Safety
- Level of Service
- Neighbourhood Acceptance

Technical Evaluation Preferred:

1. Options 1 & 7
2. Options 2a/2b
3. Option 3

Option 1: One-Way Alternating Traffic Signals



Option 7: Realignment of Compound Curve and Road Widening

Option 2a: Road Widening by Rock Removal (full width)

Option 2b: Road Widening by Rock Removal (limited)

Option 3: Steel W-Beam Guardrail Installation

Options not recommended at this time for technical reasons

- Complete realignment through reservoir
- 3-Way Stop configuration
- Road widening by rock fill in reservoir

PUBLIC CONSULTATION

- Open House: Thursday May 3 at McKinley Fire Hall
- Obtained public acceptance of technically feasible options
- Obtained feedback on relative weighting of criteria