ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 1

EO M425.01 – ESTABLISH EXPEDITION PARAMETERS

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Photocopy Section 1 of the Expedition Planning Booklet located at Attachment A for each cadet.

Photocopy the Expedition Parameters Information Sheet located at Attachment B for each cadet.

Photocopy the Silver Star Expedition Information Sheet located at Attachment C for each cadet.

Review the completed Section 1 of the Expedition Planning Booklet located at Attachment D.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A group discussion was chosen for TP 1 as it allows the cadets to interact with their peers and share their knowledge and opinions about the reasons for conducting expeditions. Sharing in the discussion encourages the cadets to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

An interactive lecture was chosen for TP 2 to orient the cadets to expedition objectives and generate interest.

An in-class activity was chosen for TP 3 as it is an interactive way to provoke thought and stimulate interest in planning an expedition.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have established expedition parameters by determining the corresponding goals, objectives and guidelines.

IMPORTANCE

It is important for cadets to establish the parameters for an expedition as this knowledge is a critical first step in the process of planning an expedition. Identifying objectives and guidelines provides the basis to develop all other aspects of the expedition plan. The process for establishing expedition parameters can also be applied to planning other types of activities.

Teaching Point 1 **Discuss reasons for conducting expeditions.**

Time: 5 min Method: Group Discussion

BACKGROUND KNOWLEDGE

The point of the group discussion is to draw the following information from the group using the tips for answering / facilitating discussion and the suggested questions provided.

The *Canadian Oxford Dictionary* defines expedition as an organized voyage or journey across land or water, with a specific goal.

REASONS FOR CONDUCTING EXPEDITIONS

Organizations conduct expeditions for a variety of reasons. In most cases, expeditions are conducted to allow participants to meet the specific outcomes of the organization. Examples include:

- challenging participants;
- developing hard and soft skills;
- providing leadership opportunities;
- increasing physical fitness levels; and
- providing opportunities to earn qualifications.

ARMY CADET EXPEDITION PHILOSOPHY

Army cadet expedition training combines many historical army-related field skills with adventure training to create one of the most challenging and rewarding aspects of army cadet training. Army cadet expedition training evolved from a common vision by stakeholders in 1998 and was refined over the course of a decade.

Expeditions provide an excellent platform for army cadets to achieve the aims and participant outcomes of the cadet program. Expeditions:

- allow army cadets to participate in adventurous activities as part of mandatory training;
- promote recruiting and retention;
- develop leadership skills while enhancing self-reliance, self-confidence, self-esteem, and self- discipline; and
- promote and raise the profile of the Army Cadet Program.

OUTWARD BOUND EXPEDITION PHILOSOPHY

The Outward Bound organization was founded in 1941 by Kurt Hahn in Wales. Hahn claimed that challenge-based outdoor training would benefit the personal development of students. Outward Bound provides students an opportunity to participate in a wilderness expedition that places challenge at the forefront of all activities, thereby allowing for personal growth in self-reliance, physical fitness, craftsmanship, and community service and compassion.

Outward Bound, an outdoor leadership school, uses expeditions as a medium to 'teach' their students about goal setting, teamwork and leadership through practical experiences. These experiences allow for character development in a way that cannot be experienced in a classroom setting or without the inherent struggles and challenges experienced on an expedition. By facing real problems, solving them with newly-learned skills, and making decisions that matter, Outward Bound believes that their students will emerge more aware of their strengths and able to use them in a variety of situations.

GROUP DISCUSSION

TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions.
- Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.

SUGGESTED QUESTIONS:

Q1. What is an expedition?

Q2. How does expedition training differ from training conducted on a field training exercise?

Q3. Where does expedition training fit within the Army Cadet Program?

Q4. Using experiences from the Silver Star expedition as a guideline, what are some reasons that expeditions are conducted?

Other questions and answers will develop throughout the group discussion. The group discussion should not be limited to only those suggested.

Reinforce those answers given and comments made during the group discussion, ensuring the teaching point has been covered.

CONFIRMATION OF TEACHING POINT 1

The cadets' participation in the group discussion will serve as the confirmation of this TP.

Teaching Point 2 **Discuss expedition goals and objectives.**

Time: 10 min Method: Interactive Lecture

The purpose of this TP is to introduce cadets to the concept of expedition goals and objectives. Encourage cadets to use their own expedition experience(s) to add to the material.

Distribute to each cadet:

- the Expedition Parameters Information Sheet located at Attachment B, and
- a Duo-Tang.

Discuss the Expedition Planning Booklet, by informing cadets that:

- the Expedition Planning Booklet will be used to simulate the planning of an expedition in each of the EOs in PO 425 (Develop an Expedition Plan);
- the Expedition Planning Booklet is divided into sections which mirror the expedition planning process;
- sections of the Expedition Planning Booklet will be completed, during the lesson and as homework, using a Silver Star expedition scenario; and
- each section will be distributed in the corresponding EO and should be placed in a provided Duo-Tang.

The development of sound goals and objectives provides guidance to individuals as they plan an expedition. The foundation of an effective trip plan is well-defined program goals and objectives. Goals and objectives can be divided into two categories:

- trip, and
- program.

Trip goals and objectives can only be developed in conjunction with program goals and objectives. Likewise, program goals and objectives must be developed in conjunction with the overall philosophy of the organization conducting the expedition.

Figure 1 Goals and Objectives Hierarchy

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Remind cadets of the organization philosophy of army cadet expeditions discussed in TP 1 as it relates to the goals and objectives hierarchy.

Goals. Goals represent broad, intended outcomes to be experienced as a result of participating in the expedition. Goals provide direction for leaders and participants as they engage in the expedition experience.

Objectives. Objectives are the targeted outcomes used to assess the accomplishment of each identified goal.

Well-written goals and objectives serve the same purpose as a good map—they provide leaders with a specific path to follow as they create and execute the expedition. Goals and objectives will also assist leaders to make decisions while on the expedition. For example, if a primary goal of developing participants' canoeing skills in Class II moving water was not being met, leaders could choose to cut out a day of hiking to spend an additional day canoeing.

Creating Goals and Objectives

Leaders must put thought and time into the purpose of the expedition when creating goals and objectives. It is important to make goals and objectives:

Specific. Goals and objectives should be specific yet remain flexible from a programming standpoint to allow for differences in group abilities and experiences.

Measurable. Goals and objectives must represent measurable outcomes. For example, ride a mountain bike on familiarization trails, not to exceed Level 3, for 30–40 km.

Achievable. Goals and objectives must be realistic and all required resources must be accessible / available.

Relevant. Goals and objectives must be worthwhile for all individuals involved. It is inadvisable to create a goal and subsequent objectives that affect only certain members of an expedition team.

Timed. Goals and objectives must be able to be completed within the timeframe of the expedition.

Review the purpose for conducting the expedition and the goals and objectives for the Silver Star Expedition as detailed in the Expedition Parameters information sheet. Cadets will be required to transfer that information into Section 1 of the Expedition Planning Booklet.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. Into what two categories are goals and objectives divided?

Q2. What are the differences between goals and objectives?

Q3. When created, goals and objectives must meet what criteria?

ANTICIPATED ANSWERS:

A1. Goals and objectives are divided into the categories of trip and program.

A2. Goals represent broad, intended outcomes to be experienced as a result of participating in the expedition. Goals provide direction for leaders and participants as they engage in the expedition experience. Objectives are the targeted outcomes used to assess the accomplishment of each identified goal.

A3. Goals and objectives must be:

- specific,
- measurable,
- achievable,
- relevant, and
- timed.

Teaching Point 3 **Have the cadets, in groups of no more than three, identify expedition guidelines and record information in the Expedition Planning Booklet.**

Time: 10 min Method: In-Class Activity

The information included in the Completed Section 1 of the Expedition Planning Booklet, located at Attachment A, was designed as a sample for use in this EO and all subsequent EOs in this PO. In their groups, cadets can develop their own guidelines as long as they meet the expectations of the expedition. If cadets experience difficulties developing guidelines, provide them assistance using information included in the completed Section 1. The guidelines that each group establishes shall be carried forward for all other aspects of the expedition planning process.

The Silver Star Expedition Information Sheet is included to provide cadets with a general idea of the purpose and delivery of the Silver Star expedition. Not all information required to establish the expedition guidelines is included in the information sheet. Cadets will have to work with their group to develop the specific guidelines.

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets, in groups of no more than three, identify expedition guidelines and record the information in the Expedition Planning Booklet.

RESOURCES

- Section 1 of the Expedition Planning Booklet located at Attachment A (one per cadet),
- Expedition Parameters Information Sheet located at Attachment B (one per cadet), and
- Silver Star Expedition Information Sheet located at Attachment C (one per cadet).

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Distribute to each cadet:
   a. Section 1 of the Expedition Planning Booklet, and
   b. the Silver Star Expedition Information Sheet.
3. Have each group turn to the page on expedition guidelines in the Expedition Planning Booklet.
4. Introduce the expedition guidelines, to include:
   a. time of year the expedition is taking place,
   b. number of days,

c. number of participants,

d. participant experience level,

e. budget, if applicable, and

f. mode(s) of travel, to include:

(1) distance, and

(2) terrain.

5. Have the groups read through the Silver Star Expedition Information Sheet.

6. Have the groups fill in the expedition guidelines in Section 1 of the Expedition Planning Booklet using personal experience and information gathered from the Silver Star Expedition Information Sheet.

7. Have the groups share their answers.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 3

The cadet's participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

QUESTIONS:

Q1. Identify two reasons for conducting expeditions.

Q2. What is the purpose of creating goals and objectives?

Q3. What are two guidelines that must be established when planning an expedition?

ANTICIPATED ANSWERS:

A1. Expeditions are conducted for the following reasons:

- to challenge participants;
- to develop hard and soft skills;
- to provide leadership opportunities;
- to increase physical fitness levels; and / or
- to provide opportunities to receive qualifications.

A2. Goals and objectives serve the same purpose as a good map—they provide leaders with a specific path to follow as they create and execute the expedition. Goals and objectives will also assist leaders in making decisions while out on the expedition.

A3. The following guidelines must be established when planning an expedition:

- time of year expedition is taking place,
- number of days,
- number of participants,
- participant experience level,
- budget, if applicable, and
- mode(s) of travel, to include:
  - distance, and
  - terrain.

CONCLUSION

HOMEWORK / READING / PRACTICE

Complete Section 1 of the Expedition Planning Booklet.

METHOD OF EVALUATION

This lesson is assessed IAW A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 3, Annex B, 425 PC.

CLOSING STATEMENT

A well-planned expedition is one in which the planners have spent ample time developing a succinct set of goals and objectives that adhere to both the trip and program expectations. Once goals and objectives have been established, the planners will then have what they require to develop the remaining components of the expedition plan. Expedition planning is a multi-purpose skill that can be applied to planning other activities.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

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C2-153 ISBN 0-7360-5731-5 Martin, B., Cashel, C., Wagstaff, M., & Breunig, M. (2006). *Outdoor leadership: Theory and practice*. Windsor, ON: Human Kinetics Publishing Inc.

C2-208 ISBN 978-1-59485-033-2 Raynolds, J., Lodato, A., Gordon, R., Blair-Smith, C., Welsh, J., & Gerzon, M. (2007). *Leadership the outward bound way*. Seattle, WA: The Mountaineers Books.

EXPEDITION PLANNING BOOKLET

Cadet Name: _____

SECTION 1 – EXPEDITION PARAMETERS

IDENTIFY THE PURPOSE FOR CONDUCTING THE EXPEDITION

_____

_____

_____

_____

_____

ESTABLISH EXPEDITION GOALS AND OBJECTIVES:

Goals represent broad, intended outcomes to be experienced as a result of participating in the expedition. Goals provide direction for leaders and participants as they engage in the expedition experience. Objectives are the targeted outcomes used to assess the accomplishment of each identified goal.

When creating goals and objectives it is important to ensure that they follow the SMART (specific, measurable, achievable, relevant and timed) philosophy.

Goal 1

Objective 1:	
Objective 2:	
Objective 3:	

Goal 2

Objective 1:	
Objective 2:	
Objective 3:	

Goal 3

Objective 1:	
Objective 2:	
Objective 3:	

Goal 4

Objective 1:	
Objective 2:	
Objective 3:	

IDENTIFY EXPEDITION GUIDELINES

Time of Year	
Number of Days	
Number of Participants	
Participant Information: • **age,** • **gender,** • **physical fitness level,** • **health, and** • **prior experience.**	

Budget (if applicable)	

	1	2	3 (if applicable)
Mode of Travel			
Distance			
Terrain			

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EXPEDITION PARAMETERS INFORMATION SHEET

IDENTIFY THE PURPOSE FOR CONDUCTING THE EXPEDITION

Silver Star expedition training is designed to provide the Silver Star cadet with the opportunity to develop expedition skills in a structured environment under the supervision and instruction of highly qualified staff.

ESTABLISH EXPEDITION GOALS AND OBJECTIVES

Goal 1

To provide challenging activities that promote the development of expedition skills, using an experiential approach.	
Objective 1:	Provide cadets with the opportunity to develop their personal expedition skills in at least two of the following modes of travel—mountain biking, canoeing and hiking.
Objective 2:	Develop an expedition route that incorporates the selected modes of travel and requires cadets to employ newly-learned skills.
Objective 3:	Require cadets to lead at least one leg of the expedition route to assess their ability to successfully navigate from point A to point B.

Goal 2

To provide a variety of opportunities for the cadets to complete daily expedition activities to promote the development of a well-rounded expedition team member.	
Objective 1:	Provide cadets with the opportunity to practice campsite set-up and departure routine by changing campsite locations.
Objective 2:	Require cadets to perform campsite routine activities such as meal preparation, water purification and food storage.
Objective 3:	Require cadets to become familiar with de-kitting procedures associated with expedition training.

Goal 3

To facilitate positive group experiences that enhance character development through social interactions.	
Objective 1:	Facilitate formal team briefings at the end of each day of training to discuss team concerns.
Objective 2:	Encourage cadets to share their personal experiences with the rest of the team to promote empathy and tolerance for diversity.
Objective 3:	Integrate games and team-building activities throughout the expedition to enhance positive social interactions.

Goal 4

To provide a variety of opportunities for personal reflection in order to promote the formation of self-identity.	
Objective 1:	Require each cadet to maintain a personal journal throughout the expedition weekend.
Objective 2:	Provide a minimum of 15 minutes for cadets to be alone for personal reflection and journal time.
Objective 3:	Provide an opportunity for each cadet to have a personal interview with their Team Instructor (TI) at the end of the expedition to discuss their own personal growth and discoveries as a result of the experience.

SILVER STAR EXPEDITION INFORMATION SHEET

Expedition centre training has been designed to provide the Silver Star cadet with the opportunity to develop expedition skills in a structured environment under the supervision and instruction of highly qualified staff using a weekend format where the cadets will arrive Friday evening and depart Sunday afternoon (2 nights, 3 days).

The expedition centre will provide training through an experiential approach, which will allow the cadet to develop skills such as mountain biking and hiking through direct experience at a personal level. Each cadet will be given the opportunity to examine what they saw, felt and thought during the weekend, and consider how it related to what they already learned as well as how it will relate to future expedition experiences.

Expedition centres will select and train at least two of the following dynamic modes of travel:

a. canoeing,

b. mountain biking, or

c. hiking.

The following are the training expectations for each dynamic mode of travel:

- **Canoeing.** The cadet shall paddle a tandem canoe on flatwater for a distance between 8–10 km.
- **Mountain biking.** The cadet shall ride a mountain bike on familiarization mountain bike trails for a distance between 35–40 km.
- **Hiking.** The cadet shall hike along a route consisting of a combination of Class 1, 2 and 3 terrain for a distance between 8–10 km. At least one third of the route must be Class 3 terrain.

When developing a training schedule, expedition centres may choose to incorporate additional Army Cadet Adventure Training Activities (ACATA) as outlined in A-CR-CCP-951/PT-002, *Royal Canadian Army Cadet Adventure Training Safety Standards*, as long as this does not impede the cadets' ability to meet mandatory training requirements.

All training will be conducted based on a small group model. The cadet will be placed into teams of no more than nine cadets upon arrival Friday evening. An expedition centre Team Instructor (TI) will be assigned to each team and will remain with the team for the duration of the weekend. These team sizes take into account the instructor / cadet training ratios.

All equipment required for the expedition is located at the expedition centre. Models and types of equipment are dependent on the availability of resources within the region and the modes of travel selected. Personal equipment required by cadets is detailed in the cadet joining instructions.

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COMPLETED SECTION 1 OF THE EXPEDITION PLANNING BOOKLET

IDENTIFY THE PURPOSE FOR CONDUCTING THE EXPEDITION

Silver Star expedition training is designed to provide the Silver Star cadet with the opportunity to develop expedition skills in a structured environment under the supervision and instruction of highly qualified staff.

ESTABLISH EXPEDITION GOALS AND OBJECTIVES

Goal 1

To provide challenging activities that promote the development of expedition skills, using an experiential approach.	
Objective 1:	Provide cadets with the opportunity to develop their personal expedition skills in at least two of the following modes of travel—mountain biking, canoeing and hiking.
Objective 2:	Develop an expedition route that incorporates the selected modes of travel and requires cadets to employ newly-learned skills.
Objective 3:	Require cadets to lead at least one leg of the expedition route to assess their ability to successfully navigate from point A to point B.

Goal 2

To provide a variety of opportunities for the cadets to complete daily expedition activities to promote the development of a well-rounded expedition team member.	
Objective 1:	Provide cadets with the opportunity to practice campsite set-up and departure routine by changing campsite locations.
Objective 2:	Require cadets to perform campsite routine activities such as meal preparation, water purification and food storage.
Objective 3:	Require cadets to become familiar with de-kitting procedures associated with expedition training.

Goal 3

To facilitate positive group experiences that enhance character development through social interactions.	
Objective 1:	Facilitate formal team briefings at the end of each day of training to discuss team concerns.
Objective 2:	Encourage cadets to share their personal experiences with the rest of the team to promote empathy and tolerance for diversity.
Objective 3:	Integrate games and team-building activities throughout the expedition to enhance positive social interactions.

Goal 4

To provide a variety of opportunities for personal reflection in order to promote the formation of self-identity.	
Objective 1:	Require each cadet to maintain a personal journal throughout the expedition weekend.
Objective 2:	Provide a minimum of 15 minutes for cadets to be alone for personal reflection and journal time.
Objective 3:	Provide an opportunity for each cadet to have a personal interview with their Team Instructor (TI) at the end of the expedition to discuss their own personal growth and discoveries as a result of the experience.

IDENTIFY EXPEDITION GUIDELINES

Time of Year	Spring (April–May) / Fall (September–October).
Number of Days	2 nights, 3 days (arrive Friday evening, depart Sunday afternoon).
Number of Participants	36 cadets (12 females, 24 males), 8 staff (5 male, 3 female) = 44 total participants
Participant Information: • **age,** • **gender,** • **physical fitness level,** • **health, and** • **prior experience.**	• Cadets are 14–16 years old. • There is a mix of male and female cadets (1/3 female). • The physical fitness level of each participant is unknown (will be identified upon cadet's arrival at expedition centre). • Cadets are either training Silver Star or Silver Star qualified. • Some cadets will have completed Basic Expedition.
Budget (if applicable)	Not applicable.

	1	2	3 (if applicable)
Mode of Travel	Canoeing	Mountain Biking	
Distance	between 8–10 km	between 35–40 km	
Terrain	flatwater	familiarization trails	

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 2

EO M425.02 – PLAN AN EXPEDITION ROUTE

Total Time:	90 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Have the cadets bring their Expedition Duo-Tang.

Gather examples of expedition route planning resources from the local area for TP 1.

Photocopy Section 2 of the Expedition Planning Booklet located at Attachment A for each cadet.

Decide if cadets will develop an expedition route using the area and information provided or an alternate area.

If using the area and information provided:

1. Photocopy the Expedition Route Planning Information handout located at Attachment B for each cadet.
2. Photocopy the resource materials required to complete TPs 4 and 6 located at Attachments C–G for each group.
3. Photocopy on 11 x 17 inch paper the topographical maps located at Attachment I for each group.
4. Review the Completed Section 2 of the Expedition Planning Booklet located at Attachment H.

If an alternate area is selected:

1. Gather, organize and photocopy (if required) the resource materials associated with the area for each group.
2. Create and photocopy the Expedition Planning Information handout for each cadet.
3. Complete the sample Section 2 of the Expedition Planning Booklet located at Attachment A.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A group discussion was chosen for TP 1 as it allows the cadets to interact with their peers and share their knowledge and opinions about identifying different types of expedition resource materials. Sharing in the

discussion encourages the cadets to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

An interactive lecture was chosen for TPs 2, 3 and 5 to introduce the cadets to factors that should be considered when planning an expedition route and to provide an introduction to expedition route cards.

An in-class activity was chosen for TPs 4 and 6 as it is an interactive way to provoke thought and stimulate interest in planning an expedition route and preparing a route card.

INTRODUCTION

REVIEW

The review for this lesson is from EO M425.01 (Establish Expedition Parameters).

QUESTIONS:

Q1. Identify two reasons for conducting expeditions.

Q2. What is the purpose of creating goals and objectives?

Q3. What are two guidelines that must be established when planning an expedition?

ANTICIPATED ANSWERS:

A1. Expeditions are conducted for the following reasons:

- to challenge participants;
- to develop hard and soft skills;
- to provide leadership opportunities;
- to increase physical fitness levels; and / or
- to provide opportunities to receive qualifications.

A2. Goals and objectives serve the same purpose as a good map—they provide leaders with a specific path to follow as they create and execute the expedition. Goals and objectives will also assist leaders in making decisions while on the expedition.

A3. The following guidelines must be established when planning an expedition:

- time of year expedition is taking place,
- number of days,
- number of participants,
- participant experience level,
- budget, if applicable, and
- mode(s) of travel, to include:
    - distance, and
    - terrain.

OBJECTIVES

By the end of this lesson the cadet shall have planned an expedition route.

IMPORTANCE

It is important for cadets to plan an expedition route as it provides cadets with a tool that can be applied to planning a variety of different activities. Expedition route selection requires cadets to complete research and identify factors in order to choose the best location / route. This process will help to build the cadets' analytical skills in a very practical manner.

Teaching Point 1 **Identify expedition route planning resources.**

Time: 10 min Method: Group Discussion

BACKGROUND KNOWLEDGE

The point of the group discussion is to draw the following information from the group using the tips for answering / facilitating discussion and the suggested questions provided.

EXPEDITION ROUTE PLANNING RESOURCES

Reference Material

Information on expedition routes can be gathered from a variety of reference materials—print and web-based. Availability of reference material differs from one province / territory to another. Possible sources include:

- topographical maps,
- recreation maps,
- trail maps,
- river maps,
- guidebooks,
- outdoors clubs' newsletters,
- magazines,
- books, and
- websites.

Organizations / Authorities

Within Canada, there are a number of organizations / authorities that can be consulted when planning an expedition route. Depending on the scope of the organization / authority, they can provide information on terrain, trails, campsites, amenities, etc. In some situations, they can also assist with the planning of the route, utilizing their experience with the area to select the best possible route that meets the purpose, goals and objectives of the expedition. As with reference material, organizations and authorities differ greatly from one province / territory to another. Possible organizations / authorities include:

- Parks Canada,
- provincial / territorial parks,
- conservation authorities,
- municipal offices,
- local river / lake authorities,
- outdoors clubs,

- local trail authorities, and
- private property owners.

GROUP DISCUSSION

TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions.
- Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.

SCENARIO

Consider the following scenario:

The Gold Star cadets have been chosen to plan the Silver Star expedition training weekend. Some of the initial planning for the expedition has been completed—goals and objectives have been established, and expedition guidelines have been identified—but no location has been selected. It is the responsibility of the Gold Star cadets to identify and research possible locations and then plan a route once all factors have been considered.

SUGGESTED QUESTIONS:

Q1. Where do expeditions usually occur?

Q2. What stands out in your mind about the location where you completed the Silver Star expedition last year?

Q3. What types of reference materials do you think were consulted when the planners of the Silver Star expedition were researching a possible location?

Q4. What types of organizations / authorities could have been approached to find out information on a specific areas / canoe routes / trail systems / campsites?

Other questions and answers will develop throughout the group discussion. The group discussion should not be limited to only those suggested.

Reinforce those answers given and comments made during the group discussion, ensuring the teaching point has been covered.

CONFIRMATION OF TEACHING POINT 1

The cadets' participation in the group discussion will serve as the confirmation of this TP.

Teaching Point 2 **Identify factors to consider when selecting an expedition location.**

Time: 10 min Method: Interactive Lecture

Have cadets review the expedition goals, objectives and guidelines they previously recorded in Section 1 of their Expedition Planning Booklets.

Distribute Section 2 of the Expedition Planning Booklet located at Attachment A to each cadet and have them place it in their Duo-Tang.

Distribute the Expedition Route Planning Information handout located at Attachment B to each cadet. If using an alternate area distribute the Expedition Route Planning Information handout created for that area.

Have the cadets turn to the expedition location comparison chart found in the Expedition Route Planning Information handout. Explain that the comparison chart is a tool that can be used to compare expedition locations to select the best possible location.

Review the information detailed in the expedition location comparison chart with the cadets. Have the cadets choose a location and provide at least two reasons why they think it best meets the goals, objectives and guidelines of the expedition.

FACTORS TO CONSIDER WHEN SELECTING AN EXPEDITION LOCATION

Selecting an expedition location is the first step in planning an expedition route. Choosing a location is dependent on a number of factors that can be identified through research of resource materials, such as topographical maps, guidebooks, websites, books and provincial parks. Expedition locations should be selected to meet the established expedition goals, objectives and guidelines.

The most effective way to select an expedition location is to identify a number of possible locations and compare and contrast each location based on the following factors:

- the distance and time needed to travel to and from the location,

- the distance and time needed to obtain emergency services, including:
    - communication, and
    - evacuation routes;
- the ability to conduct the selected modes of travel, including:
    - distance (per mode of travel and total distance), and
    - terrain (eg, availability of familiarization trails / flatwater);
- the availability of campsites / rest stops,
- the ease and cost of obtaining permission to use the area, and
- the ability to comply with established land management practices, including:
    - fire restrictions,
    - group size limit,
    - restricted camping areas, and
    - closed trails.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. Where could an expedition planner go to find information on possible expedition locations?

Q2. When selecting an expedition location, what is the primary consideration?

Q3. When assessing a location's compatibility with the selected modes of travel, the expedition planner should consider what two factors?

ANTICIPATED ANSWERS:

A1. Expedition planners can consult the following resources to find information on possible expedition locations:

- topographical maps,
- guidebooks,
- websites,
- books, and
- provincial parks.

A2. Expedition locations should be selected to meet the established expedition goals, objectives and guidelines.

A3. The expedition planner should consider if the location meets the mode of travel distance requirements (per mode and total distance) and the terrain requirements (eg, availability of familiarization trails / flatwater).

Teaching Point 3 **Identify the elements of an expedition route.**

Time: 10 min Method: Interactive Lecture

Information in this TP can be presented using a "Think, Pair, and Share" format. This will allow cadets to consider and discuss the elements included in an expedition route based on personal experience. A "Think, Pair and Share" is conducted using the following format:

1. Cadets individually think about the elements included in an expedition route for no more than one minute.
2. Cadets pair up and discuss their ideas for no more than two minutes.
3. Cadets share their ideas with the rest of the class for no more than three minutes.

Record the cadets' answers on flip chart paper. Add elements the cadets missed to the list once all pairs have shared their ideas. Ensure all keys points have been presented.

ELEMENTS OF AN EXPEDITION ROUTE

Once the possible expedition location(s) have been identified, the next step in the process is to plan the expedition route. Like location(s), expedition routes are designed to accommodate the goals, objectives and guidelines. It is important that the expedition planner take the time to review the maps and guidebooks associated with the location prior to settling on one specific route. It is advisable to select two to three possible route combinations and assess the validity of each option to meet the requirements of the expedition.

The elements of an expedition route will have some flexibility depending on the location selected. It is the responsibility of the expedition planner to identify the required elements and organize them into an exciting and challenging route. The following are examples of elements that may be incorporated to form the expedition route:

Number of days to complete the expedition. Found in the expedition guidelines and identified in the first step of the expedition planning process.

Pick-up and drop-off points. Ensure that there is enough space at the location for buses and other transportation vehicles. In most cases, pick-up and drop-off points will co-locate with the campsites for the first and last nights.

Campsites. The number of campsites required will be dependant on the number of days of the expedition and whether or not the expedition is linear or circular in design. A linear route will require different campsites every day, whereas the group may arrive back to a site when travelling a circular route. If the area allows for it, it is advisable to choose a primary and secondary campsite for each night. Campsite availability will somewhat dictate the expedition route so campsites should be identified and selected early on in the route planning process.

Modes of travel. Found in the expedition guidelines and identified in the first step of the expedition planning process. The expedition route must be designed so it incorporates the selected modes of travel in a fun, challenging and exciting manner.

Terrain requirements. Found in the expedition guidelines and identified in the first step of the expedition planning process. Identifying the level of terrain for an area / trail / river being used can be done by looking through the resource materials being used to plan the expedition, such as guidebooks or maps.

Distance requirements. Found in the expedition guidelines and identified in the first step of the expedition planning process. The expedition planner must ensure that the expedition route meets the established distance

requirements by measuring the distances for each mode of travel on the topographical map. It is acceptable for there to be minor variances in distance requirements.

Mode(s) of travel change points. Some expedition routes will require multiple modes of travel on the same day. For example, a group may canoe for the morning and then hike to their campsite in the afternoon. If this is the case, it is important that mode of travel change points are identified. These points, like pick-up and drop-off points, require ample room for the delivery and pick-up of equipment.

Lunch locations. Depending on the type of expedition, if participants are carrying their own meals or meals are being provided for them, there may be a requirement for a specified lunch location. Select more than one possible location along the route to allow for variances in speed of participants. When choosing lunch locations consider the availability of water, space, shade, suitable eating area, washroom facilities, etc.

Rest stop / resupply locations. There will always be a requirement to have designated locations along the route where the expedition participants can take a break and resupply items such as water and snacks. There should be at least two per half day of the expedition; however, both do not necessarily have to provide road access. When choosing rest-stop locations consider the availability of water, space, shade, suitable eating area, washroom facilities, etc.

Evacuation routes. When developing an expedition route, it is important to identify evacuation routes to the nearest hospital. This should include the grid reference (GR) of the hospital and then a trace of the route to the hospital. Participants are continuously moving, so planners need to provide route details based on identified starting points and main roads.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. How many possible route combinations should be identified and assessed when planning an expedition route?

Q2. Where is information relating to modes of travel, terrain requirements and distance requirements found?

Q3. When are mode of travel change points required?

ANTICIPATED ANSWERS:

A1. When planning an expedition route, planners should identify and assess two to three possible route combinations.

A2. Information relating to modes of travel, terrain requirements and distance requirements is found in the first step of the expedition planning process under expedition guidelines.

A3. Mode of travel change points are required when the expedition route requires participants to switch from one mode of travel to another on the same day.

Teaching Point 4 — **Explain and have the cadets, in groups of three, plan an expedition route.**

Time: 30 min — Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of this activity is for the cadets, in groups of three, to plan an expedition route.

RESOURCES

- Section 2 of the Expedition Planning Booklet located at Attachment A (one per cadet),
- Expedition Route Planning Information handout located at Attachment B or the Expedition Route Planning Information handout created for the alternate area (one per cadet),
- Resource Materials located at Attachments C–G and I or the identified resources for the alternate area (one per group),
- Sample Section 2 of the Expedition Planning Booklet located at Attachment H,
- Expedition Duo-Tang,
- Compass (two per group), and
- Pencil (three per group).

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of three.
2. Ensure each cadet has an Expedition Route Planning Information handout.
3. Distribute resource materials to each group, to include:
    a. Maps located at Attachment C or maps for the alternate area selected,
    b. Campground Information located at Attachment D or campground information for the alternate area selected,
    c. Mountain Bike Trails Information located at Attachment E or mountain bike information for the alternate area selected,
    d. Canoe Route Information located at Attachment F or canoe route information for the alternate area selected, and
    e. Hospital Information located at Attachment G or hospital information for the alternate area selected.
    f. Topographical maps located at Attachment I or topographical maps for the alternate area selected.
4. Brief the cadets on the resource materials provided to ensure they are aware of what is available for them to use to complete the activity.
5. Have groups turn to the page on developing an expedition route in their Expedition Planning Booklet and review the content with the cadets.
6. Have the groups plan two possible expedition routes, using the provided resource materials by:
    a. completing the Develop an Expedition Route section of their Expedition Planning Booklet, to include:
        (1) identifying the number of days to complete the expedition;
        (2) selecting drop-off and pick-up points;

(3) selecting a primary and possibly a secondary campsite for each night of the expedition;

(4) incorporating the selected modes of travel ensuring that:

(a) terrain requirements are met, and

(b) distance requirements are met;

(5) selecting mode of travel change point(s), if required;

(6) identifying possible lunch locations for each day;

(7) identifying at least two possible rest stop / resupply locations along the route; and

(8) identifying evacuation routes to the nearest hospital; and

b. plotting the routes on the topographical map, to include:

(1) drop-off and pick-up points,

(2) campsites,

(3) mode of travel number one route,

(4) mode of travel number two route,

(5) mode of travel change points,

(6) lunch locations,

(7) rest stop / resupply locations, and

(8) evacuation routes.

7. Have each group compare the two expedition routes and rate them—first choice and second choice—based on compatibility with expedition goals, objectives and guidelines.

Explain that the next step in the process is to conduct a reconnaissance of the most compatible route and then, if required, conduct a reconnaissance of the other route in order to make the final route selection.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 4

The cadets' participation in the activity will serve as the confirmation of this TP.

Teaching Point 5 **Describe expedition route cards.**

Time: 10 min Method: Interactive Lecture

This TP is intended to introduce the cadet to creating an expedition route card.

Cadets will remain seated with their groups from the previous TP.

Cadets will be required to complete a schedule (individually) in their Expedition Planning Booklet on their own time. The schedule is included in Section 2 of the Expedition Planning Booklet.

An expedition schedule is usually completed in conjunction with the expedition route card. Schedules vary in both detail and length. They can be a detailed, daily schedule organized by time or a broad overview of activities on a daily basis without time constraints. The schedule guides cadets through the expedition.

PURPOSE OF AN EXPEDITION ROUTE CARD

Expedition route cards are sometimes referred to as time control plans. For the purpose of this TP, they will be identified as expedition route cards.

Every expedition plan must include an expedition route card. Expedition route cards are a critical component of the expedition plan. They provide insight into the terrain, direction of travel, potential dangers, and amount of time required to complete the specific route. The expedition route card is developed to match the goals and ability level of the expedition participants. It provides the participants of the expedition with all the information they need to complete the expedition.

When using expedition route cards, a route is referred to as the entire expedition and each smaller section is referred to as a leg.

On an expedition route card, the entire route is divided into legs with a number of locations identified for rest stops / campsites / mode of travel change points, etc. Once the expedition route card is prepared, the route is planned.

A topographical / trail / river map(s) of the area of travel is required to use in conjunction with the expedition route card.

COMPONENTS OF AN EXPEDITION ROUTE CARD

Have the cadets turn to the Sample Route Card located in the Expedition Route Planning Information handout at Attachment B.

The information included on an expedition route card will vary, depending on the activity(s) being completed during the expedition and the resource material being used to plan the expedition. For example, if the expedition route follows a marked trail system there will be no requirement to include GRs or bearings. In this case, the route description would detail all required information.
It is the responsibility of the expedition planner to identify the key components and develop them in order to create a workable expedition route card.

The following is a list of possible components:

Mode of travel. Modes of travel may include hiking, mountain biking, canoeing, voyageur canoeing or kayaking.

GRs. When GRs are used, there are two for each leg of the route (a "from GR" and a "to GR"). Each should be accompanied by a description (eg, 456 789 Parking Lot).

Bearing. A bearing is determined for each leg of the expedition route once the start and finish GRs have been plotted. In some cases, a bearing is not required.

When bearings are not being used, the route description is filled out in detail for each leg of the route.

Distance. Distance is measured in metres or kilometres, depending on the length of the leg of the route.

Elevation. Elevation for each leg is measured in metres. There are two elevation figures on the expedition route card, one for the start point of the leg and one for the end point of the leg. Rate of travel will differ, depending on elevation.

Including the elevation on the expedition route card provides additional information about the shape and the height of the ground.

Time. The time required to complete a leg of a route can initially be calculated using the law of averages.

Rates of travel will differ, depending on factors such as the group, equipment, terrain, elevation above sea level, etc. On average:

- A person walks 4 km per hour, 1 km per 15 minutes or 100 m per 1.5 minutes.
- Off trail in open terrain, a person can be expected to travel on foot 3 km per hour.
- On rough, difficult terrain, a person can be expected to travel on foot 1–1.5 km per hour.
- When gaining elevation, there should be an extra allowance of 1 hour per every 300 m. When above 3 000 m, the rate of travel will greatly decrease.
- When losing elevation, up to a half an hour can be added for every 1 000 m lost depending on terrain.
- Canoeists paddle 4–5 km per hour in favourable conditions (mild wind, few waves). Speed is also affected by current, paddling experience and time of day.
- The speed of a mountain biker is highly influenced by the types of trail they are riding on and their experience as a mountain biker. The general speed is between 15–25 km per hour.

There should be 10 minutes of rest allowed for every hour of travel.

Route description. The route description is a short but detailed written explanation that has been developed by studying the features of the map between the start and end point of each leg of the expedition route. It is an account of terrain, prominent objects and catching features that should be passed along the leg (eg, follow the path north to a wooden bridge, cross the bridge, and then take the left path west until out of the woods). A description of the end point of the leg should also be recorded (eg, road junction or intersection).

A leg will usually end at a major change in direction or an obvious point.

Group detail. The size, fitness level, knowledge and experience of the group and the equipment that is being carried are factors to consider and may need to be noted on the expedition route card.

Date:	20 Oct 07 / Day 1	**Platoon / Team:**	Wild Horses	**Location:**	Frontenac Provincial Park
Start Time:	0800 hrs	**Est. Finish Time:**	1600 hrs	**Starting Elevation:**	260 m

LEG	MODE OF TRAVEL	FROM GR	TO GR	BEARING	DISTANCE	ELEVATION	TIME	ROUTE DESCRIPTION
1	Hike	255 981	265 931	6350 mils	4 km	S – 260 m F – 290 m	60 min	Follow flat terrain, wide paths north, stop at intersection.
2	Hike	265 931	267 911	6100 mils	4 km	S – 290 m F – 330 m	90 min	Steep hills, narrow paths, continue north.
3	Mountain Bike	267 911	315 966	1550 mils	10 km	S – 330 m F – 350 m	90 min	Some hills, wide gravel road. Go right at fork in the road after last tree.
4	Mountain Bike	315 966	330 976		2 km	S – 350 m F – 300 m	30 min	Many hills, narrow and rocky paths with obstacles, stop at bridge
5	Canoe	330 976	354 970		1.5 km	No change	30 min	Flatwater. Stay river left of small island.
6	Canoe	354 970	358 982		1 km	No change	60 min	Flatwater. Land at third campsite on river left.
7	Hike	358 982	384 001		3.5 km	S – 300 m F – 250 m	90 min	Some hills, narrow path, finish at main parking lot.

Group Details:	Team has eight members–four females and four males–who all possess a high level of physical fitness. Three members completed Basic Expedition and two members completed Expedition Instructor.

Figure 1 Sample Route Card

Note. Created by Director Cadets 3, 2008, Ottawa, ON: Department of National Defence.

CONFIRMATION OF TEACHING POINT 5

QUESTIONS:

Q1. What is the purpose of an expedition route card?

Q2. On an expedition route card, the entire route in divided into what smaller sections?

Q3. How should the time required to complete the route be calculated?

ANTICIPATED ANSWERS:

A1. An expedition route card is a critical component of the expedition plan. It provides insight into the terrain, direction of travel, potential dangers, and amount of time required to complete the specific route.

A2. On an expedition route card, the entire route is divided into legs with a number of locations identified for rest stops / campsites / mode of travel change points, etc.

A3. The time required can be calculated by the average speed of a person (the average person walks 4 km per hour). This gives the time for 1 km as 15 minutes for each 100 m as approximately 1.5 minutes.

Teaching Point 6 **Explain and have the cadets, in groups of three, prepare an expedition route card.**

Time: 10 min Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadet, in groups of three, prepare an expedition route card.

RESOURCES

- Section 2 of the Expedition Planning Booklet located at Attachment A (one per cadet),
- Expedition Route Planning Information handout located at Attachment B or the Expedition Route Planning Information handout created for the alternate area (one per cadet),
- Resource Materials located at Attachments C–G and I or the identified resources for the alternate area (one per group),
- Sample Section 2 of the Expedition Planning Booklet located at Attachment H,
- Expedition Duo-Tang,
- Compass (two per group), and
- Pencil (three per group).

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Ensure each group has:
   a. resource materials, and
   b. the Expedition Route Planning Information handout.
2. Distribute to each group:
   a. pencils, and
   b. compasses.

3. Have the groups turn to the Prepare an Expedition Route Card section of the Expedition Planning Booklet.

4. Have the groups prepare an expedition route card, for their selected route, in their Expedition Planning Booklet by:

    a. recording:

        (1) the date of the expedition,

        (2) expedition location,

        (3) start time,

        (4) estimated finish time,

        (5) starting elevation, and

        (6) group details; and

    b. filling in the following components:

        (1) mode of travel,

        (2) from GR and to GR (if required),

        (3) bearing (if required),

        (4) distance,

        (5) elevation,

        (6) time, and

        (7) route description.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 6

The cadets' participation in preparing a route card will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in planning an expedition route and preparing an expedition route card will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Cadets must ensure that all of Section 2 of the Expedition Planning Booklet are completed prior to EO M425.03 (Develop an Expedition Equipment List).

METHOD OF EVALUATION

This lesson is assessed IAW A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 3, Annex B, 425 PC.

CLOSING STATEMENT

Planning an expedition route that satisfies the expedition goals, objectives and guidelines is a critical component of expedition planning. The key to a successful expedition is a well planned expedition route. Once the route has been established, the preparation of the expedition route card will ensure that all participating members are aware of all facets of the trip. A prepared, well-organized and detailed expedition route card will effectively guide participants along the route.

INSTRUCTOR NOTES / REMARKS

Nil.

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SECTION 2 – PLAN AN EXPEDITON ROUTE

IDENTIFY EXPEDITION ROUTE PLANNING RESOURCES

When planning an expedition route, there are a variety of reference materials and organizations / authorities that can assist the expedition planner.

Listing the planning resources that have been consulted or contacted is beneficial not only in planning the current expedition but for future expedition planning as well.

Reference Materials	Organizations / Authorities

IDENTIFY FACTORS TO CONSIDER WHEN SELECTING AN EXPEDITION ROUTE

Choosing an expedition location is dependent on a number of factors that can be identified through research of resource materials. Expedition locations should be selected to meet the established expedition goals, objectives and guidelines.

The most effective way to select an expedition location is to identify a number of possible locations and compare and contrast the suitability of each location.

Selecting an Expedition Location Comparison Chart

	Location #1	Location #2	Location #3
What is the distance to and from the location?			
How long does it take to travel to and from the location?			
How long will it take to get to or receive emergency services?			
Is there adequate space at start and end points for drop-off of personnel and equipment?			
Can the distance requirements for mode of travel #1 be met? **Can the terrain requirements for mode of travel #1 be met?**			
Can the distance requirements for mode of travel #2 be met? **Can the terrain requirements for mode of travel #2 be met?**			

	Location #1	Location #2	Location #3
Are there a number of campsites / rest stops available in the area?			
What are the associated costs of using the area?			
What are the procedures to gain access to use the area?			
Are there any limitations on group sizes?			
Are there any restricted camping areas?			

An expedition location must now be chosen. In some cases, it is difficult to select a location from the comparison alone. The expedition planner may have to conduct a physical reconnaissance of the areas to assist in the selection process.

Chosen location: _____

_____

Reasons for choosing location: _____

_____

DEVELOP AN EXPEDITION ROUTE

Like the location(s), expedition routes should be designed to accommodate the goals, objectives and guidelines of the expedition. A detailed review of the maps and guidebooks associated with the location must now take place before a specific route is selected. Two to three possible route combinations should be developed and assessed for their ability to meet the requirements of the expedition.

The expedition route is penciled in on the topographical map of the area. The expedition planner uses conventional signs to identify the key elements of the expedition route on the topographical map. If possible, GRs and location identifiers should be recorded.

Length of the expedition: _____

	Route #1	Route #2
Drop-off point and campsite.		
Mode(s) of travel for day #1.		
Mode of travel change point(s) for day #1, if required.		
Possible lunch locations for day #1.		

	Route #1	Route #2
Possible rest-stop / resupply locations for day #1.		
Evacuation route(s) for day #1.		
Possible campsite(s) for night.		
Mode(s) of travel for day #2.		
Mode of travel change point(s) for day #2, if required.		
Possible lunch locations for day #2.		
Possible rest-stop / resupply locations for day #2.		

	Route #1	Route #2
Evacuation route(s) for day #2.		
Pick-up point.		
Rate routes based on their ability to comply with the goals, objectives and guidelines of the expedition.		

PREPARING AN EXPEDITION ROUTE CARD

Expedition route cards are a critical component of the expedition plan that provide insight into the terrain, direction of travel, potential dangers, and amount of time required to complete the specific route. A well developed expedition route card provides the participants of the expedition with all the information they need to complete the expedition.

The information included on an expedition route card varies depending on the activity(s) being completed during the expedition and the resource material being used to plan the expedition. For example, if the expedition route follows a marked trail system there is no requirement to include GRs or bearings. In this case, the route description details all required information.

Route Card–Day _____

Date:		**Team:**		**Location:**	
Start Time:		**Estimated Finish Time:**		**Starting Elevation:**	

Leg	Mode of Travel	From GR	To GR	Bearing	Distance	Elevation	Time	Route Description
1								
2								
3								
4								
5								
6								
7								

Group Details:	

Route Card–Day _____

Date:		**Team:**		**Location:**	
Start Time:		**Estimated Finish Time:**		**Starting Elevation:**	

Leg	Mode of Travel	From GR	To GR	Bearing	Distance	Elevation	Time	Route Description
1								
2								
3								
4								
5								
6								
7								

Group Details:	

CREATE AN EXPEDITION SCHEDULE

An expedition schedule is usually completed in conjunction with the expedition route card. Schedules vary in both detail and length. They can be a detailed, daily schedule organized by time or a broad overview of daily activities without time constraints. The schedule guides participants through the expedition.

Day _____		
Timings	**Tasks / Activity**	**Remarks**

Day _____		
Timings	**Tasks / Activity**	**Remarks**

Timings	Tasks / Activity	Remarks

Day _____		
Timings	**Tasks / Activity**	**Remarks**

Timings	Tasks / Activity	Remarks

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EXPEDITION ROUTE PLANNING INFORMATION HANDOUT

Identify Expedition Route Planning Resources

Reference Materials	Organizations / Authorities
Ontario Recreation Map	Ontario Parks
Topographical maps–Markdale, Collingwood, Goderich, Lucknow, Wingham, Chesley, Walkerton and Wiarton	Saugeen Valley Conservation Authority
Canadian Canoe Routes–www.myccr.com	Grey Sauble Conservation Authority
Ontario Trails Council–www.ontariotrails.on.ca	Bruce Trail Association
Backroad Map Book–Southwestern Ontario	Maitland Conservation Authority
A Paddlers Guide to Wilderness Weekend Adventures by Kevin Callan	
A Paddlers Guide to The Rivers of Ontario and Quebec by Kevin Callan	
MapQuest	

Select an Expedition Location Comparison Chart

	Location #1	Location #2	Location #3
	Walkerton	**Wingham**	**Thornbury**
What is the distance to and from the location?	Niagara Falls–231 km Windsor–346.45 km	Niagara Falls–228.07 km Windsor–313 km	Niagara Falls–256.84 km Windsor–444.02 km
How long does it take to travel to and from the location?	Niagara Falls–3.15 hours Windsor–4.46 hours	Niagara Falls–3 hours Windsor–4.10 hours	Niagara Falls–3.17 hours Windsor–5.35 hours
How long will it take to get to or receive emergency services?	Hospitals located in Chesley, Walkerton and Hanover. Furthest distance is 15 km. Call 911.	Hospitals located in Wingham and Goderich. Furthest distance is 20 km. Call 911.	Hospitals located in Markdale, Collingwood and Meaford. Furthest distance is 25 km. Call 911.
Is there adequate space at start and end points for drop-off of personnel and equipment?	Yes. Various points in area for start and end points.	Yes. Various points in area for start and end points.	Yes. Various points in area for start and end points.
Can the distance requirements for mode of travel #1 be met?	Saugeen River—Walkerton to Paisley–39 km—earlier take-out points available.	Maitland River—Wingham to Auburn–25 km— earlier take-out points available.	Beaver River— Kimberly to Heathcote–25 km— earlier take-out points available.
Can the terrain requirements for mode of travel #1 be met?	Mostly flatwater, some swifts depending on time of year, lift-overs and sweepers.	Flatwater, some swifts depending on time of year, lift-overs.	Flatwater.
Can the distance requirements for mode of travel #2 be met?	Brant Tract Trail System— over 25 km of trails. Roads leading to Brant Tract increase distance.	Carrick Tract Trail System— over 13 km of trails. Roads leading to Carrick Tract increase distance.	Kolapore Uplands Wilderness Ski Trails— over 30 km of trails. Roads leading to Kolapore Ski Trails increase distance.

	Location #1	Location #2	Location #3
Can the terrain requirements for mode of travel #2 be met?	Novice double- and single- track trails, intermediate single-track trails, dirt roads and paved roads.	Novice double- and single-track trails, intermediate single-track trails, dirt roads and paved roads.	Novice double- and single-track trails, intermediate single-track trails, dirt roads and paved roads.
Are there a number of campsites / rest stops available in the area?	Two Conservation Area campgrounds and three privately owned campgrounds.	Four privately owned campsites and one Conservation Area campground	Two privately owned campgrounds.
What are the associated costs of using the area?	Costs for campsites are between $15 and $30 per night. Group rates are available.	Costs for campsites are between $12 and $30 per night. Group rates are available.	Costs for campsites are between $10 and $25 per night. Group rates are available.
What are the procedures to gain access to use the area?	Contact Grey Bruce Conservation Authority.	Contact Maitland Valley Conservation Authority and Grey Bruce Conservation Authority.	Contact Grey Sable Conservation Authority.
Are there any limitations on group sizes?	No limits—just dependent on availability of campsites.	No limits—just dependent on availability of campsites.	No limits—just dependent on availability of campsites.
Are there any restricted camping areas?	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.

Chosen location: _____

_____

Reasons for choosing location: _____

_____

Date:	20 Oct 07 / Day 1	**Platoon / Team:**	Wild Horses	**Location:**	Frontenac Provincial Park
Start Time:	0800 hrs	**Est. Finish Time:**	1600 hrs	**Starting Elevation:**	260 m

LEG	MODE OF TRAVEL	FROM GR	TO GR	BEARING	DISTANCE	ELEVATION	TIME	ROUTE DESCRIPTION
1	Hike	255 981	265 931	6350 mils	4 km	S – 260 m F – 290 m	60 min	Follow flat terrain, wide paths north, stop at intersection.
2	Hike	265 931	267 911	6100 mils	4 km	S – 290 m F – 330 m	90 min	Steep hills, narrow paths, continue north.
3	Mountain Bike	267 911	315 966	1550 mils	10 km	S – 330 m F – 350 m	90 min	Some hills, wide gravel road. Go right at fork in the road after last tree.
4	Mountain Bike	315 966	330 976		2 km	S – 350 m F – 300 m	30 min	Many hills, narrow and rocky paths with obstacles, stop at bridge
5	Canoe	330 976	354 970		1.5 km	No change	30 min	Flatwater. Stay river left of small island.
6	Canoe	354 970	358 982		1 km	No change	60 min	Flatwater. Land at third campsite on river left.
7	Hike	358 982	384 001		3.5 km	S – 300 m F – 250 m	90 min	Some hills, narrow path, finish at main parking lot.

Group Details:	Team has eight members–four females and four males–who all possess a high level of physical fitness. Three members completed Basic Expedition and two members completed Expedition Instructor.

Figure B-1 Sample Route Card

Note. Created by Director Cadets 3, 2008, Ottawa, ON: Department of National Defence.

MAPS

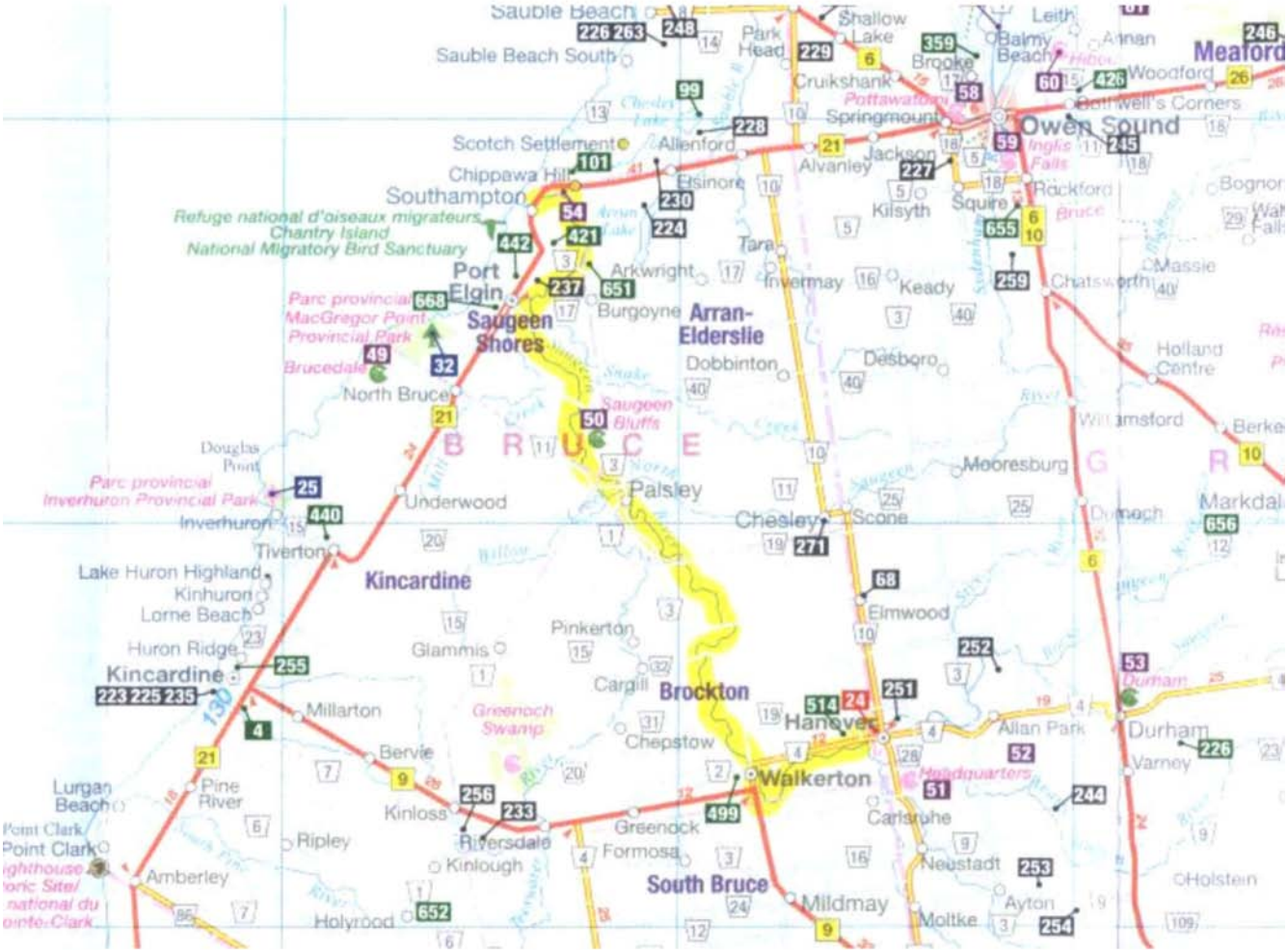
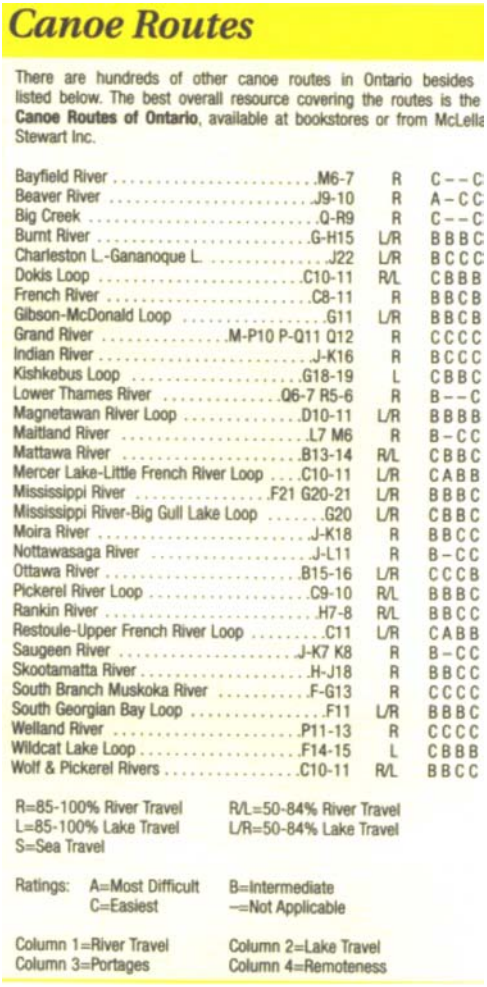


Figure C-1 Recreation Map–Saugeen River Canoe Route

Note. From *Ontario Recreation Map*, by MapArt Publishing Corporation, 2005, Oshawa, ON: Peter Heiler Ltd. Copyright 2005 by Mapmedia Corp.



Canoe Routes

There are hundreds of other canoe routes in Ontario besides listed below. The best overall resource covering the routes is the **Canoe Routes of Ontario**, available at bookstores or from McLella Stewart Inc.

Bayfield River	M6-7	R	C – – C
Beaver River	J9-10	R	A – C C
Big Creek	Q-R9	R	C – – C
Burnt River	G-H15	L/R	B B B C
Charleston L.-Gananoque L.	J22	L/R	B C C C
Dokis Loop	C10-11	R/L	C B B B
French River	C8-11	R	B B C B
Gibson-McDonald Loop	G11	L/R	B B C B
Grand River	M-P10 P-Q11 Q12	R	C C C C
Indian River	J-K16	R	B C C C
Kishkebus Loop	G18-19	L	C B B C
Lower Thames River	Q6-7 R5-6	R	B – – C
Magnetawan River Loop	D10-11	L/R	B B B B
Maitland River	L7 M6	R	B – C C
Mattawa River	B13-14	R/L	C B B C
Mercer Lake-Little French River Loop	C10-11	L/R	C A B B
Mississippi River	F21 G20-21	L/R	B B B C
Mississippi River-Big Gull Lake Loop	G20	L/R	C B B C
Moira River	J-K18	R	B B C C
Nottawasaga River	J-L11	R	B – C C
Ottawa River	B15-16	L/R	C C C B
Pickerel River Loop	C9-10	R/L	B B B C
Rankin River	H7-8	R/L	B B C C
Restoule-Upper French River Loop	C11	L/R	C A B B
Saugeen River	J-K7 K8	R	B – C C
Skootamatta River	H-J18	R	B B C C
South Branch Muskoka River	F-G13	R	C C C C
South Georgian Bay Loop	F11	L/R	B B B C
Welland River	P11-13	R	C C C C
Wildcat Lake Loop	F14-15	L	C B B B
Wolf & Pickerel Rivers	C10-11	R/L	B B C C

R=85-100% River Travel
L=85-100% Lake Travel
S=Sea Travel
R/L=50-84% River Travel
L/R=50-84% Lake Travel

Ratings: A=Most Difficult B=Intermediate C=Easiest –=Not Applicable

Column 1=River Travel
Column 2=Lake Travel
Column 3=Portages
Column 4=Remoteness

Figure C-2 Recreation Map– Canoe Route Information

Note. From *Ontario Recreation Map*, by MapArt Publishing Corporation, 2005, Oshawa, ON: Peter Heiler Ltd. Copyright 2005 by Mapmedia Corp.

Conservation Areas

10	A.W. Campbell	O6	519-847-5357	✔	✔	✘	✘	✔	✘
61	Ainslie Wood	H9	519-376-3076	✘	✘	✘	✘	✔	✘
89	Albion Hills	L11	905-880-4855	✔	✔	✔	✘	✔	✘
52	Allan Park	K8	519-364-1255	✘	✘	✔	✘	✘	✘
26	Backus Heritage	R9-10	519-586-2201	✔	✔	✔	✘	✔	✘
67	Ball's Falls	P13	905-778-3135	✔	✔	✔	✘	✔	✘
147	Baxter	F23	613-692-3571	✘	✘	✔	✘	✔	✘
81	Belfountain	L11	519-927-5838	✘	✘	✔	✘	✔	✘
43	Belwood Lake	M10	519-843-2979	✘	✘	✔	✘	✔	✘
5	Big Bend	R6	519-354-7310	✔	✘	✔	✘	✘	✔
64	Binbrook	P11	905-692-3228	✘	✘	✔	✘	✔	✘
93	Black Creek Pioneer Vill.	M12	416-736-1733	✘	✘	✘	✘	✘	✘
94	Boyd	L12	905-851-0575	✘	✘	✔	✘	✘	✘
34	Brant	P10	519-752-2040	✔	✔	✘	✘	✔	✘
55	Bruce's Caves	H8	519-376-3076	✘	✘	✔	✘	✘	✘
97	Bruce's Mill	L13	905-887-5531	✘	✘	✔	✘	✔	✘
49	Brucedale	J7	519-389-4516	✔	✘	✔	✘	✔	✘
138	Buell's Creek	H23	613-546-4228	✔	✔	✔	✘	✘	✘
32	Byng Island	Q12	905-774-5755	✔	✔	✔	✘	✔	✘
4	C.M. Wilson	S5	519-354-7310	✔	✔	✔	✘	✔	✘
2	Cedar Creek Beach	T3	519-776-5209	✘	✘	✘	✘	✘	✘
15	Charles J. McEwen	P5	519-245-3710	✘	✘	✘	✘	✔	✘
65	Chippawa Creek	P-Q12	905-386-6387	✔	✔	✔	✘	✔	✘
73	Christie	N11	905-628-3060	✘	✘	✔	✘	✔	✘
96	Cold Creek	L12	416-661-6000	✘	✔	✔	✘	✘	✘
12	Coldstream	P6-7	519-245-3710	✔	✘	✔	✘	✔	✘
56	Colpoy's Lookout	H8	519-376-3076	✘	✘	✘	✘	✘	✘
40	Conestogo Lake	M9	519-638-2873	✔	✔	✔	✘	✔	✘
70	Confederation Park	N12	1-888-319-HRCA	✔	✔	✔	✘	✔	✘
161	Cooper Marsh	F26	613-347-1332	✘	✘	✔	✘	✘	✘
76	Crawford Lake	N11	905-854-0234	✘	✘	✔	✘	✘	✘
120	Crowe Bridge	J17	613-472-3137	✘	✔	✔	✘	✔	✘
84	D.A. Tiffin	J11-12	705-424-1479	✘	✔	✔	✘	✘	✘
7	Dalewood	Q8	519-631-1270	✔	✔	✔	✘	✔	✘
25	Deer Creek	Q9	519-875-2874	✔	✔	✘	✘	✔	✘
54	Denny's Dam	J7	519-364-1255	✔	✘	✔	✘	✔	✘
132	Depot Lakes	H20	613-476-7408	✔	✘	✔	✘	✔	✘
149	Dickenson Square	F23	613-692-3571	✘	✘	✘	✘	✘	✘
72	Dundas Valley	P11	905-627-1233	✘	✘	✔	✘	✘	✘
53	Durham	K9	519-369-2074	✔	✔	✔	✘	✔	✘
158	Eau Claire Gorge	B14	705-474-5420	✘	✘	✔	✘	✘	✘
87	Edenvale	J11	705-424-1479	✘	✔	✘	✘	✘	✘
41	Elora Gorge	M10	519-846-9742	✔	✔	✔	✘	✔	✘
42	Elora Quarry	M10	519-846-5234	✘	✘	✔	✘	✔	✘
105	Enniskillen	L14	905-579-0411	✘	✘	✔	✘	✘	✘
62	Epping Lookout	J9	519-376-3076	✘	✘	✘	✘	✘	✘
63	Eugenia Falls	K9	519-376-3076	✘	✘	✔	✘	✘	✘
45	Falls Reserve	M6	1-877-FALLSCA	✔	✔	✔	✘	✔	✘
21	Fanshawe	P7	519-451-2800	✔	✔	✔	✘	✔	✘
69	Fifty Point	P12	905-643-8833	✘	✘	✘	✘	✔	✘
131	Flinton	H19	613-476-7408	✘	✘	✘	✘	✔	✘
143	Foley Mountain	H21	613-692-3571	✘	✔	✔	✘	✔	✘
46	Galbraith	M8	519-335-3557	✘	✔	✔	✘	✔	✘
109	Ganaraska Forest	K15	905-885-8173	✘	✘	✔	✘	✘	✘
110	Garden Hill	K-L15	905-885-8173	✘	✘	✔	✘	✔	✘
88	Glen Haffy	L11	905-584-2922	✘	✘	✔	✘	✘	✘
111	Goodrich-Loomis	K17	613-394-4829	✘	✘	✔	✘	✘	✘
136	Gould Lake	J20	613-546-4228	✘	✘	✔	✘	✔	✘
152	Gray's Creek	F25	613-938-3398	✘	✘	✔	✘	✘	✘
98	Greenwood	L13	905-683-2951	✘	✔	✔	✘	✔	✘
38	Guelph Lake	M10	519-824-5061	✔	✔	✘	✘	✔	✘
29	Haldimand	Q11	905-776-2700	✔	✔	✔	✘	✔	✘
104	Harmony Valley	L14	905-579-0411	✘	✘	✔	✘	✘	✘
122	Harry Smith	K18	613-476-7408	✘	✘	✔	✘	✘	✘
113	Hastings	J-K16	613-394-4829	✘	✘	✘	✘	✘	✘
28	Hay Creek	Q10	519-428-4622	✔	✔	✔	✘	✔	✘
51	Headquarters	K8	519-364-1255	✘	✘	✔	✘	✘	✘
90	Heart Lake	M11	905-846-2494	✘	✘	✔	✘	✔	✘
103	Heber Down	L14	905-579-0411	✔	✘	✔	✘	✘	✘
60	Hibou	H8	519-376-3076	✘	✘	✔	✘	✔	✘
151	High Falls	E24	613-984-2948	✘	✘	✘	✘	✘	✘
16	Highland Glen	P5	519-245-3710	✘	✘	✔	✘	✔	✘
3	Hillman Marsh	T4	519-776-5209	✘	✘	✔	✘	✔	✘
78	Hilton Falls	M-N11	905-854-0262	✘	✘	✔	✘	✘	✘
160	Holiday Beach	T2	519-776-5209	✔	✔	✔	✘	✘	✘
117	Hope Mill	K16	705-750-0545	✔	✔	✘	✘	✔	✘
57	Indian Falls	H8	519-376-3076	✘	✘	✔	✘	✘	✘
59	Inglis Falls	J8	519-376-3076	✘	✘	✔	✘	✘	✘
162	Jessups Falls	E24	613-938-3611	✘	✘	✔	✘	✘	✘
1	John R. Park Homestead	T3	519-776-5209	✘	✘	✔	✘	✘	✘
140	K and P Trail	F20	613-259-2421	✘	✘	✔	✘	✘	✘
79	Kelso	M-N11	905-878-5011	✘	✔	✔	✘	✔	✘
114	Ken Reid	J14	705-328-2271	✘	✘	✔	✘	✘	✘

Figure C-3 Recreation Map– Conservation Area Information

Note. From *Ontario Recreation Map*, by MapArt Publishing Corporation, 2005, Oshawa, ON: Peter Heiler Ltd. Copyright 2005 by Mapmedia Corp.

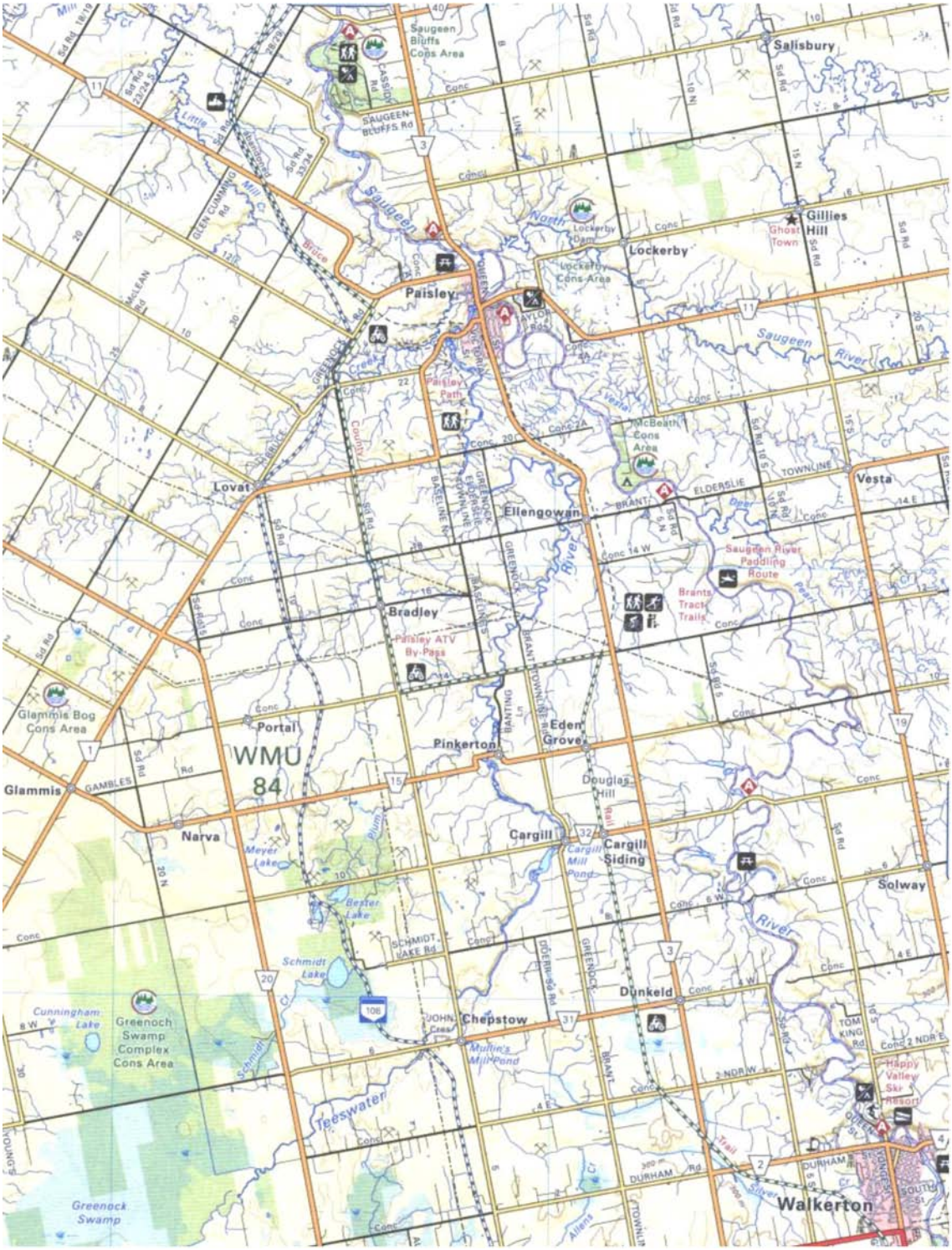


Figure C-4 Backroad Mapbook–Walkerton

Note. From *Southwestern Ontario: Backroad Mapbook* (p. 49), by C. Minutillo, 2008, Burnaby, BC: Mussio Ventures Ltd. Copyright 2008 by Mussio Ventures Ltd.

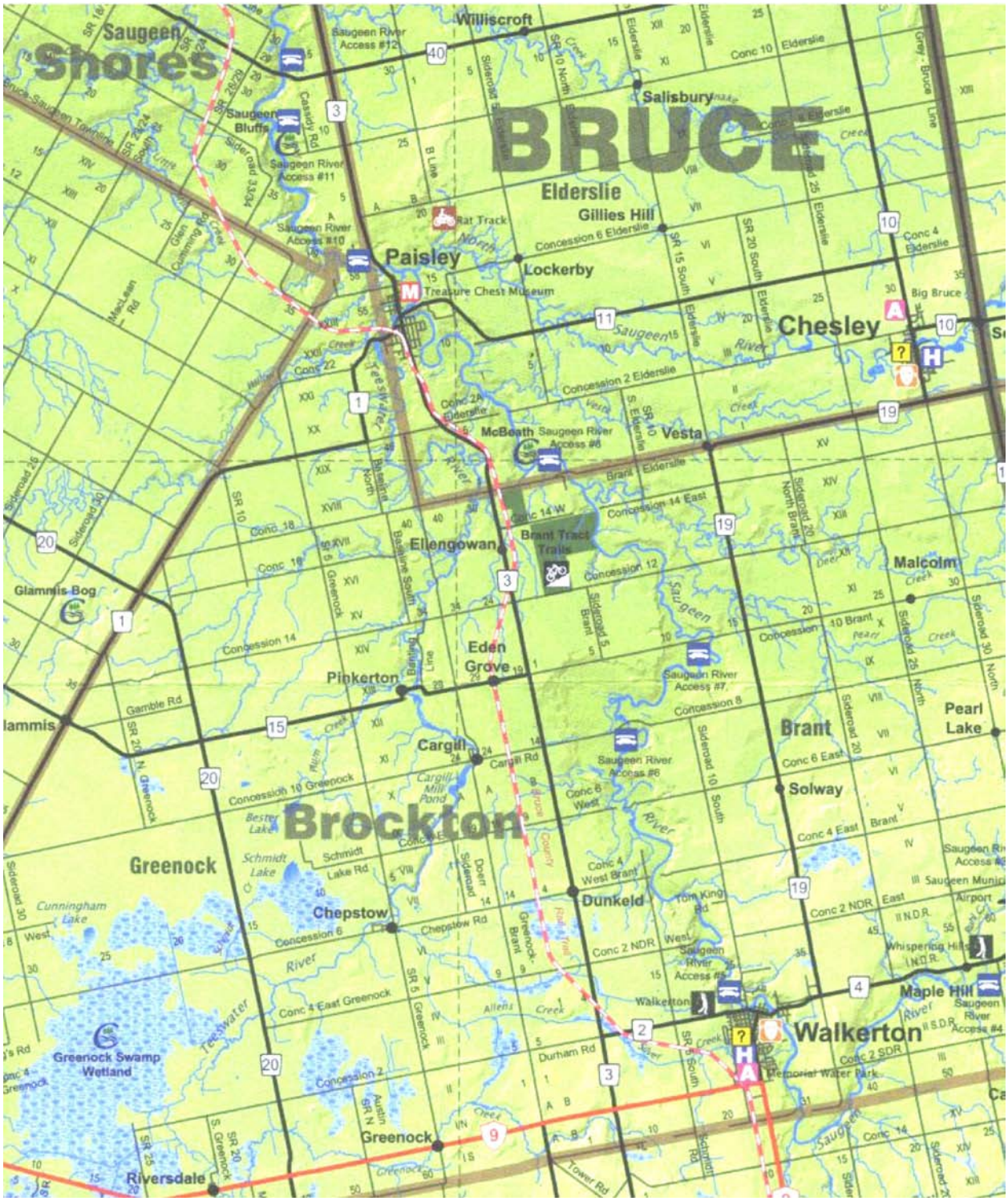


Figure C-5 Grey-Bruce Official Visitor Map

Note. From *Grey-Bruce Official Visitor Map*, by County of Bruce, 2008, London, ON: Charterhouse Printing. Copyright 2008 by County of Bruce

CAMPGROUND INFORMATION

Campground	Location	Rates	General Information / Rules
Lobies Park	P.O. Box 850, 20 Hannah Street, Walkerton, Ontario N0G 2V0 Tel: 519-881-3435	Non-serviced sites: • per day $20 • per week $110 • per month $400 Group camping: • per night $120	• Park quiet hours are 2300 hrs–0800 hrs. • Campsite check out time is 1100 hrs; check in is at 1400 hrs. • Campers shall keep their respective site in a clean and tidy order and all pets must be tied and / or on a leash at all times. • Campfires must be controlled in a pit area and supervised at all times. All fires must be extinguished by 0100 hrs.
Rotary Riverside Campground	416 Water Street, Paisley, Ontario N0G 2N0 Tel: 519-353-5575	Contact campground for campsite rates and availability.	
McBeath Conservation Area	9 km upstream of the Village of Paisley along the Saugeen River. Tel: 519-353-5142 Email: kempwelch@bmts.com	Contact the Friends of McBeath for campsite rates and availability.	• Group and family campsites are available for up to 75 people. • This site is accessible only by water. There is no public vehicle access. • The conservation area is designated a glass-free zone.
Saugeen Bluffs Conservation Area	132 Saugeen Bluffs Rd, 8 km north of Paisley off Bruce Rd 3. Tel: 519-364-1255	Non-serviced sites: • per day $27 • per week $165 Group camping: • per person per night $4.50	• There are over 200 spacious sites within the conservation area. • The campground features two picnic shelters, laundry facilities, a store and a wading pool. • There is a fully developed trail system in the conservation area. • An alcohol ban exists in the park on the May long weekend. • Campers are not permitted to bring their own firewood.
Hidden Valley Camp	RR #5, Paisley, Ontario N0G 2N0 Tel: 519-353-4100	Contact campground for campsite rates and availability.	

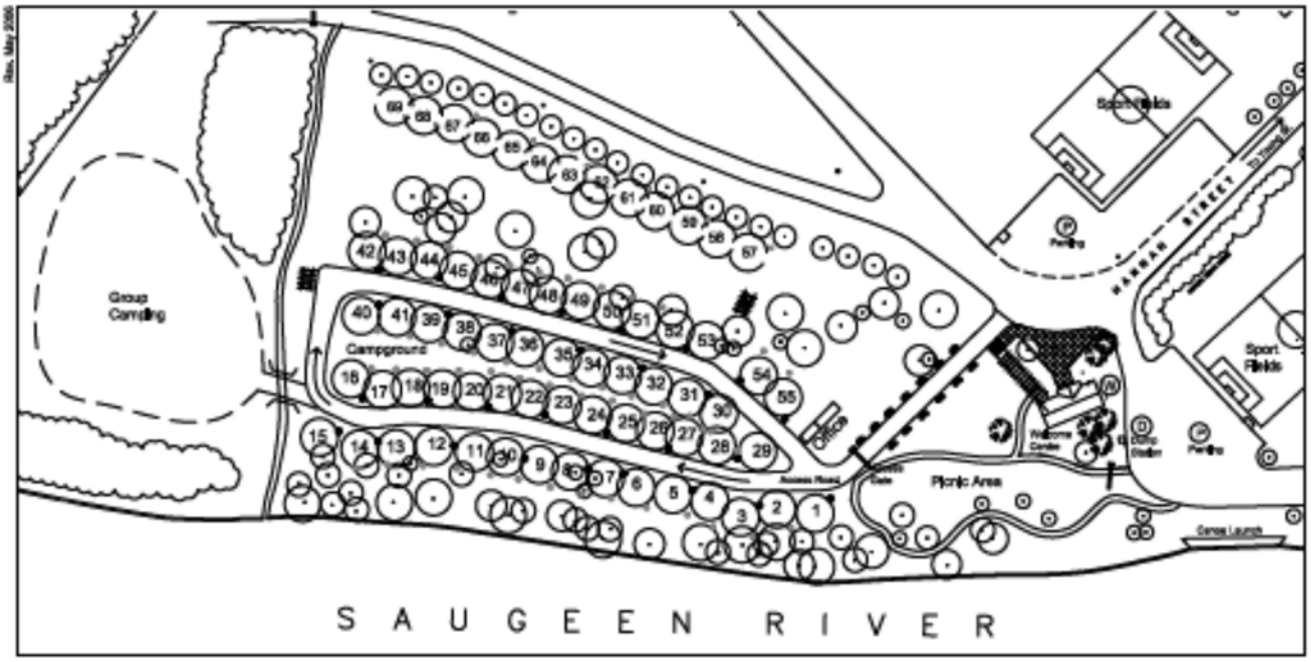


Figure D-1 Lobies Campground

Note. From *Lobies Campground* by Municipality of Brockton. Retrieved March 27, 2009, from http://town.walkerton.on.ca/Municipality/Lobies.html

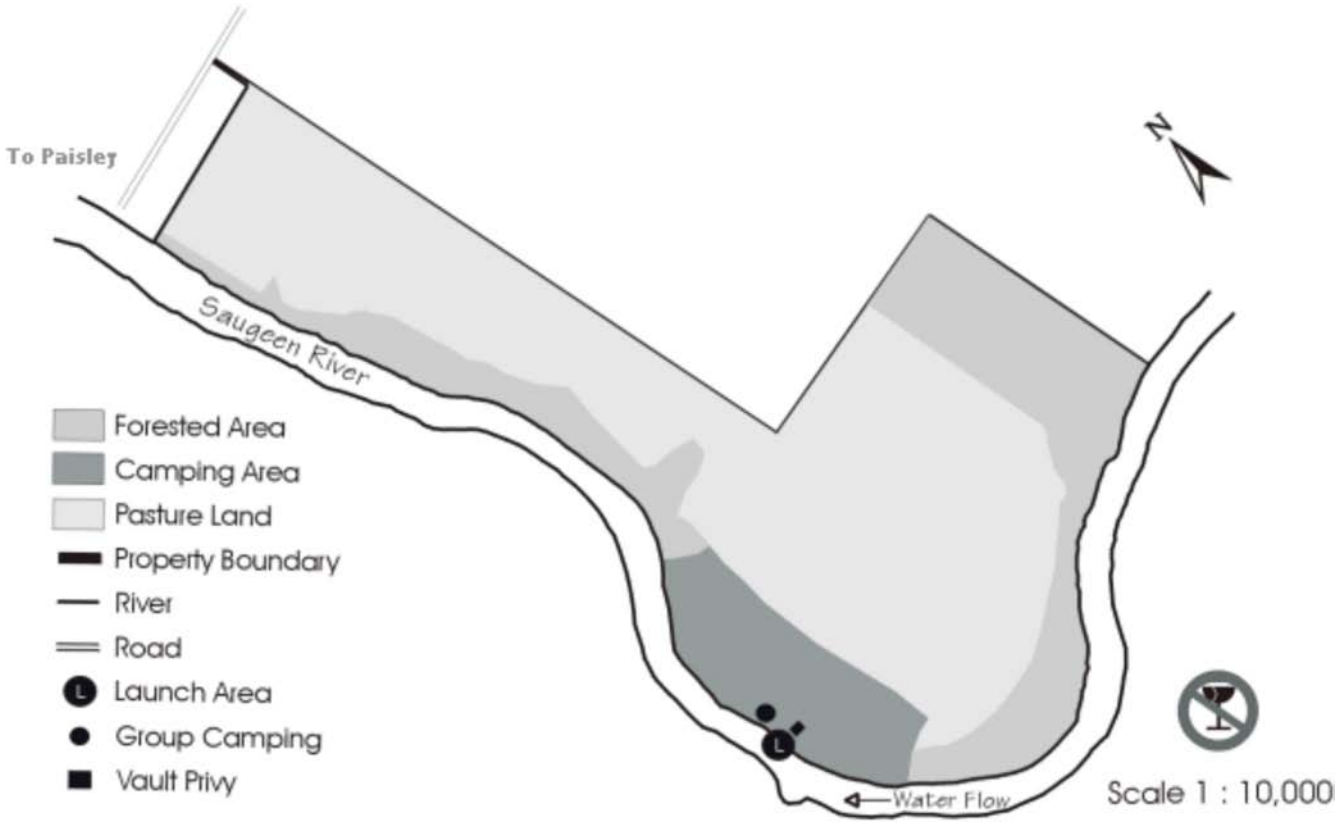


Figure D-2 McBeath Conservation Area Map

Note. From *McBeath Conservation Area* by Saugeen Conservation. Retrieved March 27, 2009, from http://www.svca.on.ca/ca-mcbeath.htm

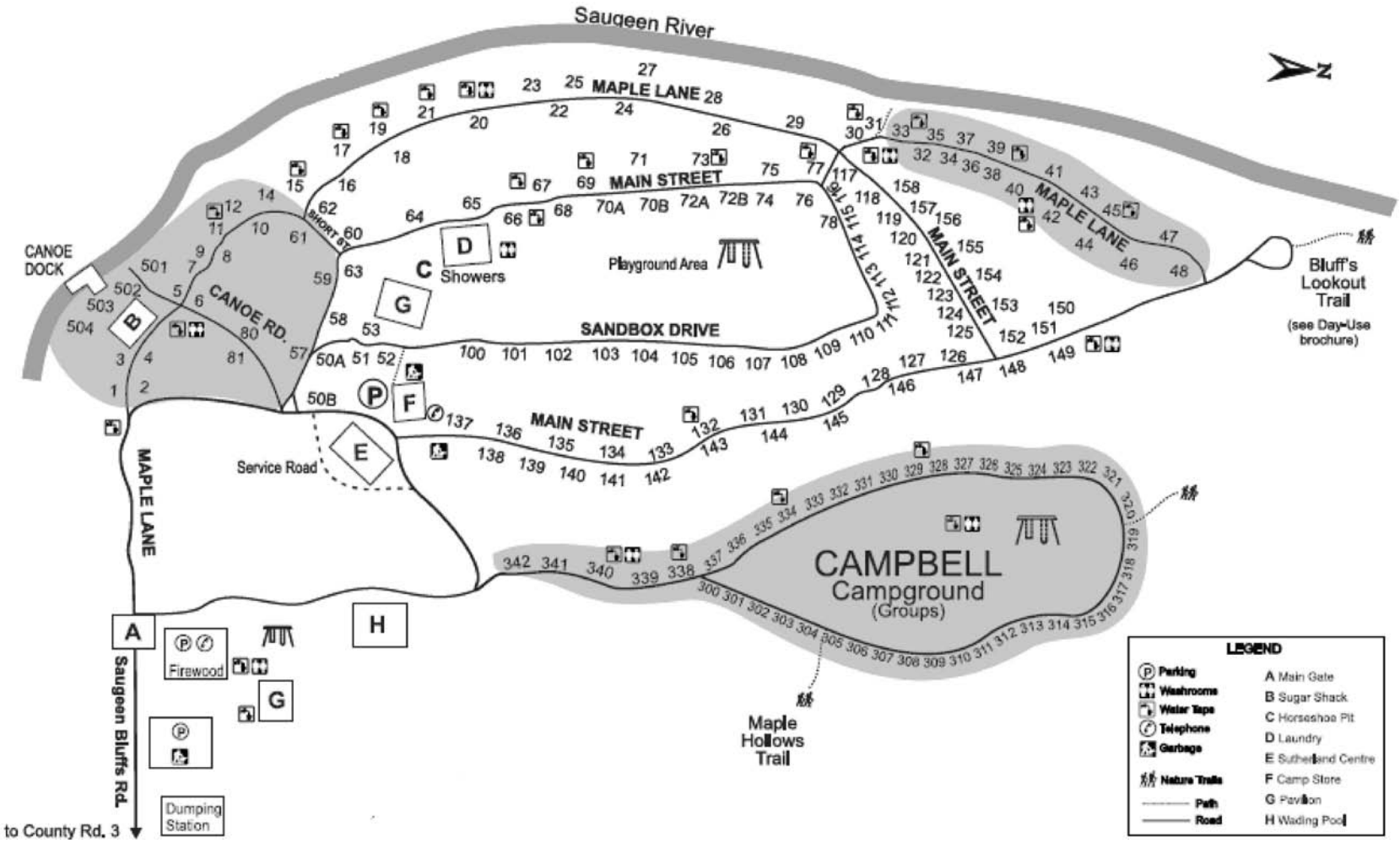


Figure D-3 Saugeen Bluffs Conservation Area Campground Map

Note. From *Campsite Map by* Saugeen Conservation. Retrieved March 27, 2009, from http://www.svca.on.ca/ca-bluffs2b.htm

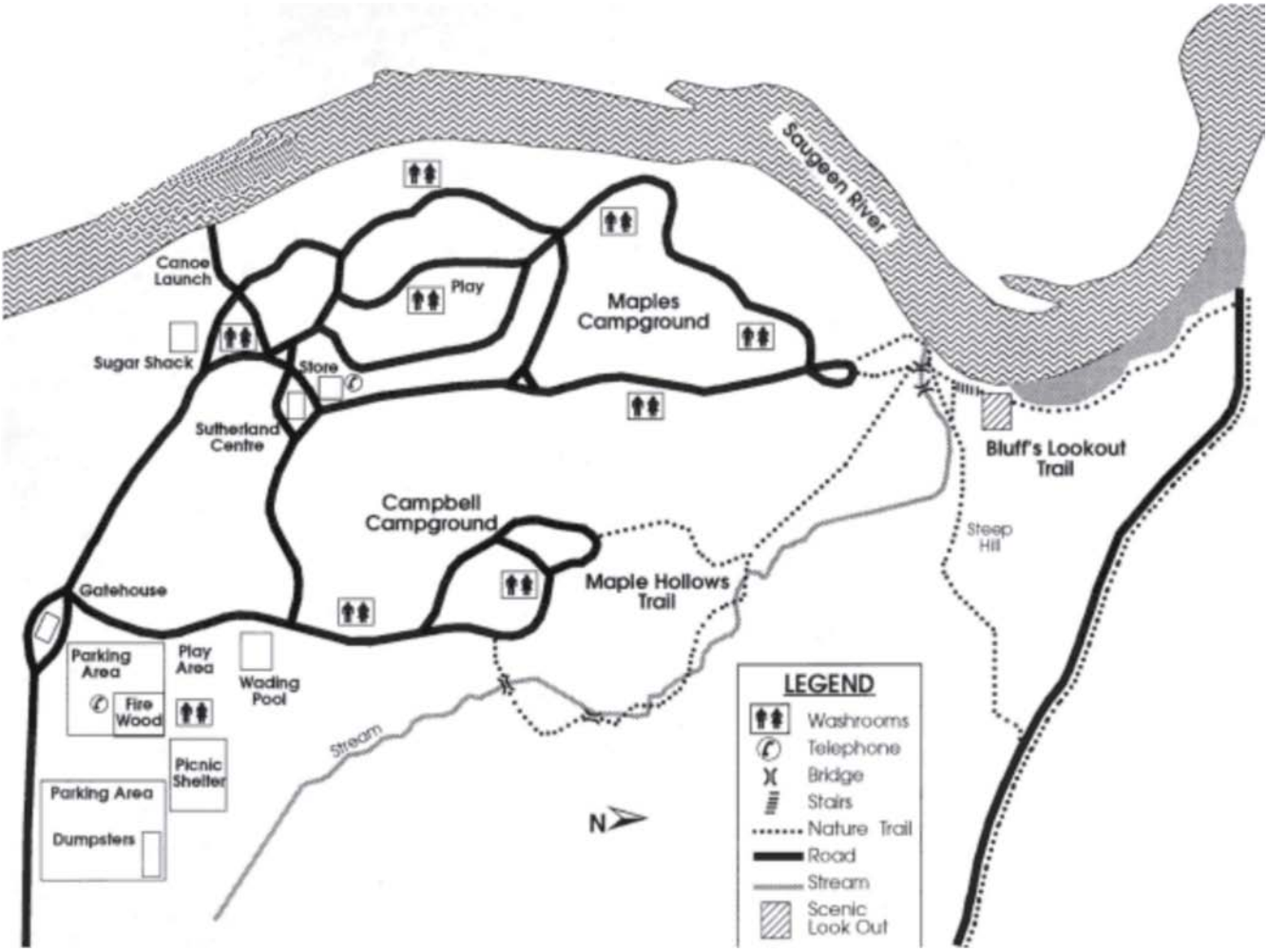


Figure D-4 Saugeen Bluffs Conservation Area Trail Map

Note. From *Trail Map* by Saugeen Conservation. Retrieved March 27, 2009, from http://www.svca.on.ca/ca-bluffs4.htm

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MOUNTAIN BIKE TRAILS INFORMATION

Brant Tract Trails

Brant Tract Trails has more than 20 km of hand cut single-track trails. Trails range from tight and technical to open and flowing concepts and can satisfy the beginner to the more advanced mountain biker. The property provides mountain bikers with spectacular views of valleys, wetlands and tower pines.

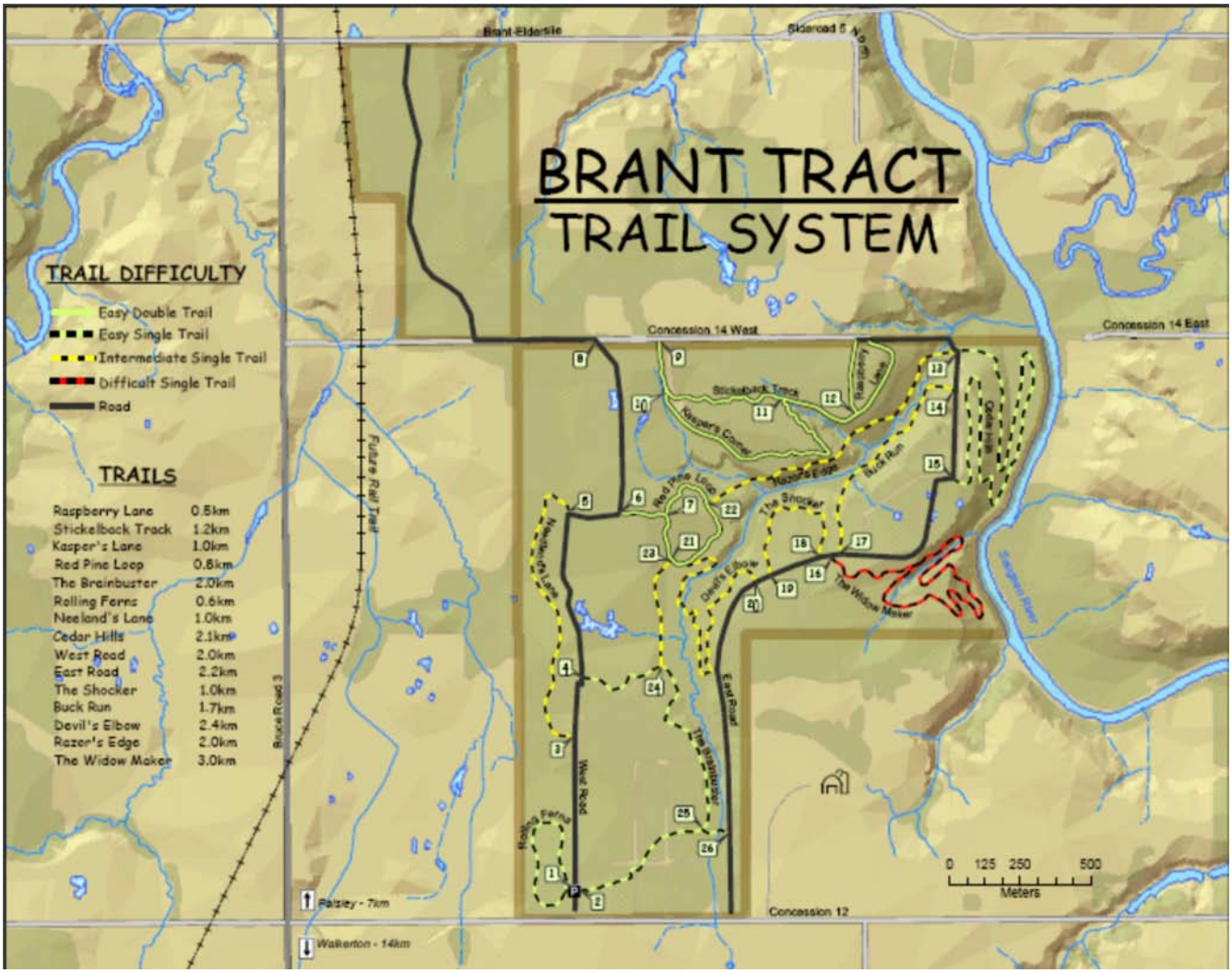

Figure E-1 Brant Tract Trail System

Note. From *Brant Tract Trails* by Mountain Bike the Bruce. Retrieved March 27, 2009, from http://www.mtbthebruce.com/brantusuage.php

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CANOE ROUTE INFORMATION

Saugeen Access Point #5 (Lobie's Park) to Saugeen Access Point #6 (Brant Conc. 8)

This is the longest section of the Saugeen River uninterrupted by bridges. The river winds out of Walkerton around several islands. In the spring, paddlers may choose one of several channels around these scenic islands but as summer goes on it is wise to stay to the deeper main channel. The Saugeen meanders through a broad valley between densely forested hills. In places, the river actually cuts into these hills, creating tall clay-sand bluffs, which provide a home for thousands of swallows, kingfishers, and other cliff-dwelling birds. Approaching the bridge on the Brant Concession 8, the bluffs diminish and give way to mixed farmland and forest. In this area it is possible to see deer and fox along the banks.

Saugeen Access Point #6 (Brant Conc. 8) to Saugeen Access Point #7 (Brant Conc. 10)

As the Saugeen progresses toward Lake Huron, the woodlands and bluffs of the upper areas give way to the rolling farmland of the middle sections. It is common to see cattle, horses and other livestock coming down to the river for a drink. The river slowly meanders through this mixed agricultural and forested land, this mixed habitat is ideal for the deer populations in the area and therefore sightings are common. A set of power lines crosses the river in this section. These mark the halfway point of the Hanover-Southampton portion of the Saugeen River.

Saugeen Access Point #7 (Brant Conc. 10) to Saugeen Access Point #8 (Brant-Elderslie Town Line)

This section ventures back in to woodlands, with some spots of agricultural land. The river continues on its slow relaxed pace through several sharp bends before this section comes to an end at a steel covered bridge just outside the hamlet of Ellengowan. This spot makes for an excellent put-in point for paddlers looking for a relaxed two day trip (6 hrs per day) to Southampton as well as a nice lunch spot for those out for a day trip on the middle section of the Saugeen.

Saugeen Access Point #8 (Brant-Elderslie Town Line) to Saugeen Access Point #9 (Paisley Hose Tower Dock)

The first section before Paisley passes through more mixed farm and forest. Shortly after the Ellengowan bridge is McBeath Conservation Area. From McBeath, the river takes a winding path to Paisley, coming right up beside the town and then swinging back away before making its way into the village. Several canoe docks line the river as it travels through the heart of the town. One of these is the Rotary Park: a scenic campground in downtown Paisley. For those looking for a lunch break, a canoe dock is situated just below the restored Fire Hose Tower, before the set of bridges in Paisley.

Saugeen Access Point #9 (Paisley Hose Tower Dock) to Saugeen Access Point #10 (Bridge North of Paisley)

Proceeding past this dock and under the bridge, paddlers will note the Teeswater River flowing over a dam and joining the Saugeen. Shortly downstream, the North Saugeen also joins the main river. Finally upon exiting Paisley, paddlers will pass under Bruce County Road 3 and come to a popular canoe launch at the north end of Paisley.

Saugeen Access Point #10 (Bridge North of Paisley) to Saugeen Access Point #11 (Saugeen Bluffs Conservation Area)

After leaving this canoe launch behind, the Saugeen picks up speed slightly and winds its way down to the Saugeen Bluffs Conservation Area. Through this trip, paddlers will notice the river's banks becoming progressively higher until they peak at about 100–115 ft. at the Saugeen Bluffs. The Saugeen Bluffs Conservation Area is a good place to spend the night or have a lunch break. The Conservation Area offers several canoe launch sites beside the river for canoe trippers for a reasonable fee.

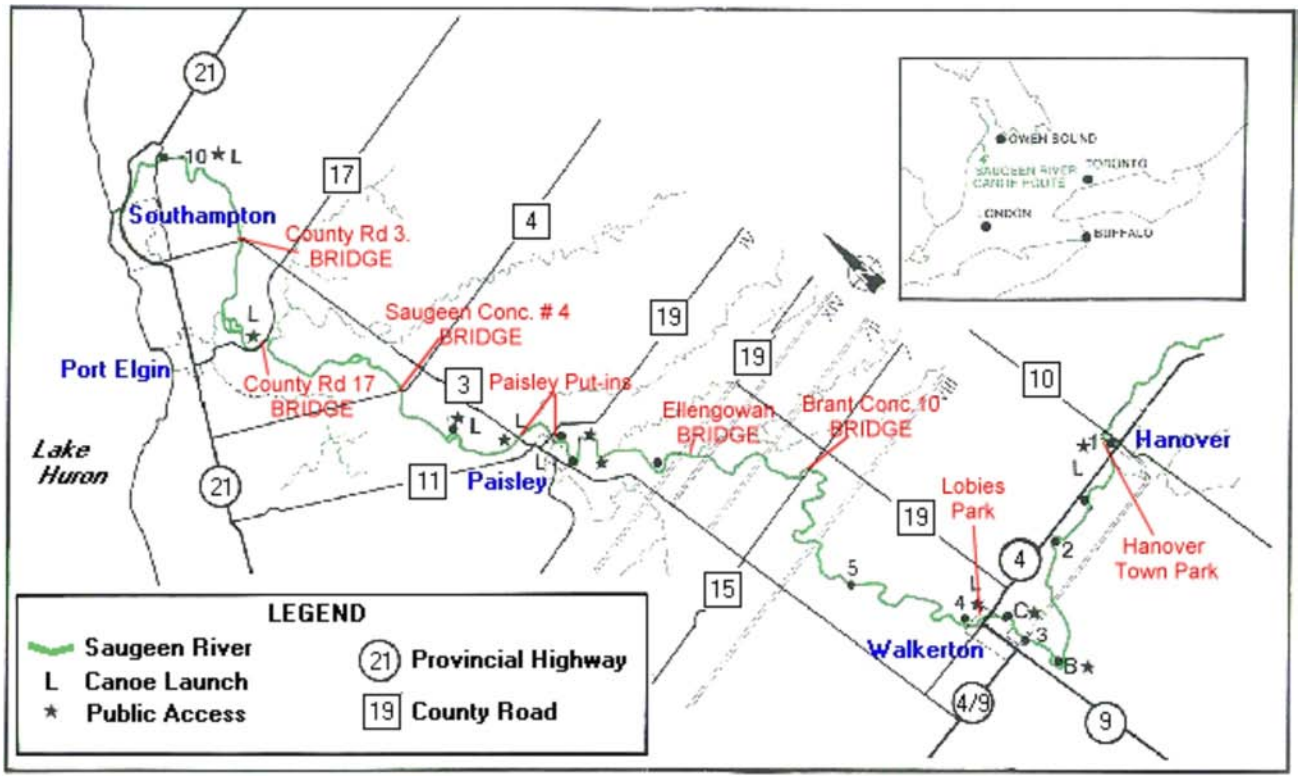

Figure F-1 Saugeen River Canoe Route

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/images/saugeenriver1.gif

Figure F-2 Saugeen River Canoe Route Access Points

Note. From *Saugeen River Canoe Route Map* by Saugeen Conservation. Retrieved March 27, 2009, from http://www.svca.on.ca/canoeroutes/map.htm

Figure F-3 Saugeen River Canoe Route Map Legend

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/maplegend.htm

Location: Along the west side of Young Street, north of Durham Street.

Facilities: Dock, parking, flush toilets, group camping and picnic shelters.

Description: There is a dock and a floating dock at the river access point. Parking is available at the campground. There are no signs to mark the facility.

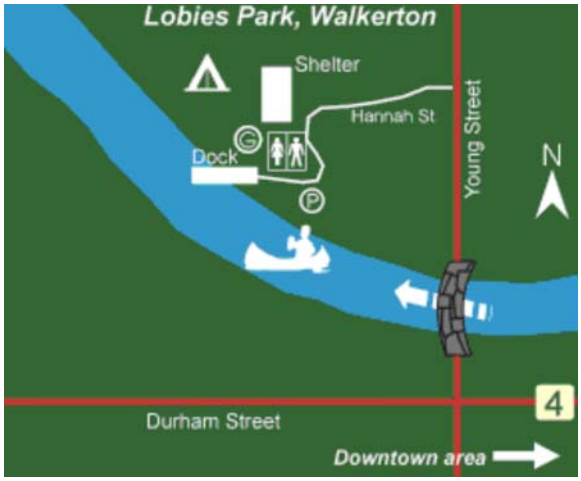

Figure F-4 Saugeen Access Point #5–Lobies Park Campground

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap3.htm

Location: Brant Concession #8 is located 0.2 km west of Sideroad #10 or 2.5 km east of Bruce Rd #3.

Facilities: River access, parking and garbage cans.

Description: River access is 80 m from the parking area. There is a 3 m high bank on the northeast side of the bridge. Roadside parking is on the east side of the bride.

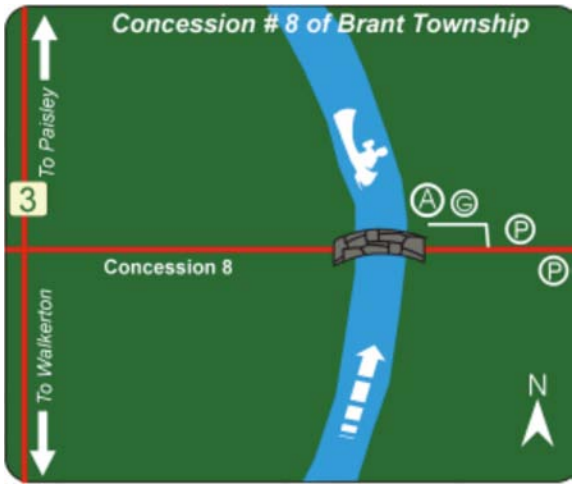

Figure F-5 Saugeen Access Point #6–Concession #8 of Brant Township

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap4.htm

Location: Brant Concession #10 is 1 km west of Bruce Rd #19 or 5 km east of Bruce Rd #3.

Facilities: River access and parking.

Description: River access is 75 m from the parking area at the northeast side of the bridge. Roadside parking is east of the bridge or southwest of the bridge.

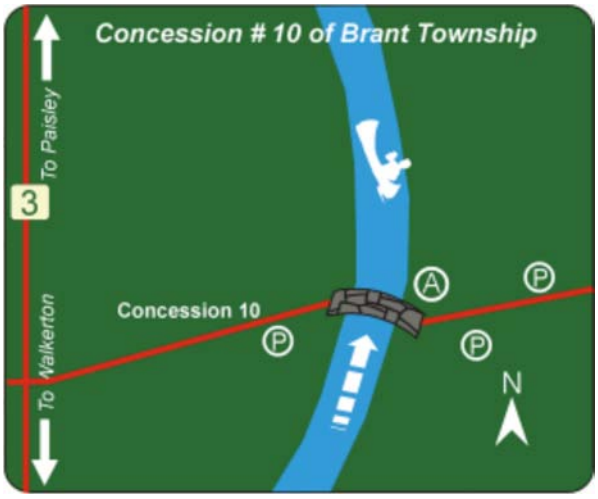

Figure F-6 Saugeen Access Point #7–Concession #10 of Brant Township

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap5.htm

Location: The Ellengowan bridge is located 2 km east of Bruce Rd #3 on the Elderslie / Brant Townline.

Facilities: River access, parking and garbage cans.

Description: River access is northwest of the bridge. The bank is 20 m high and the shore can be slippery. Parking is on the west side of the bridge. The Saugeen Valley Conservation Authority has a destination sign under the bridge.

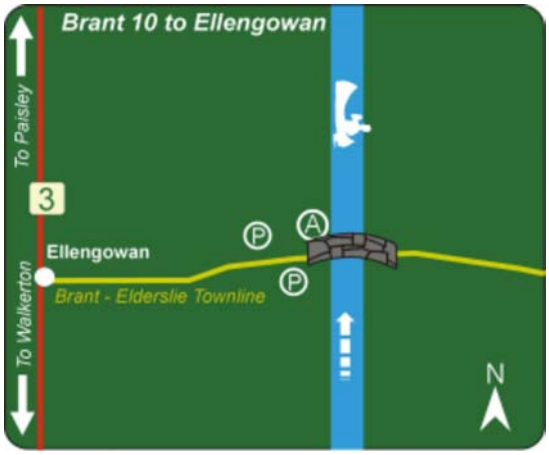

Figure F-7 Saugeen Access Point #8–Ellengowen Bridge - Elderslie / Brant Townline

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap6.htm

Location: The access point is located behind the old fire station, next to Thompson Brother's Furniture, on Water Street, east of Queen Street.

Facilities: River access, parking, garbage cans and picnic area.

Description: River access is 15 m down the bank to the floating dock. Roadside parking is limited, however there is a town parking lot behind the old hotel.

Figure F-8 Saugeen Access Point #9–Paisley Downtown

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap7.htm

Location: The bridge is located north of Paisley on Bruce Rd #3.

Facilities: River access, parking, garbage cans and picnic area.

Description: River access is 50 m down a gentle slope to the rocky shore. A County of Bruce sign is at the side of the road.

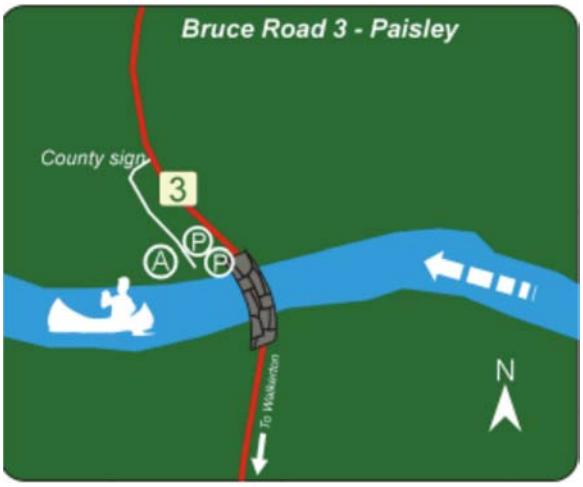

Figure F-9 Saugeen Access Point #10–Paisley North End

Note. From *Saugeen River Canoe Route* by Thorncrest Outfitters, Copyright 2005 by Thorncrest Outfitters. Retrieved March 27, 2009, from http://www.thorncrestoutfitters.com/paddling/saugeenmap8.htm

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HOSPITAL INFORMATION

Figure G-1 County of Bruce General Hospital, Walkerton, Ontario

Note. From *Maps* by MapQuest, Copyright 2009 by MapQuest Inc. Retrieved April 1, 2009, from http://www.mapquest.com/maps?city=Walkerton&*state=ON&address=21+McGivern+St.+W.%2C+*

Figure G-2 Chesley and District Hospital, Chesley, Ontario

Note. From *Maps* by MapQuest, Copyright 2009 by MapQuest Inc. Retrieved April 1, 2009, from http://www.mapquest.com/maps?city=Chesley&*state=ON&address=39-2nd+Street+Se*

COMPLETED SECTION 2 OF THE EXPEDITION PLANNING BOOKLET

IDENTIFY EXPEDITION ROUTE PLANNING RESOURCES

Reference Materials	Organizations / Authorities
Ontario Recreation Map	Ontario Parks
Topographical maps–Markdale, Collingwood, Goderich, Lucknow, Wingham, Chesley, Walkerton and Wiarton	Saugeen Valley Conservation Authority
Canadian Canoe Routes–www.myccr.com	Grey Sauble Conservation Authority
Ontario Trails Council–www.ontariotrails.on.ca	Bruce Trail Association
Backroad Map Book–Southwestern Ontario	Maitland Conservation Authority
A Paddlers Guide to Wilderness Weekend Adventures by Kevin Callan	
A Paddles Guide to The Rivers of Ontario and Quebec by Kevin Callan	
MapQuest	

IDENTIFY FACTORS TO CONSIDER WHEN SELECTING AN EXPEDITION ROUTE

Selecting an Expedition Location Comparison Chart

	Location #1	Location #2	Location #3
	Walkerton	**Wingham**	**Thornbury**
What is the distance to and from the location?	Niagara Falls–231 km Windsor–346.45 km	Niagara Falls–228.07 km Windsor–313 km	Niagara Falls–256.84 km Windsor–444.02 km
How long does it take to travel to and from the location?	Niagara Falls–3.15 hours Windsor–4.46 hours	Niagara Falls–3 hours Windsor–4.10 hours	Niagara Falls–3.17 minutes Windsor–5.35 minutes
How long will it take to get to or receive emergency services?	Hospitals located in Chesley, Walkerton and Hanover. Furthest distance is 15 km.	Hospitals located in Wingham and Goderich. Furthest distance is 20 km.	Hospitals located in Markdale, Collingwood and Meaford. Furthest distance is 25 km.
Is there adequate space at start and end points for drop-off of personnel and equipment?	Yes. Various points in area for start and end points.	Yes. Various points in area for start and end points.	Yes. Various points in area for start and end points.
Can the distance requirements for mode of travel #1 be met?	Saugeen River—Walkerton to Paisley–39 km—earlier take-out points available.	Maitland River—Wingham to Auburn–25 km—earlier take-out points available.	Beaver River—Kimberly to Heathcote–25 km—earlier take-out points available.
Can the terrain requirements for mode of travel #1 be met?	Mostly flatwater, some swifts depending on time of year, lift-overs and sweepers.	Flatwater, some swifts depending on time of year, lift-overs.	Flatwater.

	Location #1	Location #2	Location #3
Can the distance requirements for mode of travel #2 be met?	Brant Tract Trail System— over 25 km of trails. Roads leading to Brant Tract increase distance.	Carrick Tract Trail System—over 13 km of trails. Roads leading to Carrick Tract increase distance.	Kolapore Uplands Wilderness Ski Trails— over 30 km of trails. Roads leading to Kolapore Ski Trails increase distance.
Can the terrain requirements for mode of travel #2 be met?	Novice double- and single- track trails, intermediate single-track trails, dirt roads and paved roads.	Novice double- and single-track trails, intermediate single-track trails, dirt roads and paved roads.	Novice double- and single-track trails, intermediate single-track trails, dirt roads and paved roads.
Are there a number of campsites / rest stops available in the area?	Two Conservation Area campgrounds and three privately owned campground.	Four privately owned campsites and one Conservation Area campground	Two privately owned campgrounds.
What are the associated costs of using the area?	Costs for campsites are between $15 and $30 per night. Group rates are available.	Costs for campsites are between $12 and $30 per night. Group rates are available.	Costs for campsites are between $10 and $25 per night. Group rates are available.
What are the procedures to gain access to use the area?	Contact Grey Bruce Conservation Authority.	Contact Maitland Valley Conservation Authority and Grey Bruce Conservation Authority.	Contact Grey Sable Conservation Authority.
Are there any limitations on group sizes?	No limits - just dependent on availability of campsites.	No limits - just dependent on availability of campsites.	No limits - just dependent on availability of campsites.
Are there any restricted camping areas?	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.	Can only camp in designated campgrounds. Rest stops can occur at campgrounds, conservation areas and crown land. No stopping on private land.

Chosen location: Location #1

Reasons for choosing location: Location #1 provided the best area to meet the goals, objectives and guidelines of the expedition. There are a variety of campgrounds in the area that will accommodate larger groups. The Brant Tract Trails will provide an excellent area for mountain biking. Many resources exist to assist with planning the route.

DEVELOP AN EXPEDITION ROUTE

Length of the expedition:	**2 nights / 3 days (Friday Evening to Sunday Afternoon)**	**2 nights / 3 days (Friday Evening to Sunday Afternoon)**
	Route #1	**Route #2**
Drop-off point and campsite.	Saugeen Access Point #5, Lobie's Park, Yonge Street North, Walkerton, ON (GR 877 868). Campsite at Lobie's Park, Yonge Street North, Walkerton, ON. GR 877 868	Saugeen Access Point #11, Saugeen Bluffs Conservation Area, North of Paisley, 1 km west off Bruce Rd 3 (GR 748 109). Campsite at Saugeen Bluffs Conservation Area, North of Paisley, 1 km west off Bruce Rd 3 (GR 748 109).
Mode(s) of travel day #1.	• Canoe the Saugeen River from Saugeen Access Point #5 (GR 877 868) to Saugeen Access Point #6 (845 947). • Mountain bike to Paisley Rotary Campground (GR 782 059) along the road and the rail trail.	• Mountain bike from Saugeen Bluffs Conservation Area (GR 748 109) to Brant Tract Trails (GR 822 982). • Mountain bike from Brant Tract Trails (GR 822 982) to Paisley Rotary Campground (GR 782 059) along the road.
Mode of travel change point(s) for day #1, if required.	Saugeen Access Point #6–Concession 8, Brant Twp, 2 km East of Hwy 3.	None.
Possible lunch locations for day #1.	• Picnic area along the river - North of Concession 6 (GR 843 928). • Saugeen Access Point #6 (GR 845 947).	• Saugeen Access Point # 9, Paisley Hose Tower dock, east of Bruce Rd 3 and Bruce Rd 11 intersection (GR 782 059). • Brant Tract Trails (GR 822 982).

	Route #1	Route #2
Possible rest-stop / re-supply locations for day #1.	• Saugeen River, near Concession 4, West Brant, east of the town of Dunkeld (GR 850 904). • Rail trail, Concession 14 and Bruce Rd 3 (GR 812 001).	• Saugeen Access Point #9 (GR 782 059). • Brant Tract Trails (GR 822 982).
Evacuation route(s) for day #1.	• Canoe - move to nearest road access takeout and then proceed to County of Bruce General Hospital, 21 McGiven St W., Walkerton, ON (GR 877 853). • Mountain Bike - move from rail trail to main road and then proceed to Chesley and District Hospital, 39-2nd St. SE, Chesley, ON (GR 926 051).	Chesley and District Hospital, 39-2nd St. SE, Chesley, ON (GR 926 051).
Possible campsite(s) for night.	• Paisley Rotary Campground (GR 782 059). • Saugeen Bluffs Conservation Area, North of Paisley, 1 km west off Bruce Rd 3 (GR 748 109).	Paisley Rotary Campground (GR 782 059).
Mode(s) of travel day #2.	• Mountain bike along the road to Brant Tract Trails (GR 822 982). • Mountain bike on Brant Tract Trail system.	Canoe the Saugeen River from Saugeen Access Point #9 (GR 777 073) to Saugeen Access Point #11 (GR 756 083).
Mode of travel change point(s) for day #2, if required.	None.	None.
Possible lunch locations for day #2.	Brant Tract Trails, 6 km south of Paisley on Concession 12, 1 km east of Bruce Rd 3 (GR 822 982).	• Hidden Valley Camp, north of Paisley, approximately half way to Saugeen Bluffs (GR 756 083). • Saugeen Bluffs Conservation Area (GR 756 083)

	Route #1	Route #2
Possible rest-stop / re-supply locations for day #2.	• Bruce Rd 19 and Concession 18 (GR 867 024). • Brant Tract Trails (GR 822 982).	• Saugeen Access Point # 10, bridge north of Paisley, west side of Bruce Rd 3 (GR 777 073). • Hidden Valley Camp, north of Paisley, approximately half way to Saugeen Bluffs (GR 756 083).
Evacuation route(s) for day #2.	Chesley and District Hospital, 39-2nd St. SE, Chesley, ON (GR 926 051).	Move to nearest road access takeout and then proceed to Chesley and District Hospital, 39-2nd St. SE, Chesley, ON (GR 926 051).
Pick-up point.	Brant Tract Trails, 6 km south of Paisley on Concession 12, 1 km east of Bruce Rd 3 (GR 822 982).	Saugeen Access Point #11, Saugeen Bluffs Conservation Area, North of Paisley, 1 km west off Bruce Rd 3 (GR 748 109).

RATING	2nd Choice	1st Choice

PREAPARING AN EXPEDITION ROUTE CARD

Route Card - Day 1

Date:	**5 Oct (Day 1)**	**Team:**	**Spartans**	**Location:**	**Walkerton**
Start Time:	**0800 hrs**	**Estimated Finish Time:**	**1700 hrs**	**Starting Elevation:**	**210 m**

Leg	Mode of Travel	From GR	To GR	Bearing	Distance	Elevation	Time	Route Description
1	Mountain Bike	748 109	767 106		1.3 km	Start (S) - 210 m Finish (F) - 240 m	6 min	West on Conc. 10 Elderslie until it intersects with Bruce Rd 3. Loose surfaced road.
2	Mountain Bike	767 106	782 059		5 km	S - 240 m F - 220 m	15 min (+15 min break)	South on Bruce Rd 3, pass Conc. 8, down big hill, over bridge and into the town of Paisley. Hard packed, main road. Break / water resupply at Paisley Hose Tower.
3	Mountain Bike	782 059	781 055		500 m	S - 220 m F - 220 m	2 min	South on Bruce Rd 3, turn west onto Bruce Rd 1 until it is crossed by the Rail Trail.
4	Mountain Bike	781 055	809 011		5.5 km	S - 220 m F - 250 m	16 min (+15 min break	Follow the Rail Trail south until it intersects with Conc. 14 W. There are some hills along the route - mostly flat ground. Rail Trail will cross Bruce Rd 3 after 2 km. Break / water resupply at this point.
5	Mountain Bike	809 011	812 986		2.6 km	S - 250 m F - 250 m	8 min	Continue South on the Rail Trail until it intersects with Bruce Rd 3.
6	Mountain Bike	812 986	814 981		500 m	S - 250 m F - 250 m	2 min	South on Bruce Rd 3 until it intersects with Conc. 12. Some hills, hard packed, main road.

7	Mountain Bike	814 981	822 982		800 m	S- 250 m F - 250 m	3 min (+1 hour break)	West on Conc. 12 to the entrance to Brant Tract Trails (West Road) parking lot on the north side of the road. Loose surface road. Lunch.
8	Mountain Bike	822 982			11.5 km	various	60 min	Brant Tract Trail system trails will be run in the following order: Rolling Ferns, The Brainbuster, Devil's Elbow, The Shocker, Buck Run, Razor's Edge, Red Pine Loop and Neeland's Lane.
9	Mountain Bike	822 982	784 975		3.8 km	S - 250 m F - 260 m	11 min (+ 15 min break)	West on Conc. 12 to intersection at Baseline Rd N. Will cross Bruce Rd 3, cross Greenock-Brant Townline Rd, go down big hill, cross bridge and causeway. Hard packed, main road. Break/water re-supply.
10	Mountain Bike	784 975	782 059		9.4 km	S - 260 m F - 220 m	45 min	South on Baseline Rd N (becomes Bruce Rd1) to the Paisley Rotary Campground. Loose surface road, multiple hills throughout the leg.

Group Details:	There are six cadets on the team—four male and two female. Three of the six cadets completed Basic Expedition during this past summer. All six cadets have a high level of physical fitness.

Route Card - Day 2

Date:	**6 Oct (Day 2)**	**Team:**	**Spartans**	**Location:**	**Walkerton**
Start Time:	**0800 hrs**	**Estimated Finish Time:**	**1500 hrs**	**Starting Elevation:**	**220 m**

Leg	Mode of Travel	From GR	To GR	Bearing	Distance	Elevation	Time	Route Description
1	Canoe	782 059	777 073		2.5 km		37 min (+ 15 min break)	Break / water resupply at Saugeen Access Point #10 —bridge, river left.

2	Canoe	777 073	756 083		2.8 km		42 min (+ 15 min break)	Break / water resupply at Hidden Valley Camp, river left.
3	Canoe	756 083	748 109		3.8 km		60 min	Some obstructions along the centre of the river, stay river left. Arrive Saugeen Bluffs Conservation area, river right.

Group Details:	There are six cadets on the team—four male and two female. Three of the six cadets completed Basic Expedition during this past summer. All six cadets have a high level of physical fitness.

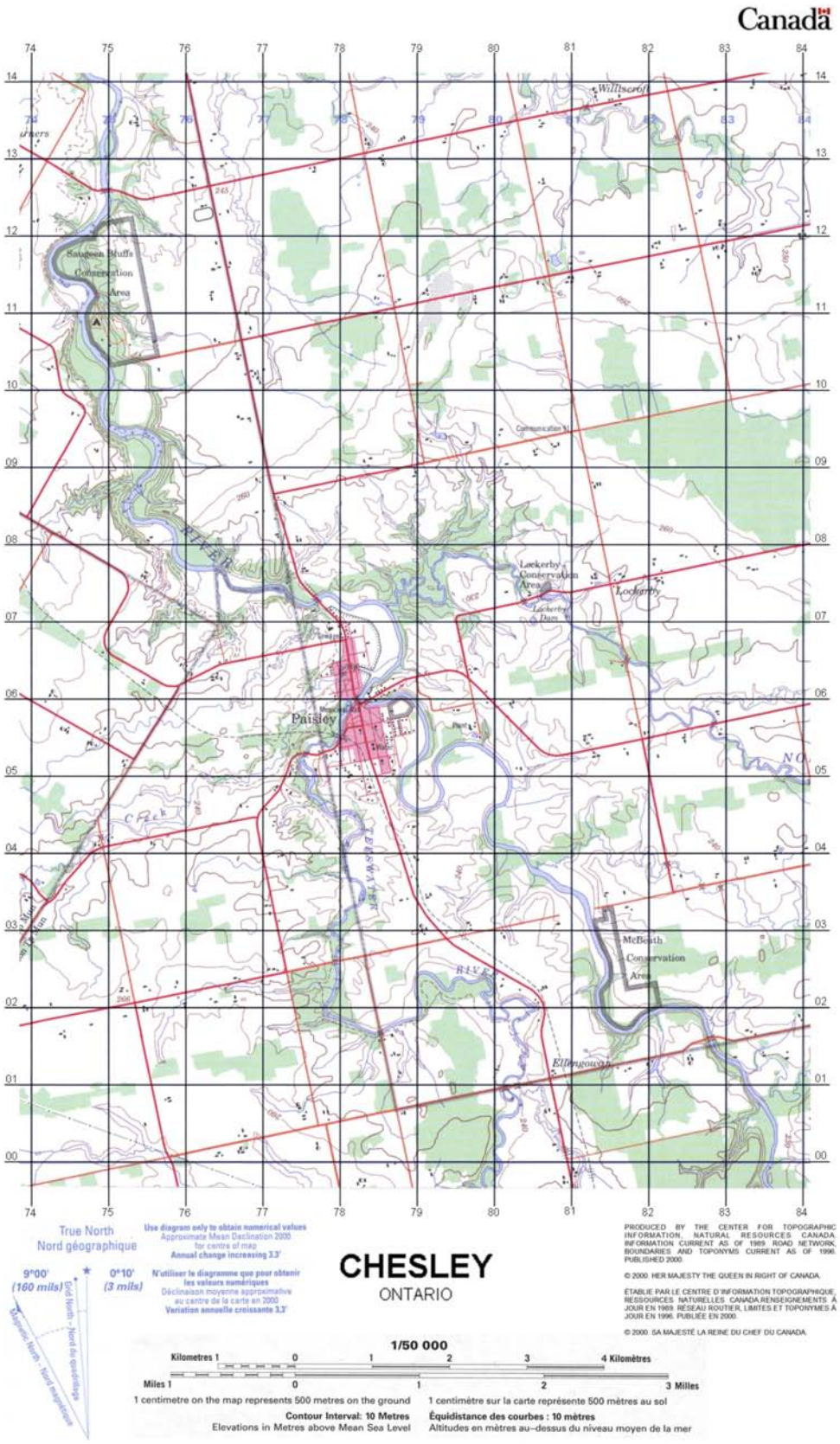
CREATE AN EXPEDITION SCHEDULE

Friday		
Timings	**Tasks / Activity**	**Remarks**
	Collect Expedition Skill / Experience Assessment Form	Expedition centre staff must read and tabulate scores from Expedition Skills / Experience Assessment form. Place cadets in teams of varied skill levels.
	Issue all personal and group expedition equipment	Expedition centre staff.
	Set up campsite	Expedition centre staff to rotate to ensure that cadets know how to set up tents, organize equipment, light lanterns, etc.
	Initial briefing / divide cadets into teams	To include: activities, expectations, safety, timings, dress, meals, rules, etc. Cadets will be introduced to their team instructor.
	Navigation review	Completed as required, time permitting.
2300 hrs	Lights Out	

Saturday		
Timings	**Tasks / Activity**	**Remarks**
0600 hrs	Reveille / Ablutions	Cadets will pack all personal equipment prior to eating breakfast.
0630 hrs	Breakfast	Supply Officer to prepare breakfast, expedition centre staff to model set-up of eating area, garbage collection, clean up, etc.
0730 hrs	Campsite tear down	Under direction of TI each team will tear down all components of the campsite, organize personal and group equipment for transport to new campsite.
0800 hrs	Start Expedition	Mode of Travel #1—Mountain Bike to Brant Tract Trails - from Brant Tract Trails to Paisley Rotary Campground.
1200 hrs - 1300 hrs	Lunch	Lunch will occur at a Brant Tract Trails parking lot.
1600 hrs	Arrive at camp site # 2	Teams will set up their campsites, with the TI providing feedback as required.
1730 hrs	Supper	Preparation of supper will be incorporated into the teams campsite set up routine.
2000 hrs	Evening Activities	Cadet will make one entry in their expedition journal.
2200 hrs	Lights out	

Sunday		
Timings	**Tasks / Activity**	**Remarks**
0600 hrs	Reveille / Breakfast / Tear down campsite	Teams will be required to complete daily routine activities.
0800 hrs	Continue expedition	Mode of travel #2—Canoe from Paisley to Saugeen Bluffs Conservation Area.
1200 hrs	Lunch	Lunch will occur along the canoe route—teams will be required to bring lunch with them.
1330 hrs	Arrive at Saugeen Bluffs	Teams will complete the de-kitting process under the direction of the expedition centre Log O.

1430 hrs	Debriefing	All cadets will be required to: fill out an expedition centre activity critique and complete a journal entry about their experiences during the weekend.
1500 hrs	Depart	


Canada
Saugeen Bluffs Conservation Area
Paisley
Lackerby Conservation Area
Lackerby
McBeath Conservation Area
Williscroft
Ellengowan
CHESLEY
ONTARIO
True North
Nord géographique
Use diagram only to obtain numerical values
Approximate Mean Declination 2000
for centre of map
Annual change increasing 3.3'
N'utiliser le diagramme que pour obtenir les valeurs numériques
Déclinaison moyenne approximative au centre de la carte en 2000
Variation annuelle croissante 3.3'
9°00' (160 mils)
0°10' (3 mils)
Grid North - Nord du quadrillage
Magnetic North - Nord magnétique
1/50 000
Kilometres 1 0 1 2 3 4 Kilometres
Miles 1 0 1 2 3 Milles
1 centimetre on the map represents 500 metres on the ground
1 centimètre sur la carte représente 500 mètres au sol
Contour Interval: 10 Metres
Elevations in Metres above Mean Sea Level
Équidistance des courbes : 10 mètres
Altitudes en mètres au-dessus du niveau moyen de la mer
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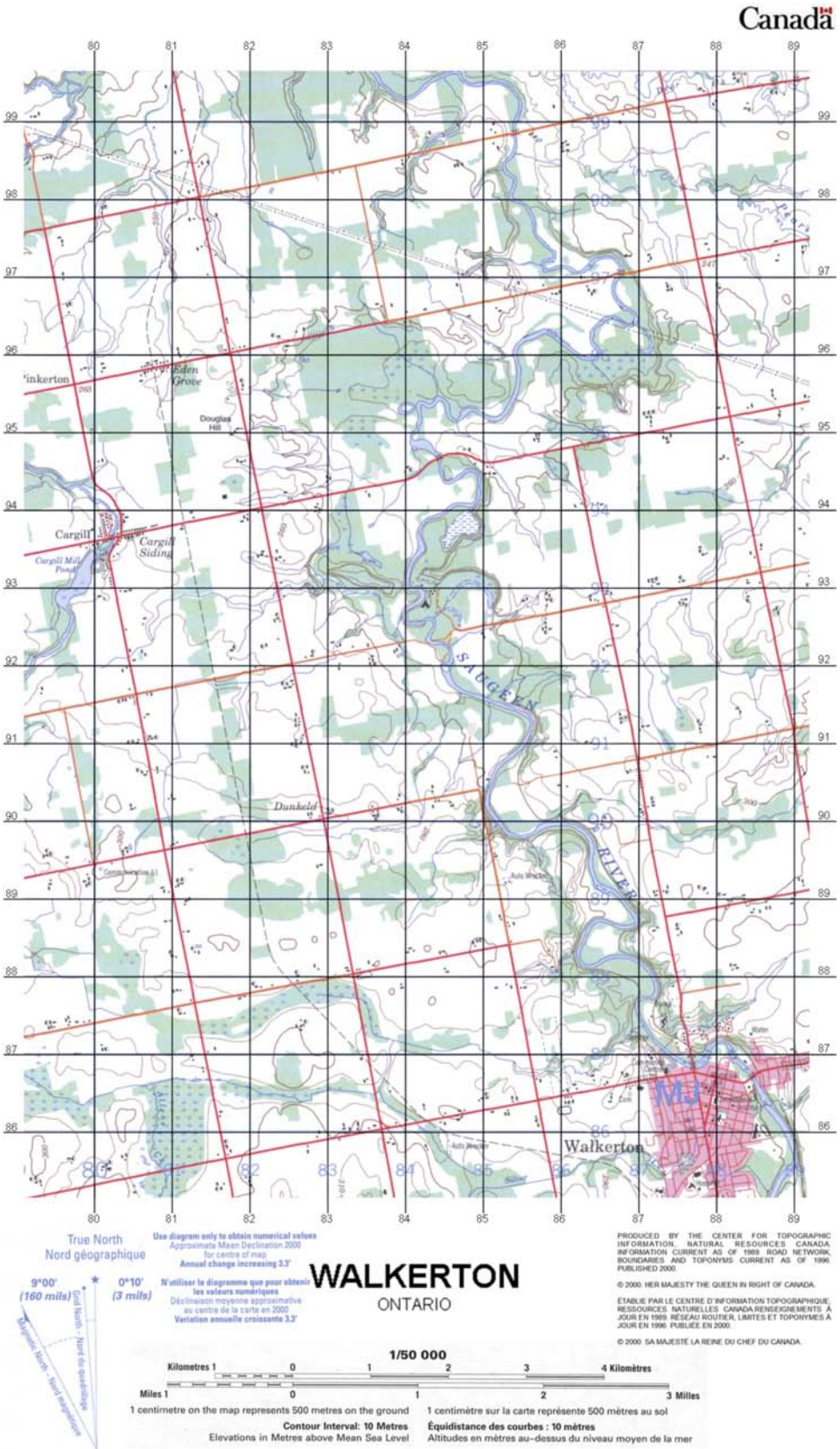
Canada
Walkerton
Cargill
Cargill Siding
Eden Grove
Douglas Hill
Dunkeld
SAUGEEN
RIVER
WALKERTON
ONTARIO
True North
Nord géographique
1/50 000
Kilometres 1 0 1 2 3 4 Kilometres
Miles 1 0 1 2 3 Milles
1 centimetre on the map represents 500 metres on the ground
1 centimètre sur la carte représente 500 mètres au sol
Contour Interval: 10 Metres
Elevations in Metres above Mean Sea Level
Équidistance des courbes : 10 mètres
Altitudes en mètres au-dessus du niveau moyen de la mer
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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 3

EO M425.03 – DEVELOP AN EXPEDITION EQUIPMENT LIST

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Have the cadets bring their Expedition Duo-Tang.

Photocopy Section 3 of the Expedition Planning Booklet located at Attachment A for each group.

Photocopy Section 3 of the Expedition Planning Booklet located at Attachment A for each cadet.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An in-class activity was chosen for this lesson as it is an interactive way to provoke thought and stimulate interest about developing expedition equipment lists.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have developed an expedition equipment list.

IMPORTANCE

It is important for cadets to examine every part of an expedition and consider what equipment and materials are required to successfully complete the desired training. Each activity has unique characteristics, even the same activity at the same location during the same time of year may present equipment differences. Cadets must scrutinize every expedition and ensure all materials and equipment have been determined so orders and requests can be placed and materials prepared prior to the commencement of the expedition.

Teaching Point 1 **Have the cadets, in groups of no more than three, develop an expedition equipment list.**

Time: 50 min Method: In-Class Activity

BACKGROUND KNOWLEDGE

Cadets shall be informed of the estimated fuel consumption information below prior to carrying out the activity. This information should be available for all cadets to reference.

FUEL CONSUMPTION

When determining how much fuel to pack for an expedition, refer to the owners' manual of the stove being used to determine how much fuel it will consume. Estimates of fuel consumption for a Coleman Peak One single-burner mountain stove per day are:

Summer

- One person requires 1 / 6 L (5.5 ounces) of fuel.
- A group of three requires 1 / 3 L (11 ounces) of fuel.

Spring / Fall

- One person requires 1 / 4 L (8.5 ounces) of fuel.
- A group of three requires 1 / 2 L (17 ounces) of fuel.

Winter

- One person requires 1 / 2 L (17 ounces) of fuel.
- A group of three requires 3 / 4 L (25.5 ounces) of fuel.

ACTIVITY

Time: 50 min

Cadets will be referencing the guidelines and information developed in their Expedition Duo-Tang.

OBJECTIVE

The objective of this activity is to have the cadets to develop an expedition equipment list, to include:

- personal equipment,
- group equipment, and
- activity-specific equipment.

RESOURCES

- Section 3 of the Expedition Planning Booklet located at Attachment A (one per group),
- Completed example of Section 3 of the Expedition Planning Booklet located at Attachment B,
- Expedition Duo-Tang, and
- Pens / pencils.

ACTIVITY LAYOUT

Set up the classroom for group work, with the required resources, for groups of three cadets.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Distribute Section 3 of the Expedition Planning Booklet to each group.
3. Have each group review Sections 1 and 2 in their Duo-Tang.
4. Based on the information recorded and established in Sections 1 and 2, have the cadets identify the required equipment for the expedition, to include:
    - personal equipment,
    - group equipment, and
    - activity-specific equipment, to include:
        - mountain biking; and
        - canoeing.
5. Tell the groups that they will have five minutes for each list.
6. Circulate among the groups and assist the cadets as necessary, offering suggestions and advice. Refer to the completed example of Section 3 of the Expedition Planning Booklet, as required. Cadets answers may differ depending on the guidelines and route developed.
7. Review the answers with the groups.
8. Distribute Section 3 of the Expedition Planning Booklet to each cadet.
9. Allow 15 minutes for each cadet to record their findings in Section 3 of their Expedition Planning Booklet, using the complied information from the group.
10. Have the cadets place the completed Section 3 of the Expedition Planning Booklet into their Expedition Duo-Tang.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 1

The cadets' participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' developing of an expedition equipment list will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Have the cadets complete any unfinished areas of Section 3 of the Expedition Planning Booklet that could not be completed during the lesson.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

A successful expedition relies on many conditions. Taking the time to properly assess the required materials for an expedition helps guarantee a positive expedition experience. Shortages and missing materials place stress on the conducting staff and the quality of training being conducted. A well thought-out expedition leads to a successful expedition.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

A2-001 A-CR-CCP-951/PT-002 Director Cadets 3. (2006). *Royal Canadian Army Cadets adventure training safety standards*. Ottawa, ON: Department of National Defence.

C2-042 ISBN 0-7566-0946-1 Berger, K. (2005). *Backpacking & hiking*. New York, NY: DK Publishing, Inc.

C2-051 ISBN 978-0-7153-2254-3 Bagshaw, C. (2006). *The ultimate hiking skills manual*. Cincinatti, OH: David & Charles.

SECTION 3 – EXPEDITION EQUIPMENT LIST

PERSONAL EQUIPMENT

Personal expedition equipment are items that are used by an individual and are maintained by that person. Personal equipment is the kit a cadet carries in their expedition field pack.

List all items that cadets are required to bring with them to successfully complete the expedition.

NON-ISSUED EQUIPMENT SUPPLIED BY CADET	
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ISSUED EQUIPMENT UPON ARRIVAL	
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GROUP EQUIPMENT

Group equipment is selected for its versatility, weight and ease of use. The more compact an item is or can become, the easier it is to pack and carry. Group equipment is given to the cadets upon arrival at the expedition centre.

List all the items the cadets require to successfully complete the expedition. Group equipment includes items that cadets are not expected to purchase, such as two-man tents, water filters and stoves.

ISSUED GROUP EQUIPMENT

Number of persons per group:____

1.		27.	
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ACTIVITY—SPECIFIC EQUIPMENT

Record the materials and equipment required to effectively complete the desired training. List all associated equipment and materials that are used for each mode of travel.

MODES OF TRAVEL			
Mode of Travel #1 Equipment Required		**Mode of Travel #2 Equipment Required**	
Type of Activity:		**Type of Activity:**	
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4.		4.	
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COMPLETED EXAMPLE OF SECTION 3 OF THE EXPEDITION PLANNING BOOKLET

PERSONAL EQUIPMENT

Personal expedition equipment are items that are used by an individual and are maintained by that person. Personal equipment is the kit a cadet carries in their expedition field pack.

List all items that cadets are required to bring with them to successfully complete the expedition.

	NON-ISSUED EQUIPMENT SUPPLIED BY CADET
1.	**Camera**
2.	**Camp soap (biodegradable)**
3.	**Clothing (for 2 days 2 nights)**
4.	**Facecloth or small towel x 2**
5.	**Gloves x 1 pair**
6.	**High energy snacks**
7.	**Lip balm**
8.	**Matches (minimum of 20 strike anywhere)**
9.	**Notepad and pencil**
10.	**Pocket knife / survival knife**
11.	**Rain gear**
12.	**Sunglasses**
13.	**Sunscreen—SPF 15, (30 recommended)**
14.	**Survival kit**
15.	**Toilet paper x 1 roll**
16.	**Toothbrush**
17.	**Toothpaste**
18.	**Wide brim hat**
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	ISSUED EQUIPMENT UPON ARRIVAL
1.	**Backpack (one per cadet)**
2.	**Carabiner (one per cadet)**
3.	**Flashlight / headlamp (one per cadet)**
4.	**Insect repellent (one per cadet)**
5.	**KFS (knife, fork, spoon,) set (one per cadet)**
6.	**Plate (one per cadet)**
7.	**Sleeping bag (one per cadet)**
8.	**Sleeping mats (one per cadet)**
9.	**Small bowl (one per cadet)**
10.	**Trekking pole (one per cadet)**
11.	**Valise (one per cadet)**
12.	**Water bottle (one per cadet)**
13.	**Water carrier (one per cadet)**
14.	**Whistle (one per cadet)**
15.	**Mosquito net (one per cadet)**
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GROUP EQUIPMENT

Group equipment is selected for its versatility, weight and ease of use. The more compact an item is or can become, the easier it is to pack and carry. Group equipment is given to the cadets upon arrival at the expedition centre.

List all the items the cadets require to successfully complete the expedition. Group equipment includes items that cadets are not expected to purchase, such as two-man tents, water filters and stoves.

ISSUED GROUP EQUIPMENT

Number of persons per group: 9

1.	**15-m rope (one per group)**
2.	**Batteries** (spares for communication device and GPS)
3.	**Compass (two per group)**
4.	**First-aid kit (one per group)**
5.	**Food (as detailed in the ration plan)**
6.	**Fuel bottle(s) (three, one litre bottles per group)**
7.	**Garbage bags (one per meal)**
8.	**Glow sticks (two per cadet)**
9.	**GPS receiver (one per group)**
10.	**Hand-held radio (two per group)**
11.	**Naphtha (three litres)**
12.	**Pot set (two sets)**
13.	**Large resealable bags (10 per group)**
14.	**Single burner mountain stove (two per group)**
15.	**Tent complete, 3-person (three per group)**
16.	**Topographical map / guidebook (one per group)**
17.	**Water filter (two per group)**
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ACTIVITY—SPECIFIC EQUIPMENT ANSWER KEY

Record the materials and equipment required to effectively complete the desired training. List all associated equipment and materials that are used for each mode of travel.

MODES OF TRAVEL

Mode of Travel #1 Equipment Required	
Type of Activity: Canoeing	
1.	**Bailer (one per canoe)—22**
2.	**Canoes (one per tandem group)—22**
3.	**Canoe repair kit (one per canoe group)—4**
4.	**Paddles (three per canoe)—66**
5.	**Painters (two per canoe)—44**
6.	**PFD (one per person)— 44**
7.	**Throw Bag with rope, not less than 15 m (49 ft) (one per canoe)—22**
8.	**15-m buoyant heaving line or throw bag (one per canoe)—22**
9.	**Wet / dry suits for each person if water conditions are below 10 degrees Celsius—44**
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Mode of Travel #2 Equipment Required	
Type of Activity: Mountain Biking	
1.	**Basic bike repair kit (one per group)—4**
2.	**Helmet (one per person)—44**
3.	**Mountain Bike complete (one per person)—44**
4.	**Reflective vest (one per group)—4**
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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 4

EO M425.04 – DEVELOP AN EXPEDITION RATION PLAN

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Have the cadets bring their Expedition Duo-Tang.

Photocopy the *Eating Well With Canada's Food Guide* located at Attachment A and the Energy Expenditures for Physical Activity Information Sheet located at Attachment B for each cadet.

Photocopy the Expedition Ration Plan Information Sheet located at Attachment C for each cadet.

Photocopy Section 4 of the Expedition Planning Booklet located at Attachment D for each cadet.

Review the completed example of Section 4 of the Expedition Planning Booklet located at Attachment E.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for TPs 1–4 as it introduces the cadets to developing an expedition ration plan.

An in-class activity was chosen for TP 5 as it is an interactive way for the cadets to confirm their comprehension of developing an expedition ration plan.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have developed an expedition ration plan while considering meal requirements, food options, food weight and nutritional value.

IMPORTANCE

It is important for cadets to develop an expedition ration plan as it is a significant step in the process of planning an expedition. Being able to identify the different types of rations, their nutritional values and how the food is going to be packed and cooked, while considering the type of activities that are to be conducted, will aid in the overall success of the expedition. With a successful ration plan, cadets will have more time and energy throughout the day to fully participate in the expedition.

Teaching Point 1 **Discuss daily nutrition requirements when on an expedition.**

Time: 10 min Method: Interactive Lecture

This TP is intended to discuss nutritional requirements when on an expedition.

Distribute *Eating Well With Canada's Food Guide* located at Attachment A and the Energy Expenditures for Physical Activity Information Sheet located at Attachment B for each cadet for reference while describing the nutrition requirements and developing an expedition ration plan.

Basic nutrition must be kept in mind when planning expedition rations, as cadets typically burn many more calories on an expedition compared to most everyday activities. Ensuring an adequate amount of calories and nutritional balance helps to maintain energy levels and positive attitudes, as well-nourished cadets can think better and tend to make better safety-related decisions.

NUTRIENTS

Calories. A measurement of food energy. Required calories are based on the amount and intensity of expedition activities. When an individual's expedition activities change, their eating habits should reflect those changes. More calories are required as activity level increases.

Sodium. Most sodium in food comes from sodium chloride, which is table or sea salt. Salt is a common ingredient in processed and prepared foods. The appropriate amounts of sodium help maintain fluid and electrolytes balance when active.

Water is essential. Even a small amount of dehydration (one percent of body weight) can increase cardiovascular strain as indicated by a disproportionate elevation of heart rate during exercise and limit the ability of the body to transfer heat from contracting muscles to the skin's surface where it can be dissipated to the environment.

Carbohydrates. Primary sources of energy for the body. The types of carbohydrates are fibre, which is a complex carbohydrate, and sugar, which is a simple carbohydrate.

- **Complex carbohydrates.** Break down slowly and can help prevent overeating. They are found in vegetables, fruit, whole grains, brown rice, nuts, soy products and legumes.
- **Fibre.** A complex carbohydrate found in plants. Unlike other carbohydrates it passes through the body undigested and is healthy for the digestive system. Fibre provides energy for the muscles and brain.
- **Simple carbohydrates.** Break down quickly and can cause a person to become hungry quickly (quick high, quick low). They are found in sugary soft drinks, sugary cereals, white bread, white rice, cookies, candy, fries and pastries.
- **Sugars.** A simple carbohydrate. Natural sugars are found in foods such as milk, fruit and vegetables. Added sugars contribute calories, yet they have no significant nutritional value.

Protein. Found in a variety of foods such as meat, poultry, fish, legumes, nuts, milk products and grain products. It builds muscles, bones and teeth.

Vitamin C. Found in many fruits and vegetables. Helps the body fight infections.

Iron. Found in foods such as meat, fish, poultry, grains, vegetables, fruit, nuts and seeds. Helps the red blood cells carry oxygen throughout the body.

The following personal daily nutritional guidelines must be adhered to:

- 50–80 percent should be carbohydrates,
- 10–15 percent should be proteins, and
- 30 percent should be fats (of which only 10 percent should be saturated fats).

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What are calories and why are they important when planning meals for an expedition?

Q2. What types of foods are proteins found in?

Q3. Why is important to include iron when considering nutrition requirements?

ANTICIPATED ANSWERS:

A1. A measurement of food energy. Required calories are based on the amount and intensity of expedition activities. When an individual's expedition activities change, their eating habits should reflect those changes. More calories are required as activity level increases.

A2. Proteins are found in a variety of foods such as meat, poultry, fish, legumes, nuts, milk products and grain products.

A3. Iron helps the red blood cells carry oxygen throughout the body.

Teaching Point 2 **Discuss planning meals for an expedition.**

Time: 10 min Method: Interactive Lecture

This TP is intended to consider the people participating in the expedition when planning the meals.

When planning meals for an expedition, considerations need to be determined, such as nutrition, taste, perishability, cooking ease and cleanup. As well, the following aspects of the expedition and mealtimes also need to be determined.

Type of activity. The average individual on an expedition will consume thousands of calories throughout the day, an important factor to remember when planning an expedition ration plan. Depending on the expedition activity, the following calorie consumption is to be considered:

- Activities such as moderate backpacking or canoeing will consume 2 500–3 000 calories per day.
- Strenuous activities such as difficult backpacking or snow camping will consume 3 000–3 500 calories per day.
- Very strenuous activities such as mountaineering or extended periods of time spent in cold weather requires 3 500–5 000 calories per day.

Number of people. For each meal, calculate the amount of cadets on the expedition and the amount of food that will be required for each. Count the total number of meals and categorize them as breakfast, lunch, dinner or snack.

Individuals consume from 1.5–2.5 pounds (.68–1.13 kg) of food per day. When planning meals and meal sizes for the expedition, the following per person, per day estimates are helpful:

- average activities require 1.5 pounds (.68 kg) of food,
- strenuous activities require 1.5–2 pounds (.68 to .91 kg) of food, and
- very strenuous activities require 2–2.5 pounds (.91 to 1.13 kg) of food.

Size of cooking groups. The decision needs to be made whether to cook in small groups or one large group, depending on the number of cadets on the expedition.

- **One large group.** Mealtimes with one large group can promote relaxation and a sense of community. Cooking in a large group ultimately saves weight, as the total number of stoves and pots to carry are minimized, however the actual cooking process tends to take longer to complete.
- **Several small groups.** Mealtimes with small groups tend to be more efficient and it enables more people to become more proficient cooks. Small groups can create a sense of separation unless cooking groups are rotated frequently.

Group leaders need to decide whether to cook and eat with the groups or alone. On a short trip or with young cadets, it makes sense for the leader to share food with the group. On a long trip or with more experienced cadets, it can be very productive for the group(s) if the leaders separate themselves. It gives cadets complete control of the quality and timings of the meals and a sense of independence.

Special meal requirements. When deciding what to eat at each meal, it is important to take note of food preferences (eg, vegetarians) and allergies within the group.

Helpful Tips

The following are helpful tips for when planning the rations and conducting mealtimes on an expedition:

- **Plan ahead.** While dinner is cooking, plan the food for the next day. Sort the food required for the next day while on the trail in one or two stuff sacks. Try to plan simple meals for long days and more complex meals on the easier days.
- **Eat often.** While conducting expedition activities, try to consume calories more efficiently by eating five times a day (breakfast, morning snack, lunch, afternoon snack and dinner).
- **Pack individual snack bags.** Rather than having one large bag of trail mix, divide the large bag into individual snack bags the night before. This way, each person can snack throughout the day according to individual needs, rather than waiting for a group-determined snack break. It also limits the spreading of germs.
- **Keep snacks accessible.** Pack lunch and snacks in the top or side pockets of the expedition field pack for easy access.
- **Start slow-cooking food early.** Pre-soak foods that may take a long time to cook (eg, beans).

- **Oil the pot.** Prior to cooking starches or grains, rub the inside of the pot with margarine or oil. This makes cleanup easier and prevents liquids from boiling over.
- **Be creative with leftovers.** Think of ways to use leftovers (eg, leftover rice can be kneaded into bread dough, fried up with spices, or made into rice pudding by adding milk, sugar, raisins and nutmeg or cinnamon). Screw-top hard-plastic containers are useful for storing leftovers for later consumption.
- **Make hot drinks for more than one.** When making hot drinks, make a full pot for several cadets.
- **Drink, drink, drink.** Water helps digest food.
- **Use dried fruits and vegetables.** Rehydrated dried fruits and vegetables can make a bland meal seem almost gourmet.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. How many calories are consumed when conducting very strenuous activities?

Q2. How many pounds of food do cadets consume per day, on average?

Q3. What are the advantages to cooking as a large group?

ANTICIPATED ANSWERS:

A1. Very strenuous activities require 3 500–5 000 calories per day.

A2. Cadets consume from 1.5–2.5 pounds of food per day.

A3. Mealtimes with one large group promotes relaxation and a sense of community. Cooking in a large group ultimately saves weight, as the total number of stoves and pots to carry are minimized.

Teaching Point 3 **Discuss the types and options of expedition rations.**

Time: 10 min Method: Interactive Lecture

This TP is intended to introduce the types and options when planning expedition rations.

Distribute the Expedition Ration Plan Information Sheet located at Attachment C for each cadet for reference while describing the types and options of expedition rations and developing an expedition ration plan.

EXPEDITION RATION TYPES

Whether conducting a menu plan or bulk rations for the expedition, there are five food types to consider when developing an expedition ration plan.

1. **Freeze-dried.** A way to preserve food by freezing it and drying it by the sublimation of ice in a vacuum. Pre-packaged freeze-dried meals are very light to carry and allow for quick preparation with minimal cooking skills and time, however they tend to be more expensive (average $4–10 per meal) and tend to be less nutritious. There are many types of food that can be freeze-dried (eg, meat, pasta and vegetables).

Pre-packaged meals that are made for four people may actually only satisfy two very hungry people. Supplementing with additional rice or noodles may be required.

2. **Dehydrated.** Food that has had the water removed for preservation and storage (eg, fruit, vegetables and meat).

3. **Trail food.** Food that can be consumed while in the middle of an activity (eg, trail mix and granola bars).

4. **Fresh rations.** Food that has been store bought and is still fresh for consumption (eg, fruit, vegetables and meat).

5. **Individual meal packages (IMPs) and meals ready to eat (MREs).** Otherwise known as boil-in-the-bag. Each IMP and MRE include a main course (meat or vegetarian), vegetables and fruit in sealed foil pouches, and dried foods in paper/tinfoil pouches. All of the food items are safe to eat cold and dry—they may not taste as good as hot food, though. High sugar items like chocolate, hard candies and drink mixes, as well as coffee and tea are also included.

   These types of meals were developed to meet a typical day's three meal requirement. These meals are identified as breakfast, lunch and supper and contain between 1400 and 1800 calories—enough calories for an adult performing strenuous tasks for prolonged periods.

Staple food is the chief element or a main component of a meal (eg, rice or noodles).

EXPEDITION RATION OPTIONS

Being able to develop an appropriate expedition ration plan is an important aspect of expedition planning, as the food consumed can dramatically affect the success of an expedition. There are two different expedition rationing options that are commonly followed when designing a ration plan.

Menu Planning

Ask the cadets questions about planning a menu to evaluate their level of knowledge.

Some sample questions may include:

- Have you planned meals for an expedition before?
- What factors did you have to consider when planning meals for an expedition?
- What type of meals did you plan for the expedition?

Menu planning systematically plans the contents of each meal over the course of the expedition. The advantages to menu planning are that there is an organized guide of each meal created to assist in preparation and it is a convenient way to plan for short expeditions (2–5 days).

Steps of the Menu Planning System

The menu planning system has seven steps:

1. Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.

2. Identify items which can be eaten at each meal.

3. Decide specifically what to eat at each of the meals, taking note of food preferences and allergies within the group.

When deciding each meal, some helpful hints may include:

- packing fresh foods (fruits and vegetables) for the first day or two;
- freezing meat that will be thawed and ready to cook for dinner; and
- adding freeze-dried items which can add additional nutrition (eg, freeze-dried peas added into a pasta dish).

4. Estimate how much food will be needed at each meal to feed every cadet, while considering:
   a. how big the appetites will be,
   b. how strenuous the expedition will be, and
   c. the time of year.
5. Determine the total food required, based on the menu and generate a shopping list.
6. Purchase the food.
7. Repackage, prepare and pack the food for the expedition.

Bulk Rationing

Buy food in bulk based on the amount and weight of food consumed per day. The advantages to bulk rationing are that it provides opportunities for cooking creativity, allows easier calculations for caloric and nutritional levels and is more beneficial for longer trips. The bulk ration system tends to be more financially feasible, as cadets can eat plenty of delicious food for $3–6 a day.

Bulk food must be repacked into clear plastic bags or containers to reduce packaging and additional waste in the field. There are many foods that can be purchased in bulk to repackage for the expedition such as pasta, beans, rice, flour, cereals, nuts, dried fruits, sugar, soup bases and spices.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. What are the five types of expedition rations?

Q2. What are the two different expedition rationing options that are commonly followed when designing a ration plan?

Q3. What is the average cost per person, per day with the bulk ration system?

ANTICIPATED ANSWERS:

A1. The five types of expedition rations are:

- freeze-dried,
- dehydrated,
- trail food,

- fresh rations, and
- IMPs.

A2. The two different expedition rationing options are menu planning and bulk rations.

A3. The bulk ration system tends to be more financially feasible, as cadets can eat plenty of delicious food for $3–6 a day.

Teaching Point 4 **Discuss packing food for an expedition.**

Time: 5 min Method: Interactive Lecture

This TP is intended to discuss packing and distributing food prior to conducting an expedition.

Have examples of containers, pre-assembled meals and packed food for the cadets to view.

Once the expedition ration plan has been developed and the food has been purchased, the food must be pre-assembled and packed. The following steps simplify packaging, carrying and preparing food while on the expedition.

Strip away the packaging. Cardboard, paper, foil and cans are all excess weight and potential litter.

Select containers. Pack food in see-through bags and containers to allow the contents to be easily seen and selected without having to open the bag or container. Labelling or marking the bags or containers can also aid in selecting. Use bags or containers that are lightweight and are resealable. Examples of containers that can be used include:

- resealable plastic bags (or other strong bags that can be tied),
- resealable plastic containers,
- plastic bottles with screw-top lid, and
- squeeze tubes.

When labelling each container or bag, meal directions or ingredients can also be marked on the outside (eg, pasta directions or chili ingredients).

Pre-assemble the meals. Pre-assembling most of the food prior to the expedition saves time and aids by having the meal preparation times go faster and smoother. Some examples of pre-assembling meals include:

- throwing all ingredients in a bag (called meal-in-a-bag) and cook when required;
- pre-soaking foods that require a longer time to cook (eg, beans); and
- dividing trail food into individual bags.

Develop storage for cold items. As some meals require foods to be chilled or frozen throughout the expedition, cold storage will need to be developed for those items. It is recommended that frozen or chilled items be used first to ensure they stay fresh. If this is not possible, a cold storage system needs to be developed. As groups are rarely stationary on an expedition, maintaining cold storage may be difficult, however some locations to store cold foods may include:

- ice packs and coolers,
- food barrels,
- in a river, lake or creek (ensure the container is sealed),
- in the snow, and
- with regular or dry ice (be careful when handling dry ice).

Divide items among group members. As repackaging consolidates food into a more manageable system of transport, it is easier to distribute the food among the group. When the food has been labelled, it is then distributed among group members. Keep the contents of one complete meal together with one person, as this allows for each meal to be found easily among the group.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS:

Q1. What are some examples of containers that may be used to pack and store food while on an expedition?

Q2. Why is it beneficial to pre-assemble most of the food prior to the expedition?

Q3. What are some locations that food can be stored in order to stay cold?

ANTICIPATED ANSWERS:

A1. Some examples of containers that can be used to pack and store food while on an expedition include:

- resealable plastic bags (or other strong bags that can be tied),
- resealable plastic containers,
- plastic bottles with screw-top lid, and
- squeeze tubes.

A2. Pre-assembling most of the food prior to the expedition saves time and aids in having the meal preparation time go faster and smoother.

A3. Some locations to store cold foods include:

- ice packs and coolers,
- food barrels,
- in a river, lake or creek (ensure the container is sealed),
- in the snow, and
- with regular or dry ice (be careful when handling dry ice).

Teaching Point 5 **Have the cadets, in groups of no more than three, develop an expedition ration plan.**

Time: 15 min Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets, in groups of no more than three, develop an expedition ration plan and record the information in the Expedition Planning Booklet.

RESOURCES

- *Eating Well With Canada's Food Guide* located at Attachment A (one per cadet),
- Energy Expenditures for Physical Activity Information Sheet located at Attachment B (one per cadet), and
- Expedition Ration Plan Information Sheet located at Attachment C (one per cadet),
- Section 4 of the Expedition Planning Booklet located at Attachment D (one per cadet),
- Completed example of Section 4 of the Expedition Planning Booklet located at Attachment E,
- Expedition Duo-Tang, and
- Pens / pencils.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Distribute to each cadet:
    a. Section 4 of the Expedition Planning Booklet, and
    b. Expedition Ration Plan Information Sheet.
3. Introduce the expedition ration guidelines, to include:
    a. meal requirements based on activity,
    b. food options,
    c. food weights,
    d. nutritional value, and
    e. packing and food distribution.
4. Have the groups read through the Expedition Ration Plan Information Sheet.
5. Have the groups fill in the expedition ration information in Section 4 of the Expedition Planning Booklet using information gathered from the Expedition Ration Plan Information Sheet.

6. Have the groups share their answers. Refer to the completed example of Section 4 of the Expedition Planning Booklet as required.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 5

The cadet's participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

QUESTIONS:

Q1. What foods are vitamin C found in and why is vitamin C important to the body?

Q2. After determining whether to have large or small cooking groups, what other factors need to be considered when deciding how or where to eat as the leader?

Q3. What are the seven steps when conducting the menu planning system on an expedition?

ANTICIPATED ANSWERS:

A1. Vitamin C is found in many fruits and vegetables and helps the body fight infections.

A2. Group leaders need to decide whether to cook and eat with the groups or alone. On a short trip or with young cadets, it makes sense for the leader to share food with the group. On a long trip or with more advanced cadets, it can be very productive for the group(s) if the leader(s) separate themselves. It gives cadets complete control of the quality and timings of the meals and a sense of independence.

A3. The seven steps when conducting the menu planning system are:

1. Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.
2. Identify items which can be eaten at each meal.
3. Decide specifically what to eat at each of the meals.
4. Estimate how much food will be needed at each meal to feed every cadet.
5. Determine the total food required, based on the menu and generate a shopping list.
6. Go shopping for the food.
7. Repackage, prepare and pack the food for the expedition.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

This lesson is assessed IAW A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 3, Annex B, 425 PC.

CLOSING STATEMENT

A well thought out ration plan can provide the required nutrients and energy levels required to successfully complete the expedition and achieve the goals and objectives that have been set out. As the ration plan is being developed it is also important to consider the types of activities, cadets and how the food is going to be packed and cooked. Creating a ration plan is a skill that can be applied when planning other overnight activities.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

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C2-208 ISBN 978-1-59485-033-2 Raynolds, J., Lodato, A., Gordon, R., Blair-Smith, C., Welsh, J., & Gerzon, M. (2007). *Leadership the outward bound way*. Seattle, WA: The Mountaineers Books.

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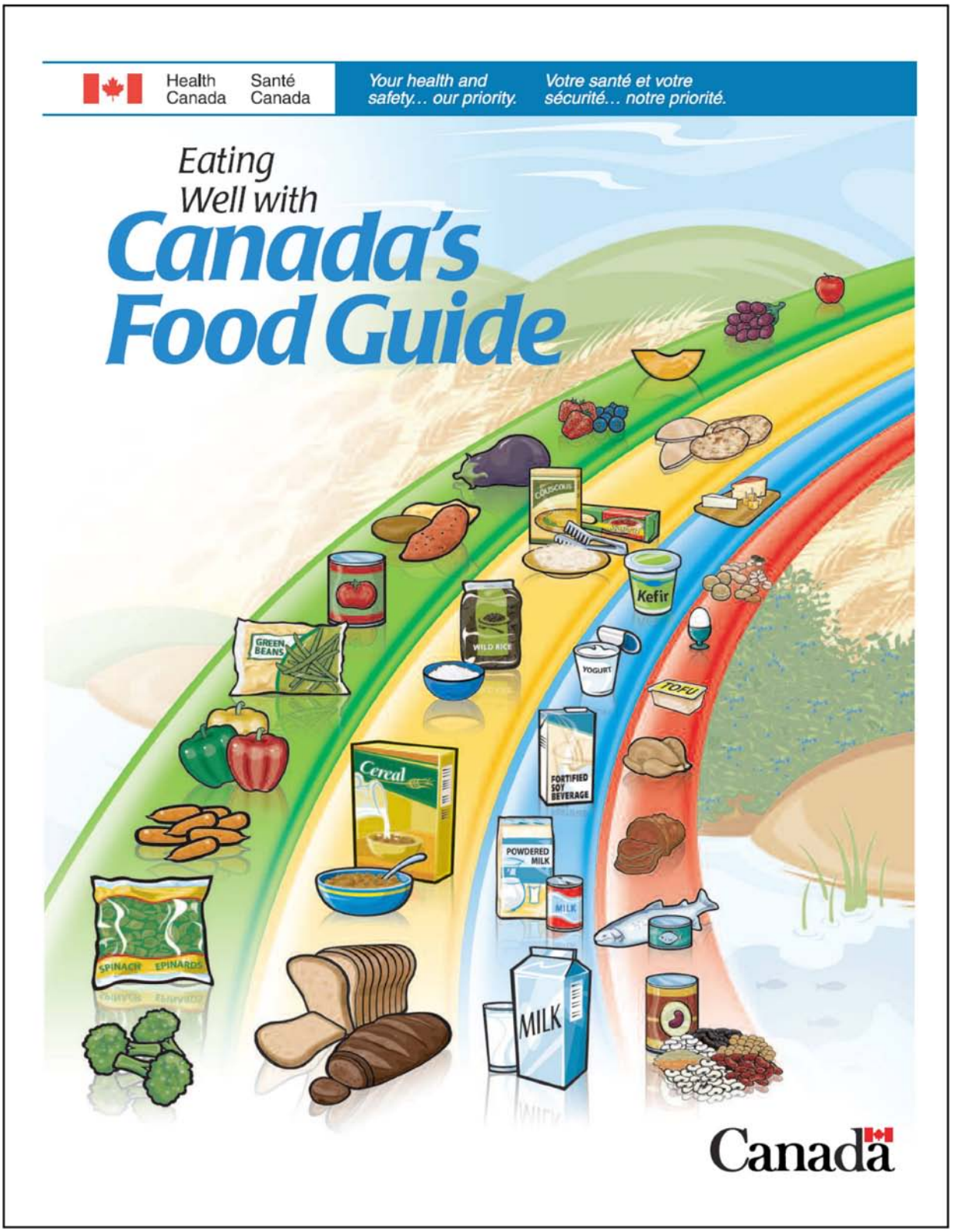
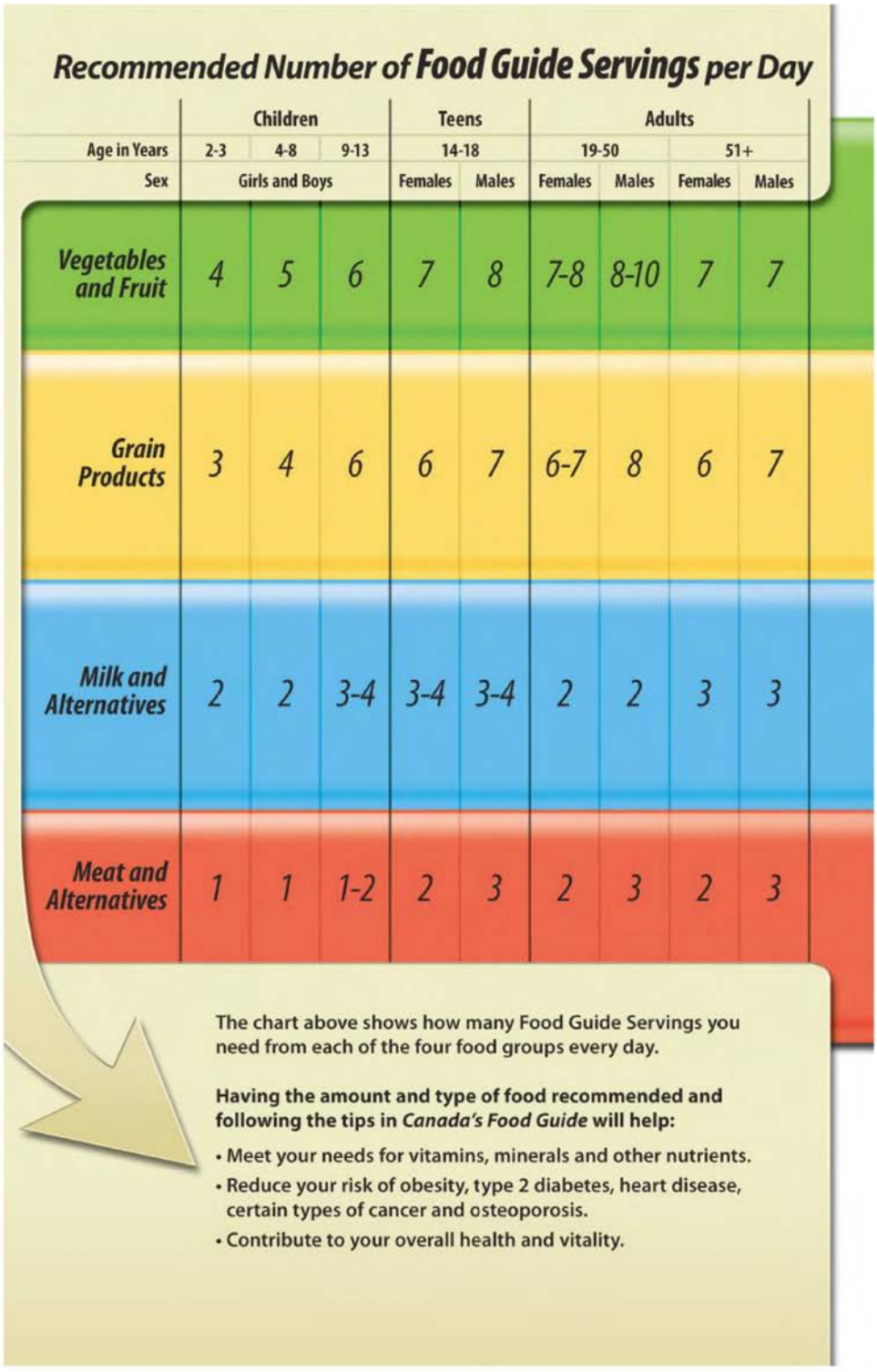

Health Canada
Santé Canada
Your health and safety… our priority.
Votre santé et votre sécurité… notre priorité.
Eating Well with
Canada's Food Guide
GREEN BEANS
WILD RICE
Kefir
YOGURT
TOFU
Cereal
FORTIFIED SOY BEVERAGE
POWDERED MILK
MILK
SPINACH
EPINARDS
MILK
Canada



Recommended Number of Food Guide Servings per Day

	Children			Teens		Adults			
Age in Years	2-3	4-8	9-13	14-18		19-50		51+	
Sex	Girls and Boys			Females	Males	Females	Males	Females	Males
Vegetables and Fruit	4	5	6	7	8	7-8	8-10	7	7
Grain Products	3	4	6	6	7	6-7	8	6	7
Milk and Alternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and Alternatives	1	1	1-2	2	3	2	3	2	3

The chart above shows how many Food Guide Servings you need from each of the four food groups every day.

Having the amount and type of food recommended and following the tips in *Canada's Food Guide* will help:

- Meet your needs for vitamins, minerals and other nutrients.
- Reduce your risk of obesity, type 2 diabetes, heart disease, certain types of cancer and osteoporosis.
- Contribute to your overall health and vitality.


What is One Food Guide Serving?
Look at the examples below.
Fresh, frozen or canned vegetables
125 mL (½ cup)
Leafy vegetables
Cooked: 125 mL (½ cup)
Raw: 250 mL (1 cup)
Fresh, frozen or canned fruits
1 fruit or 125 mL (½ cup)
100% Juice
125 mL (½ cup)
Bread
1 slice (35 g)
Bagel
½ bagel (45 g)
Flat breads
½ pita or ½ tortilla (35 g)
BROWN RICE
Cooked rice, bulgur or quinoa
125 mL (½ cup)
Cereal
Cold: 30 g
Hot: 175 mL (¾ cup)
Cooked pasta or couscous
125 mL (½ cup)
MILK
Milk or powdered milk (reconstituted)
250 mL (1 cup)
Canned milk (evaporated)
125 mL (½ cup)
Fortified soy beverage
250 mL (1 cup)
YOGURT
Yogurt
175 g
(¾ cup)
Kefir
Kefir
175 g
(¾ cup)
Cheese
50 g (1 ½ oz.)
Cooked fish, shellfish, poultry, lean meat
75 g (2 ½ oz.)/125 mL (½ cup)
Cooked legumes
175 mL (¾ cup)
TOFU
Tofu
150 g or
175 mL (¾ cup)
Eggs
2 eggs
Peanut or nut butters
30 mL (2 Tbsp)
Shelled nuts and seeds
60 mL (¼ cup)
Oils and Fats
• Include a small amount – 30 to 45 mL (2 to 3 Tbsp) – of unsaturated fat each day. This includes oil used for cooking, salad dressings, margarine and mayonnaise.
• Use vegetable oils such as canola, olive and soybean.
• Choose soft margarines that are low in saturated and trans fats.
• Limit butter, hard margarine, lard and shortening.

Make each Food Guide Serving count…

wherever you are – at home, at school, at work or when eating out!

- **Eat at least one dark green and one orange vegetable each day.**
  - Go for dark green vegetables such as broccoli, romaine lettuce and spinach.
  - Go for orange vegetables such as carrots, sweet potatoes and winter squash.
- **Choose vegetables and fruit prepared with little or no added fat, sugar or salt.**
  - Enjoy vegetables steamed, baked or stir-fried instead of deep-fried.
- **Have vegetables and fruit more often than juice.**

- **Make at least half of your grain products whole grain each day.**
  - Eat a variety of whole grains such as barley, brown rice, oats, quinoa and wild rice.
  - Enjoy whole grain breads, oatmeal or whole wheat pasta.
- **Choose grain products that are lower in fat, sugar or salt.**
  - Compare the Nutrition Facts table on labels to make wise choices.
  - Enjoy the true taste of grain products. When adding sauces or spreads, use small amounts.

- **Drink skim, 1%, or 2% milk each day.**
  - Have 500 mL (2 cups) of milk every day for adequate vitamin D.
  - Drink fortified soy beverages if you do not drink milk.
- **Select lower fat milk alternatives.**
  - Compare the Nutrition Facts table on yogurts or cheeses to make wise choices.

- **Have meat alternatives such as beans, lentils and tofu often.**
- **Eat at least two Food Guide Servings of fish each week.***
  - Choose fish such as char, herring, mackerel, salmon, sardines and trout.
- **Select lean meat and alternatives prepared with little or no added fat or salt.**
  - Trim the visible fat from meats. Remove the skin on poultry.
  - Use cooking methods such as roasting, baking or poaching that require little or no added fat.
  - If you eat luncheon meats, sausages or prepackaged meats, choose those lower in salt (sodium) and fat.

Enjoy a variety of foods from the four food groups.

Satisfy your thirst with water!

Drink water regularly. It's a calorie-free way to quench your thirst. Drink more water in hot weather or when you are very active.

* Health Canada provides advice for limiting exposure to mercury from certain types of fish. Refer to www.healthcanada.gc.ca for the latest information.

Advice for different ages and stages…

Children

Following *Canada's Food Guide* helps children grow and thrive.

Young children have small appetites and need calories for growth and development.

- Serve small nutritious meals and snacks each day.
- Do not restrict nutritious foods because of their fat content. Offer a variety of foods from the four food groups.
- Most of all... be a good role model.

Women of childbearing age

All women who could become pregnant and those who are pregnant or breastfeeding need a multivitamin containing **folic acid** every day. Pregnant women need to ensure that their multivitamin also contains **iron**. A health care professional can help you find the multivitamin that's right for you.

Pregnant and breastfeeding women need more calories. Include an extra 2 to 3 Food Guide Servings each day.

Here are two examples:

- Have fruit and yogurt for a snack, or
- Have an extra slice of toast at breakfast and an extra glass of milk at supper.

Men and women over 50

The need for **vitamin D** increases after the age of 50.

In addition to following *Canada's Food Guide*, everyone over the age of 50 should take a daily vitamin D supplement of 10 µg (400 IU).

How do I count Food Guide Servings in a meal?

Here is an example:

Vegetable and beef stir-fry with rice, a glass of milk and an apple for dessert		
250 mL (1 cup) mixed broccoli, carrot and sweet red pepper	=	2 **Vegetables and Fruit** Food Guide Servings
75 g (2 ½ oz.) lean beef	=	1 **Meat and Alternatives** Food Guide Serving
250 mL (1 cup) brown rice	=	2 **Grain Products** Food Guide Servings
5 mL (1 tsp) canola oil	=	part of your **Oils and Fats** intake for the day
250 mL (1 cup) 1% milk	=	1 **Milk and Alternatives** Food Guide Serving
1 apple	=	1 **Vegetables and Fruit** Food Guide Serving

Eat well and be active today and every day!

The benefits of eating well and being active include:

- Better overall health.
- Lower risk of disease.
- A healthy body weight.
- Feeling and looking better.
- More energy.
- Stronger muscles and bones.

Be active

To be active every day is a step towards better health and a healthy body weight.

Canada's Physical Activity Guide recommends building 30 to 60 minutes of moderate physical activity into daily life for adults and at least 90 minutes a day for children and youth. You don't have to do it all at once. Add it up in periods of at least 10 minutes at a time for adults and five minutes at a time for children and youth.

Start slowly and build up.

Eat well

Another important step towards better health and a healthy body weight is to follow *Canada's Food Guide* by:

- Eating the recommended amount and type of food each day.
- Limiting foods and beverages high in calories, fat, sugar or salt (sodium) such as cakes and pastries, chocolate and candies, cookies and granola bars, doughnuts and muffins, ice cream and frozen desserts, french fries, potato chips, nachos and other salty snacks, alcohol, fruit flavoured drinks, soft drinks, sports and energy drinks, and sweetened hot or cold drinks.

Read the label

- Compare the Nutrition Facts table on food labels to choose products that contain less fat, saturated fat, trans fat, sugar and sodium.
- Keep in mind that the calories and nutrients listed are for the amount of food found at the top of the Nutrition Facts table.

Nutrition Facts

Per 0 mL (0 g)

Amount	% Daily Value
Calories 0	
Fat 0 g	**0** %
Saturates 0 g	**0** %
+ Trans 0 g	
Cholesterol 0 mg	
Sodium 0 mg	**0** %
Carbohydrate 0 g	**0** %
Fibre 0 g	**0** %
Sugars 0 g	
Protein 0 g	

Vitamin A	0 %	Vitamin C	0 %
Calcium	0 %	Iron	0 %

Limit trans fat

When a Nutrition Facts table is not available, ask for nutrition information to choose foods lower in trans and saturated fats.

Take a step today...

- ✓ Have breakfast every day. It may help control your hunger later in the day.
- ✓ Walk wherever you can – get off the bus early, use the stairs.
- ✓ Benefit from eating vegetables and fruit at all meals and as snacks.
- ✓ Spend less time being inactive such as watching TV or playing computer games.
- ✓ Request nutrition information about menu items when eating out to help you make healthier choices.
- ✓ Enjoy eating with family and friends!
- ✓ Take time to eat and savour every bite!

For more information, interactive tools, or additional copies visit Canada's Food Guide on-line at:
www.healthcanada.gc.ca/foodguide

or contact:

Publications
Health Canada
Ottawa, Ontario K1A 0K9
E-Mail: publications@hc-sc.gc.ca
Tel.: 1-866-225-0709
Fax: (613) 941-5366
TTY: 1-800-267-1245

Également disponible en français sous le titre :
Bien manger avec le Guide alimentaire canadien

This publication can be made available on request on diskette, large print, audio-cassette and braille.

 HC Pub.: 4651 Cat.: H164-38/1-2007E ISBN: 0-662-44467-1

ENERGY EXPENDITURES FOR PHYSICAL ACTIVITY INFORMATION SHEET

Many references evaluate the amount of calories burnt during various activities. This table is to serve as a guide with the understanding that other resources could suggest different values. Values below are for activities of one-hour durations.

Activity (1 hour)	Cadet Weight		
	130 lbs	155 lbs	190 lbs
Backpacking, general	413	493	604
Bicycling, < 16 km / h, leisure	236	281	345
Bicycling, > 32 km / h, racing	944	1126	1380
Bicycling, 16–19 km / h, light effort	354	422	518
Bicycling, 19–22.4 km /h, moderate effort	472	563	690
Bicycling, 22.4–25.4 km / h, vigorous effort	590	704	863
Bicycling, 25.4–30.4 km / h, very fast, racing	708	844	1035
Canoeing, on camping trip	236	281	345
Canoeing, rowing, > 9.6 km / h, vigorous effort	708	844	1035
Canoeing, rowing, light effort	177	211	259
Canoeing, rowing, moderate effort	413	493	604
Cooking or food preparation	148	176	216
Hiking, cross country	354	422	518
Skiing, cross-country, moderate effort	472	563	690
Skiing, cross-country, slow or light effort	413	493	604
Skiing, cross-country, uphill, maximum effort	974	1161	1423
Skiing, cross-country, vigorous effort	531	633	776
Snowshoeing	472	563	690
Walking, 3.2 km / h, slow pace	148	176	216
Walking, 5.6 km / h, uphill	354	422	518
Walking, 6.4 km / h, very brisk pace	236	281	345
White-water rafting, kayaking, or canoeing	295	352	431

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EXPEDITION RATION PLAN INFORMATION SHEET

Steps of the Menu Planning System

1. Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.
2. Identify items which can be eaten at each meal.
3. Decide specifically what to eat at each of the meals.
4. Estimate how much food will be needed at each meal to feed every cadet.
5. Determine the total food required, based on the menu and generate a shopping list.
6. Purchase the food.
7. Repackage, prepare and pack the food for the expedition.

Number of Calories per Pound for Some Expedition Ration Items

DAIRY	GRAINS / STARCHES	LEGUMES	MEATS	TRAIL FOODS	SWEETS	CONDIMENTS	DRINKS	SPICES	MISC.
Powdered Milk: 1650	Flour (white): 1650	Lentils: 150	Bacon Bits: 2836	Dried Apricots: 1100	Honey: 1300	Jelly: 1200	Tea: 0	Salt and Pepper: 0	Yeast: 0
Powdered Eggs: 2700	Flour (wheat): 1500	Pinto Beans: 200	Pepperoni: 2250	Mix Dried Fruit: 1250	White Sugar: 1700	Peanut Butter: 2580	Coffee: 0	Garlic Powder: 0	Olive Oil: 4000
Margarine: 1900	Pancake Mix: 1850	Chili Base: 1600	Salami: 2050	Raisins: 1400	Brown Sugar: 1700	Maple Syrup: 1222	Hot Cocoa Mix: 1650	Oregano: 0	Vegetable Oil: 4000
Cheddar Cheese: 1760	Pasta Noodles: 1700	Soup Mix: 2000		Salted Peanuts: 2650	Chocolate Chips: 2100	Salad Dressing: 500	Juice Mix: 1950	Chili Powder: 0	Granola Bars: 1760
Parmesan Cheese: 1800	Rice (white): 1650			Roasted Peanuts: 2500	Cocoa: 1650	Soy Sauce: 240		Onion Powder: 0	Popcorn: 1650
Dairy Cream: 3750	Rolled Oats: 1750			Cashews: 2500	Cookies: 2200	Bbq Sauce: 240		Curry Powder: 0	Ketchup: 400
	Cream of Wheat: 1750			Walnuts: 2450	Brownie Mix: 1800			Beef Bouillon: 0	Tomato Sauce: 109
	Potato: 1624			M&M's: 2133				Tabasco: 0	

<table>
<tr>
<td rowspan="3">Core Nutrients
• calories,
• sodium,
• carbohydrates, to include:
○ complex carbohydrates,
○ fibre,
○ simple carbohydrates, and
○ sugars.
• proteins,
• vitamin C, and
• iron.</td>
<td>Nutritional Needs Required per Cadet per Day
• 50 percent to 80 percent carbohydrates,
• 10 percent to 15 percent proteins, and
• 30 percent fats (of which only 10 percent should be saturated fats).</td>
</tr>
<tr>
<td>Types of Expedition Activities
• Activities such as moderate backpacking or canoeing will require 2 500–3 000 calories per day.
• Strenuous activities such as difficult backpacking or snow camping will require 3 000–3 500 calories per day.
• Very strenuous activities such as mountaineering or extended time spent in cold weather requires 3 500–5 000 calories per day.</td>
</tr>
<tr>
<td>Average Consumption per Day
• From 1.5–2.5 pounds (.68–1.13 kg) of food.
• Average activities require 1.5 pounds (.68 kg) of food.
• Strenuous activities require 1.5–2 pounds (.68–.91 kg) of food.
• Very strenuous activities require 2–2.5 pounds (.91–1.13 kg) of food.</td>
</tr>
</table>

Helpful Tips When Planning Expedition Rations and Conducting Mealtimes

- Plan ahead.
- Eat often.
- Pack individual snack bags.
- Keep snacks accessible.
- Start slow-cooking food early.
- Oil the pot.
- Be creative with leftovers.
- Make hot drinks for more than one cadet.
- Drink, drink, drink.
- Use dried fruits and vegetables.

SAMPLE MENU PLAN	Friday	Saturday	Sunday
Breakfast		Hash browns with cheese Powdered Milk Hot coffee / chocolate	Oatmeal Powdered Milk Salami Hot coffee / chocolate
Morning snack		GORP	Granola bars
Lunch / Dinner		Salami Bagels Havarti cheese Fruit drink	Veggie wrap Carrots Soup Fruit drink
Afternoon snack		Peanut butter Crackers	
Dinner / Supper	Instant soup Basic pasta Fruit bars Hot chocolate	Chili No-bake cookies Fruit Hot Chocolate	

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SECTION 4 – EXPEDITION RATION PLAN

IDENTIFY THE ACTIVITIES BEING CONDUCTED ON THE EXPEDITION

_____

_____

_____

_____

_____

1: Identify expedition ration planning guidelines.

Time of Year / Number of Days	
Number of Cadets	

2: Determine number of meals required.

	Day One	Day Two	Day Three	Total
Breakfast				
Morning Snack				
Lunch / Dinner				
Afternoon Snack				
Dinner / Supper				

3: Determine the following.

What type of meals may be prepared and eaten on this type of expedition.	
Determine how much food is required.	
Special meal requirements.	
Cooking group size(s).	
Packing food considerations. (packaging, pre-assembling meals and food and weight distribution)	
Budget (if applicable).	

4: Create a menu plan.

	Day One	Day Two	Day Three
Breakfast			
Morning Snack			
Lunch / Dinner			
Afternoon Snack			
Dinner / Supper			

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COMPLETED EXAMPLE OF SECTION 4 OF THE EXPEDITION PLANNING BOOKLET

IDENTIFY THE ACTIVITIES BEING CONDUCTED ON THE EXPEDITION

Canoeing on flatwater. Paddling a distance between 10–15 km.

Mountain biking on familiarization trails. Biking a distance between 40–50 km.

1: Identify expedition ration planning guidelines.

Time of Year / Number of Days	Fall (October) / 2 nights, 3 days.
Number of Cadets	36 cadets (12 females, 24 males), 8 staff (5 male, 3 female) = 44 total cadets

2: Determine number of meals required.

	Day One	Day Two	Day Three	Total
Breakfast		44	44	88
Morning Snack		44	44	88
Lunch / Dinner		44	44	88
Afternoon Snack		44		44
Dinner / Supper	44	44		88

3: Determine the following.

What type of meals may be prepared and eaten on this type of expedition.	A menu that includes some fresh rations, with some meals to be pre-assembled prior to the expedition. Breakfast Saturday morning and Supper / Dinner Saturday evening will be the two pre-assembled meals. The remaining meals and snacks will be fresh rations.
Determine how much food is required.	44 cadets—six meals and three snacks each. 264 meals and 132 snacks total. (note the total weight of food and caloric requirements)
Special meal requirements.	One vegetarian.
Cooking group size(s).	Six groups with each group consisting of six cadets and one staff. Two remaining staff will be cooking / eating on their own.
Packing food considerations. (packaging, pre-assembling meals and food and weight distribution)	Two meals will be pre-assembled prior to expedition. Remaining meals will be fresh rations stored in containers. Each cadet will carry one full meal and their individual snacks.
Budget (if applicable).	Not applicable.

4: Create a menu plan.

	Day One	Day Two	Day Three
Breakfast		Pancakes Fruit Powdered milk Hot coffee / chocolate	Fried cheese bagels Salami Fruit drink Hot coffee / chocolate
Morning Snack		No-bake cookies	Peanut butter Crackers
Lunch / Dinner		Italian pasta salad Fruit bars Cheese Fruit drink	Basic falafel Vegetables No-bake cookies Powdered milk
Afternoon Snack		Trail Mix	
Dinner / Supper	Sweet and sour rice Vegetables Crackers Hot coffee / chocolate	Vegetarian meatballs Soup Fruit Hot coffee / chocolate	

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 5

EO C425.01 – DISCUSS ACTIONS TAKEN WHEN A PERSON IS LOST

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Refer to local area instructions as well as the corps / regional standard operating procedure (SOP) for information on when to contact emergency services after a person is missing or lost, for use in TP 5.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for TPs 1–4 and TP 6 as it introduces the cadets to precautions to take, lost person behaviour, ways to communicate with a lost person and common search and rescue techniques.

A group discussion was chosen for TP 5 as it allows the cadets to interact with their peers and share their knowledge and opinions about when to contact emergency services when lost. Sharing in the discussion encourages the cadets to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have discussed actions taken when a person is lost.

IMPORTANCE

It is important for cadets to know what actions to take when lost as well as the actions searchers will take to find them. When completing cadet activities in the field, the possibility of becoming lost is always present. When planning and leading activities, it is important to understand and communicate search and rescue principles. Cadets participating in an activity should be aware of the actions they must take when lost, as it will increase the chances of them being found quickly.

Teaching Point 1 **Discuss lost person behaviour.**

Time: 10 min Method: Interactive Lecture

LOST PERSON BEHAVIOUR

Every lost person will react differently. The behaviours listed are generalizations of lost persons.

It is possible that some cadets have been lost before (eg, in a big department store, driving to an unfamiliar destination with their parents, out for a walk). Have the cadets share their experiences.

Have the cadets briefly answer the following questions:

- If you became lost, how would you react?
- Do you think you could control fear and panic?
- Would you be prepared to analyze the situation and establish a logical course of action?

Understanding / predicting the behaviour of a lost or missing person can greatly increase the chances for a successful search.

Initial Actions

A person who has received some survival training will know that the first step when becoming lost is to STOP (stop, think, observe and plan) and then gather information in order to try to determine current location. Someone who has not been trained may begin to panic when they realize that they are lost.

Movement Patterns

If a lost person finds a trail, they will most likely start hiking on it. It is more likely they will follow a route of easy travel than one more advanced. A lost person will rarely reverse direction on a trail. They may hike to higher elevation, hoping to see more of the area.

The person may convince themselves that they are making their way back to the group, when in fact they are heading in the opposite direction.

Behaviour Patterns

Behaviour will differ from one person to the next, from situation to situation.

Have the cadets imagine they have become lost. Ask them if they think their behaviour would be different in the daytime than in the night-time? Why?

Day behaviour. Throughout the day, a lost person will most likely attempt to be found by wandering to look for people or wait for searchers to locate them. When a person keeps themselves busy, feelings of fear and panic will be minimized.

Night behaviour. A lost person may become scared and lonely in the night and seek temporary shelter. They will usually stay in the same place throughout the night. If capable, they will try to ignite a fire (which may also act as a signal).

Panic behaviour. Panic often causes a person to act without thinking. When a lost person panics, they become disoriented and wander aimlessly, possibly becoming hysterical.

Behaviour when a person does not want to be found. A person who does not want to be found likely became lost to gain attention or for fear of punishment. They are most likely seeking solitude and will not respond to searchers' efforts and will do very little to aid in their rescue.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What are some typical movement patterns of a lost person?

Q2. If a person is lost and finds a trail, what will they likely do?

Q3. Why would a person not want to be found?

ANTICIPATED ANSWERS:

A1. If a lost person finds a trail, they will most likely start hiking on it. They are also much more likely to follow a route of easy travel than one more advanced. A lost person will rarely reverse direction on a trail. A lost person may hike to a high elevation, hoping to see more of the area.

A2. They will most likely start hiking on it.

A3. A person who does not want to be found likely became lost to gain attention or for fear of punishment.

Teaching Point 2 **Explain precautions that will minimize the possibility of a person becoming lost.**

Time: 10 min Method: Interactive Lecture

This lesson concentrates on becoming lost as an individual. Stress that the same principles apply when a group of cadets become lost.

There is a possibility of becoming lost at all times when in the field, even when going to the washroom or filling up a canteen. It is good practice to carry a whistle at all times and have a general idea of the layout of the land.

PRECAUTIONS THAT WILL MINIMIZE THE POSSIBILITY OF A PERSON BECOMING LOST

All of the precautions listed below should be included during the initial briefing of an activity.

Provide Clear and Detailed Instructions on the Activity Being Completed

When briefing the cadets on the activity to be completed, ensure the instructions are clear and detailed. All cadets should know the what, where, why, when and how prior to the start of the activity.

Everyone involved in the activity should have a clear understanding of the route and the route plan. During the initial briefing, make sure everyone looks at their map and follows along the route as it is identified and described. This way, the cadets can visualize where they are going as well as see the features along the route, such as hills, rivers, trails and other conventional signs.

Set Activity Boundaries

Objects such as pole lines, fences, and rivers make great boundaries. Have all of the cadets look at the map and outline the boundaries along the route. When the cadets participating in the activity have clearly-defined and well-understood boundaries, the chances of becoming lost are minimized. If a person does become lost, they will likely be found quicker, by staying within the boundaries.

Provide All Personnel With a Safety Bearing

A safety bearing, when set on a compass, leads a person to a major feature such as a road, fence or landmark. It is designed to assist a person who is lost or separated from the group to find a location where they can then be located. A safety bearing should be derived for every cadet activity involving hiking / navigation / expedition-type activities. It can be set on the compass and walked on until the feature is reached. It is also good to provide a general direction to travel (eg, hike north-west until a road is reached)

Enforce a "Buddy System" at All Times

Using the buddy system will help reduce the possibility of a person becoming lost, because they will never be alone. The buddy system should be enforced throughout all weekend training activities, even at night when a person has to use the washroom.

Becoming disoriented by going to the washroom in the dark could result in becoming lost.

Provide All Personnel With Noise-Making Devices

A series of three anything (eg, whistle blasts, flashes) is the universal signal for distress. Each cadet should have devices that can be used to signal when training in the field. Noise-making devices can be whistles, horns or even yells.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. Why is it important to set activity boundaries?

Q2. What is a safety bearing?

Q3. What is the universal sign for distress?

ANTICIPATED ANSWERS:

A1. When the cadets participating in the activity have clearly-defined and well-understood boundaries, the chances of becoming lost are minimized. If a person does become lost, they will likely be found quicker (if they stay within the boundaries).

A2. A safety bearing, when set on a compass, leads a person to a major feature such as a road, fence or landmark. It is designed as a way to assist a person who is lost or separated from the group to find a location where they can wait to be found.

A3. A series of three anything (eg, whistle blasts, flashes).

Teaching Point 3 **Explain immediate actions to take when one becomes lost or separated from the group.**

Time: 5 min Method: Interactive Lecture

Each survival situation must be analyzed and dealt with according to the circumstances. In addition to being proficient in survival skills, individuals should also know something about the area they may be required to survive in—the climate, flora, fauna, escape routes, search and rescue procedures, etc. The mind is the most essential component for survival. Being prepared means being able to cope with the seven enemies of survival, while still being able to make good decisions.

IMMEDIATE ACTIONS TO TAKE WHEN ONE BECOMES LOST OR SEPARATED FROM THE GROUP

Employ the STOP Procedure

Once it is determined that one is lost, the best thing to do is to stay in one place, keep calm and try to gather information to determine one's location. It is extremely important to concentrate on making good decisions.

STOP is a mnemonic for:

- **Sit.** Stop where you are! Do not panic. Many lost people waste valuable energy and risk injury by panicking—running aimlessly, continuing to travel after dark, or walking in circles. If a lost person decides to immediately wander in an attempt to find their location, in most cases they will move further away and increase the distance between the known points of their course. This will only increase the size of the search area, increasing the time it will take for a rescue team to locate an individual. As long as there is no immediate danger, stay in one place. During the first 30 minutes of being lost is when people tend to make their biggest mistakes. Making good decisions about the situation involves thinking through options without panicking.
- **Think.** Think about immediate and future dangers and the factors involved in the situation. Consider the time of day, personal physical condition and the last time water or food was consumed. Try to list the options that are available.

- **Observe.** Observe and listen for the signals of rescuers. Study the immediate environment, determining weather, terrain and resources available. Check the immediate area for a shelter location, fresh drinking water, and for clues of the current location.
- **Plan.** Plan the best course of action. It could be close to dark and consideration should be given to setting up shelter, finding water or starting a fire. A safety bearing could have been provided prior to beginning the activity and consideration should be given to use it or not. Include how to signal rescuers in the plan.

Listen for a Whistle Signal / Yell / Horn Honking From the Group / Searchers

When the group becomes aware that a person is missing or lost, one of the first steps is to make noise, that the missing person may hear.

Communicate the Location to the Group / Searchers by Making Noise

As a missing person, it is important to make noise that the group / searchers may hear so that they can approach the general area. Blowing a whistle or banging objects together to make noise will save the voice.

Walk on the Safety Bearing to the Nearest Road or Fence Line

After employing the STOP procedure and listening for and communicating with noise, the next step is to walk on the safety bearing provided in the briefing. The safety bearing should help a missing person become located by leading them to a major feature such as a road, fence or landmark. Once the feature has been reached, the person should stop, remain in their position and wait to be found.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. What is the first action to take when lost?

Q2. What should one think about when employing the STOP procedure?

Q3. Why should a lost person make noise?

ANTICIPATED ANSWERS:

A1. Employ the STOP procedure.

A2. Think about immediate and future dangers and the factors involved in the situation. Consider the time of day, personal physical condition, and the last time water or food was consumed. Try to list the options that are available.

A3. It is important to make noise that the group / searchers may hear so that they can approach the general area.

Teaching Point 4 **Explain actions the group / searchers will take when a person becomes lost.**

Time: 15 min Method: Interactive Lecture

The actions listed below are the first steps a group will take when it is confirmed that a person has become lost.

The leader of the group will begin to complete these actions without search and rescue personnel. These actions will help make the decision about when to call search and rescue personnel to be dispatched to the area.

If search and rescue professionals are dispatched, they will require this information.

ACTIONS THE GROUP / SEARCHERS WILL TAKE WHEN A PERSON BECOMES LOST

When it is discovered that a person is missing, the first instinct may be to go in the direction they were last seen, shouting their name. If everyone in the group has the same instinct, the list of missing persons may soon include the entire group.

Panic is triggered when a person becomes lost; however, it is a time when people need to remain calm, think clearly and act deliberately.

Analyze the Severity of the Situation

A combination of factors affecting urgency will help determine not only how quickly to respond, but the nature and level of response. A decision whether or not to contact emergency services will have to be made. The first step is to analyze the severity of the situation. If the majority of these factors are a high level of concern, it is likely that the leader should contact emergency services.

Time of day. A person lost in the evening is more of a concern than in the morning. Searching is more likely to be successful during daylight.

Weather. Severe weather (eg, torrential rain, snow, cold, fog) lessens the chances of a person being found. The forecasted weather should be considered. Searching is more likely to be successful in good weather.

Age and experience level of the person. A person with limited navigation and survival training will be more concerning than a person who has completed a variety of survival training.

Medical concerns. When a missing person has a medical concern or injury, their condition must be carefully analyzed. Will they need medication soon? How long can they go without medication? Will they need medical attention when found?

People with serious medical issues could behave abnormally.

Equipment in the person's possession. When a person has limited equipment, the necessity to begin a search becomes more important. When participating in an activity, it is important that cadets have equipment such as a signalling device, water and rain gear (if the forecast is calling for rain). Knowing what the person is wearing will help the search process, since personnel know what colour(s) to look for.

When conducting activities, it is a good idea to give every cadet a garbage bag. The garbage bag can act as raingear, a water collection device, temporary shelter and a signalling device, yet it is small enough to fit in the cadet's pocket.

Signalling devices available. When a missing person has a signalling device, such as a whistle, a horn, matches or a flashlight, the group can be made aware of the sounds and sights to look for. The leader should also complete an inventory of the signalling devices available that the group can use to signal the lost person.

Communicate With the Lost Person

There are a variety of ways in which the group should try to communicate with the lost person.

Make noise. When a lost person hears noise, they will likely move toward it. Also, hope of being found will begin to rise, since they are now aware that people are looking for them close by.

Mark trees. A lost person may wander around the area. If they see a marking on a tree left by the group, they will know that people are near. When marking trees, the group could also leave instructions stating what the person should do.

Use signalling devices. There are a variety of signalling devices that the group could use, such as a signal fire, flares, a whistle, and a horn. If the lost person sees a signal, they will know which direction to head toward.

Confine the Area to Establish a Search Perimeter

Confinement area. A search perimeter that encompasses the last known area of the missing person and beyond. Once the area has been established, it should be unlikely that the missing person could pass through it without being detected.

Road blocks / trail blocks / patrols. Roads or pathways provide routes in which the missing person could depart. Road blocks / trail blocks / patrols leading in and out of the confinement area should be established. It is possible that the missing person could find a car passing by and simply hop in it and get transported to the closest town (while people are still searching). Also, personnel in the area can be made aware of the situation and provide searchers with any known information.

Lookouts. Searchers find locations at high elevations and look for the missing person.

Track traps. Areas in which tracks easily appear (eg, dusty road, sandy area, and mud) and are brushed off so that there are no tracks or marks. These areas are then checked frequently for tracks. If tracks are found in a track trap, searchers know that the missing person has moved through the area.

String lines. As searchers make their way through the perimeter of an area, one person carries a spool of string. As they walk through an area, the string unrolls, leaving a visible trail. The string then serves as a perimeter to confine the missing person, as well as a sign that assistance is nearby.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS:

Q1. What are the factors considered to analyze the severity of the situation when a person becomes lost?

Q2. What is a confinement area?

Q3. What are some ways to confine the area to establish a search perimeter?

ANTICIPATED ANSWERS:

A1. The factors used to analyze the severity of the situation are:

- the time of day,
- the weather,
- the age and experience level of the person,
- medical concerns,
- equipment in the person's possession, and
- signalling devices available.

A2. A confinement area is a search perimeter that encompasses the last known area of the missing person and beyond. Once the area has been established, it should be unlikely that the missing person could pass through it without being detected.

A3. A search perimeter can be established by using:

- road blocks / trail blocks / patrols,
- lookouts,
- track traps, and
- string lines.

Teaching Point 5 **Discuss when to contact emergency services.**

Time: 5 min Method: Group Discussion

BACKGROUND KNOWLEDGE

The point of the group discussion is to draw the following information from the group using the tips for answering / facilitating discussion and the suggested questions provided.

WHEN TO CONTACT EMERGENCY SERVICES

There are no hard and fast rules that state when emergency services should be contacted after a person becomes lost. It is the responsibility of the leader to make the call based on the following factors:

- time of day,
- current and forecasted weather,
- age and experience level of the cadet,
- medical concerns,

- equipment in the cadet's possession, and
- signalling devices available.

If there is any doubt whether or not the cadet will be found, there is little light left in the day or the temperatures are dropping, it is recommended that emergency services be contacted.

It typically takes emergency services a minimum of one hour to initiate a search and rescue mission once they have been notified and even longer for rural areas without teams stationed in the area. Also, emergency services will usually not begin a search after dark—they will wait until first light.

It is much easier to call off emergency personnel than call them in.

GROUP DISCUSSION

TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions.
- Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.

SUGGESTED QUESTIONS:

Q1. What local area instructions and corps / regional SOP for when to contact emergency services exist in your area?

Q2. What factors would influence the decision whether or not to contact emergency services?

Q3. Approximately how long do you think it would take emergency services to get to your local area and begin a search mission?

Other questions and answers will develop throughout the group discussion. The group discussion should not be limited to only those suggested.

Reinforce those answers given and comments made during the group discussion, ensuring the teaching point has been covered.

CONFIRMATION OF TEACHING POINT 5

The cadets' participation in the group discussion will serve as the confirmation of this TP.

Teaching Point 6 **Discuss ground search procedures used by search and rescue professionals when dispatched.**

Time: 5 min Method: Interactive Lecture

There are a wide variety of documented search and rescue procedures. These procedures will be completed by search and rescue professionals, once they have been dispatched to the area.

GROUND SEARCH PROCEDURES USED BY SEARCH AND RECUE PROFESSIONALS WHEN DISPATCHED

Hasty Search

A hasty search does not have definable boundaries. This type of search is used to discover evidence / the missing person quickly by visiting general locations where they are likely to be found (eg, campsites, abandoned vehicles, roads, trails). Hasty search techniques are usually used in the early stages of a search, but can be used anytime to check an unconfirmed sighting or to recheck specific, likely locations.

The goal of a hasty search is speed. The team is normally comprised of two to four searchers.

Running a trail, path or track is an example of a hasty search.

Other terms used to describe hasty searches include scratch, eyeball, quick-look, 360s, sign-cutting, ridge running, road / trail patrolling and trail running.

Loose Grid Search

This search involves searchers lining up on a baseline, at a wide spacing. Spacing is dependent on terrain and visibility. Generally, the amount of overlapping area should be minimal; however, searchers should always be able to maintain occasional visual / voice contact with the searchers on either side.
Once the search lanes are established, each searcher proceeds to search their area by weaving / roaming forward.

The loose grid search is generally used in the early stages of a search operation, especially if hasty searches found clues and the time frame is short. They may also be valuable in situations where the search area is large and the area has not been confined.

The goal of a loose grid search is to cover a large geographic area quickly, with few resources. The team is normally comprised of three to seven searchers.

Other terms used to describe loose grid searches include open grid and low coverage searches.

For Figures 1–3:

- A = the visual scan width, and
- B = the sweep width.

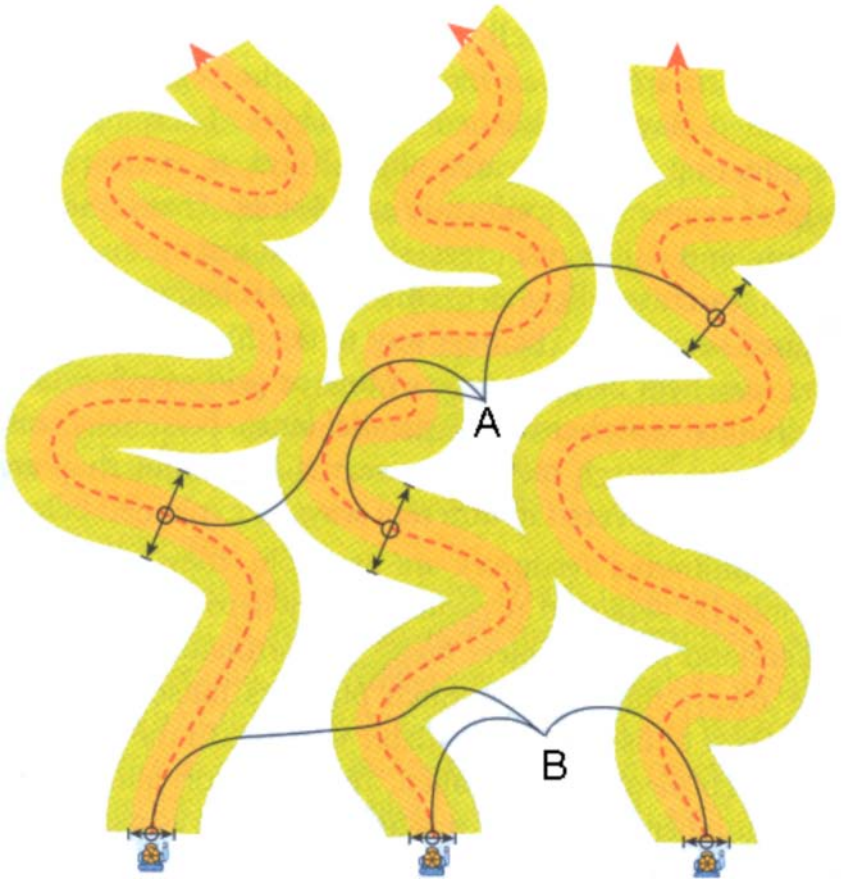

Figure 1 Loose Grid Search—Example 1

Note. From *Fundamentals of Search and Rescue* (p. 244), by National Association for Search and Rescue. 2005, Mississauga, ON: Jones and Bartlett Publishers Canada. Copyright 2005 by Jones and Bartlett Publishers, Inc.

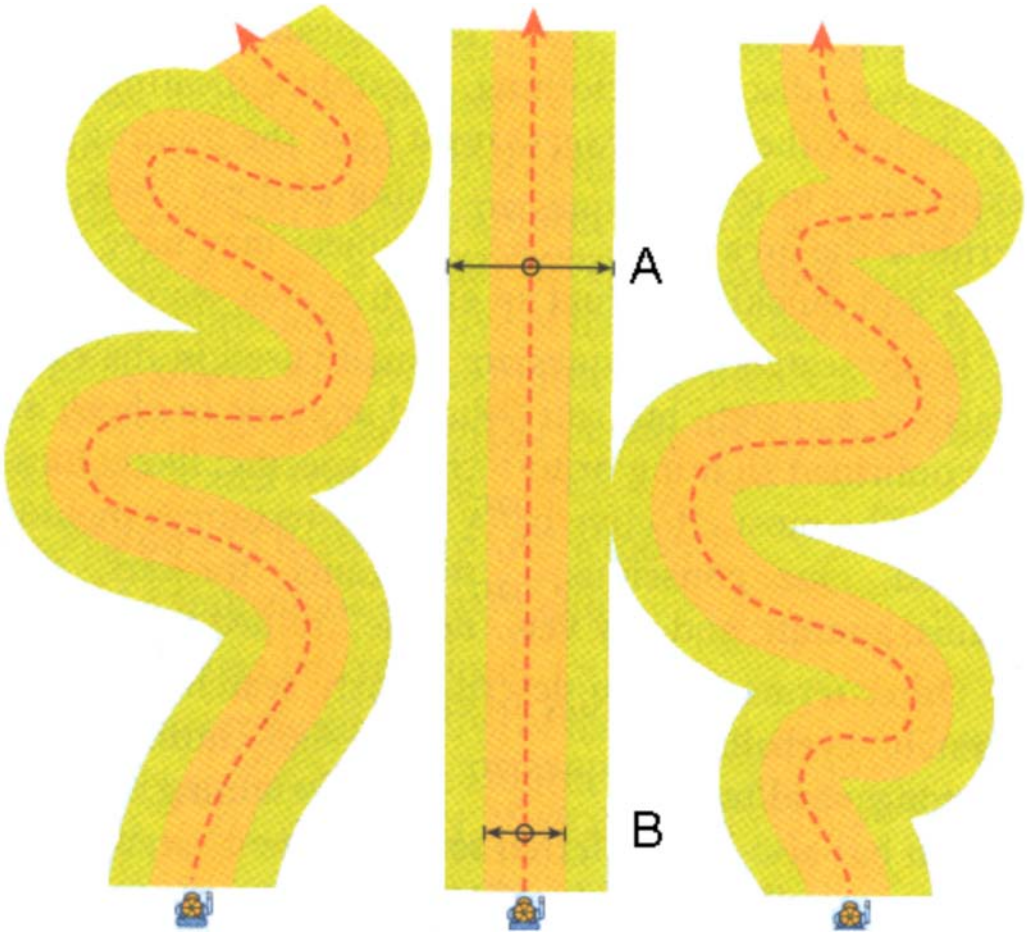

Figure 2 Loose Grid Search—Example 2

Note. From *Fundamentals of Search and Rescue* (p. 244), by National Association for Search and Rescue. 2005, Mississauga, ON: Jones and Bartlett Publishers Canada. Copyright 2005 by Jones and Bartlett Publishers, Inc.

Tight Grid Search

A tight grid search is a slow, highly systematic area search. It is generally used when a very thorough, high-coverage search is required. This involves searchers lining up on a baseline, relatively close together. They then proceed along straight, parallel, equally spaced tracks, scanning the area. Since searchers are close together, there will be a visual overlap by adjacent searchers into the other person's area.

The goal of a tight grid search is to minimize the chances that a clue or the missing person will remain undetected. The team is normally comprised of four to seven searchers.

Other terms used to describe tight grid searches include closed grid, sweep searches, Type III searches and saturation searching.

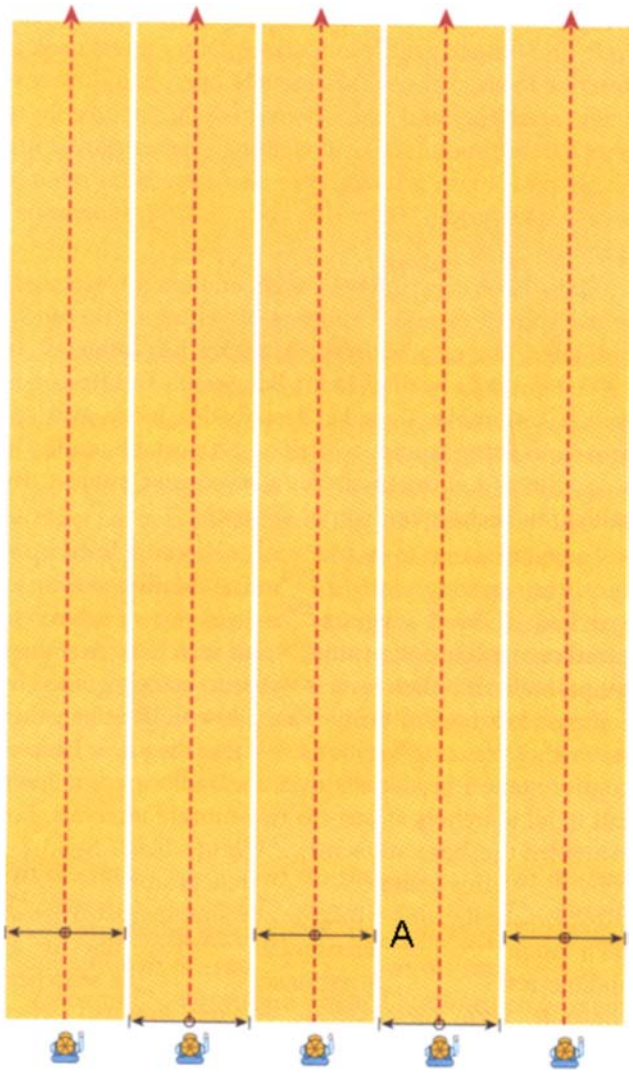

Figure 3 Tight Grid Search Example

Note. From *Fundamentals of Search and Rescue* (p. 246), by National Association for Search and Rescue. 2005, Mississauga, ON: Jones and Bartlett Publishers Canada. Copyright 2005 by Jones and Bartlett Publishers, Inc.

CONFIRMATION OF TEACHING POINT 6

QUESTIONS:

Q1. What is a hasty search?

Q2. The goal of this type of search is to cover a large geographic area quickly, with few resources.

Q3. What type of search team is normally comprised of three to seven searchers?

ANTICIPATED ANSWERS:

A1. A hasty search does not have definable boundaries. This type of search is used to discover evidence / the missing person quickly by visiting general locations where they are likely to be found (eg, campsites, abandoned vehicles, roads, trails).

A2. A loose grid search.

A3. A loose grid search team.

QUESTIONS

Q1. Describe the steps of the STOP procedure.

Q2. What is a string line?

Q3. When should emergency services be contacted?

ANTICIPATED ANSWERS

A1. Once it is determined that one is lost, the best thing to do is to stay in one place, keep calm and try to gather information to determine one's location. It is extremely important to concentrate on making good decisions.

STOP is a mnemonic for:

- **Sit.** Stop where you are! Do not panic. Many lost people waste valuable energy and risk injury by panicking—running aimlessly, continuing to travel after dark, or walking in circles. If a lost person decides to immediately wander in an attempt to find their location, in most cases they will move further away and increase the distance between the known points of their course. This will only increase the size of the search area, increasing the time it will take for a rescue team to locate an individual. As long as there is no immediate danger, stay in one place. During the first 30 minutes of being lost is when people tend to make their biggest mistakes. Making good decisions about the situation involves thinking through options without panicking.
- **Think.** Think about immediate and future dangers and the factors involved in the situation. Consider the time of day, personal physical condition and the last time water or food was consumed. Try to list the options that are available.
- **Observe.** Observe and listen for the signals of rescuers. Study the immediate environment, determining weather, terrain and resources available. Check the immediate area for a shelter location, fresh drinking water, and for clues of the current location.
- **Plan.** Plan the best course of action. It could be close to dark and consideration should be given to setting up shelter, finding water or starting a fire. A safety bearing could have been provided prior to beginning the activity and consideration should be given to use it or not. Include how to signal rescuers in the plan.

A2. As searchers make their way through the perimeter of an area, one person carries a spool of string. As they walk through an area, the string unrolls, leaving a visible trail. The string then serves as a perimeter to confine the missing person, as well as a sign that assistance is nearby.

A3. There are no hard and fast rules that state when emergency services should be contacted after a person becomes lost. Answers will vary.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

A person can become lost simply by leaving a tent to go to the washroom and becoming disoriented or by following an incorrect compass bearing on a hike. Cadets participating in an activity should be aware of the actions they must take when lost, as it will increase the chances of them being found quickly.

INSTRUCTOR NOTES / REMARKS

Nil.

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 6

EO C425.02 – ANALYZE PROBLEMS USING AN EXPEDITION CASE STUDY

Total Time: 270 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Photocopy the Case Study Worksheet located at Attachment A. One copy is required for each cadet and each group.

There are eight case study examples located at Attachment B. The difficulty level of the case study increases by number. If attempting a case study for the first time, it is recommended that a lower number case study be chosen. Select a case study to use, become familiar with it and photocopy it for each cadet.

A case study may generate a lot of class discussion. Keep the discussion on track. Develop a list of open-ended questions to use throughout the activity. Some examples of open-ended questions are:

- How did you make that choice?
- What would you do differently?
- Why do you feel that way?
- What do you think would have happened if…?
- What does that mean to you?
- Is there another way of looking at it?
- Why is that important?

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A case study was chosen for this lesson as it allows the cadet to analyze problems using expedition case studies.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have analyzed problems using an expedition case study.

IMPORTANCE

It is important for cadets to analyze expedition-based problems. Using expedition case studies is a great way to help build better judgment and decision-making skills. Real-life cases can be analyzed and problems / issues debated without the risk of poor decisions causing harm. Using case studies helps to build confidence to make decisions later.

Teaching Point 1 **Have the cadets complete an expedition case study activity.**

Time: 80 min Method: Case Study

CASE STUDY

In the case study method, the cadet is provided with the opportunity to consider a real-life situation. Cadets respond to a scenario by examining the facts and incidents of the case, to critically analyze data and develop solutions. Facilitate by guiding the cadets toward answers.

The method is used to challenge cadets to apply what they know to a real situation.

Using expedition-based cases is a great way to help build judgment and decision-making skills. Real-life cases can be analyzed and problems / issues debated without the risk of poor decisions causing harm. Using case studies helps to build experience.

The process is a learning opportunity. In some cases, the correct decision is rarely obvious and in many cases several different solutions could work, provided they are implemented correctly—the goal is to develop skills.

The case study method works best with relatively small groups of relatively mature cadets. The primary objective is not to find a correct solution to the problem(s) but to understand the principles involved.

ACTIVITY

Time: 80 min

OBJECTIVE

The objective of this activity is to have the cadets analyze problems using an expedition case study.

RESOURCES

- Case Study Worksheet located at Attachment A (one per cadet and one per group),
- Case Study located at Attachment B (one per cadet), and
- Pens / pencils.

ACTIVITY LAYOUT

Set up the area with tables and chairs for both individual and group work.

ACTIVITY INSTRUCTIONS

Timings may have to be adjusted, depending on the productivity of the cadets.

1. Conduct a briefing, to include an explanation of:
   a. the objective and importance of the activity; and
   b. the resources required to perform the activity.
2. Summarize the case study that will be analyzed during the activity.
3. Distribute a Case Study Worksheet, the case study and a pen / pencil to each cadet.
4. Allow 25 minutes for the cadets to read the case study and complete the Case Study Worksheet.
5. Divide the cadets into groups of no more than three.
6. Distribute a Case Study Worksheet to each group.
7. Allow 20 minutes for the cadets to share and discuss the answers from their Case Study Worksheets. Each group will record their group answers on the Case Study Worksheet.
8. Rotate from group to group to verify that the cadets understand the issues and answer any questions.
9. Allow 25 minutes for the cadets to discuss their answers with the entire class.
10. Elaborate on the main points through well-formed, pre-planned questions. Guide the cadets through the facts, assumptions and problems of the case study. Direct them to the cause of the problem, as well as the consequences. Lead the cadets from issue to issue and discuss critical points.
11. Conduct a debriefing on the activity by asking:
    a. if it was difficult for the group to solve the problems in the case study (why / why not);
    b. what issues were difficult to decide on;
    c. why some decisions were more difficult to make than others;
    d. how some of the issues identified in the activity relate to issues that have occurred on a previous expedition(s), if any;
    e. what three words you would use to summarize what you learned from completing this activity; and
    f. how this information can assist you when planning an expedition.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 1

The cadets' participation in analyze problems using an expedition case study will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in the case study will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

The case study is a way to apply known concepts to a real situation. The process is a learning opportunity. In some cases, the correct decision is rarely obvious and in many cases several different solutions could work, provided they are implemented correctly—the goal is to develop skills. It is a great way to think about problems that could occur, while analyzing how they could also be prevented.

INSTRUCTOR NOTES / REMARKS

An experienced instructor shall be chosen to instruct this lesson.

This EO may be conducted as many as three sessions of three periods each during Gold Star training.

REFERENCES

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C2-250 Leemon, D., & Schimelpfenig, T. (2005). *Risk management for outdoor leaders: A practical guide for managing risk through leadership*. Lander, WY: National Outdoor Leadership School.

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CASE STUDY WORKSHEET

Case Study Title: _____

Name / Group: _____

Read the case study individually and answer the four questions below. When combined into groups, each group will be required to discuss their answers and record group answers. If extra room is required, use the back of the sheet.

1. A **fact** is something that is known to have occurred. Identify five facts that led to problems in this case study.

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•
•
•
•

2. An **assumption** is something that a person takes or accepts to be true, without proof, for the purpose of argument or action. Identify five assumptions you believe led to problems in the case study.

•
•
•
•
•

3. A **problem** is a doubtful or difficult matter requiring a solution. Identify three major problems that occurred throughout the case study. Once identified, use the column on the right side to rank each problem from the most serious (# 1) to the least serious (# 3).

•	
•	
•	

4. A **solution** is an act or means of solving a problem or difficulty. Develop solutions to the problems identified in Question 3.

Solution to Problem #1
Solution to Problem #2
Solution to Problem #3

CASE STUDY #1

FORGOTTEN BATTERIES AFFECT EVACUATION

Narrative:

Three summer camp backpacking leaders were preparing for a week-long trip. They had worked with each other several times before and were looking forward to getting out of the camp and into the field. While the campers were at the lake, the leader, Sam, and his co-leaders, Sally and Bob, worked on putting together the gear in the main office. They gathered maps, first aid kits, batteries, radios and field paperwork while they reviewed student profiles and medical histories, looked at maps while chatting about the route, the chance for good fishing and maybe a peak climb. While this was going on, Bob, an avid Red Sox fan, tuned into the team's game with the New York Yankees on the television.

"Hey, the Red Sox are up by two in the sixth. Great! I hate the Yankees," Bob said.

Sam wrestled with first aid kits, watching the game intermittently as the noise of the crowd or Bob made it clear that something interesting was happening. Sally inventoried the maps and asked if they needed any route information from the climbing guide. No one answered, so she said, "Hey guys, leave the game for a minute and help me finish. Do we need the guide?"

"Naw," said Sam. "The peak is a walk. I've done it several times. Don't forget the batteries. If we don't have an evacuation, we can use them in the Walkman."

Sally commented that the radio uses batteries quickly and the spare set is essential.

Bob asked about the checklist. He didn't see it in the paperwork.

"I hate that thing," said Sam. "We never needed it until those airheads forgot the maps last summer."

Sam searched around, found the checklist, checked off its items, initialled it, and stuck it in his pocket. "Done. What's up with the game?" The trio finished their prep work with the game in extra innings and the dinner bell ringing.

"Grab the stuff, and let's go. I'll get the batteries and the maps," Bob said. He placed the batteries on the couch and turned his attention to the television, where the Yankees just took the lead from the Red Sox. "Cripes, the Yankees are the evil empire, but they win and win."

They left the room and the next morning for the field.

Two days and about 15 km (9.5 miles) up the trail, Sally fell while crossing some deadfall and badly fractured her left lower leg. It was clear they needed medical support. Sam asked for the radio. Bob quickly dug it out of his pack and tried to turn it on. The batteries were dead. Sally didn't have the spares, nor did Sam. Bob had a sudden vivid image of the batteries on the couch in front of the television.[1]

[1] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (p. 42), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #2

AN INAPPROPRIATE CALL FOR HELP

Narrative:

Four students were hiking 20 minutes ahead of the staff, enjoying a well-earned afternoon of independent travel. Along the way, one student tripped on a tree root and fell forward, striking her head on the ground. Momentarily stunned, then scared, she began to hyperventilate. Two of the other students in the group dropped their packs and ran back to the staff, telling them about the injury.

When they arrived on the scene, the staff found the injured student breathing rapidly and complaining of tingling in her hands and a headache. She seemed disoriented and agitated. They decided this was a severe head injury and called to request a medical evacuation. The cell phone connection was inconsistent, coming in and out, and they drained their batteries relaying the first request for immediate rescue.

After things settled down, the staff performed a more careful assessment of the student. One of them recognized that the student was hyperventilating and scared. The instructors wanted to alert the life flight, but the cell phone was dead. Unfortunately, the life flight had a serious mechanical problem during the flight and had to perform an emergency landing, winding up in a deep valley and out of radio contact. The sheriff had to send a plane to search for the first helicopter and a second helicopter to respond to the original call for help. The student was transported to the hospital where she was quickly assessed and released with a small bruise on her head.[2]

[2] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (pp. 39–40), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #3

STUDENT LEFT ALONE IN REMOTE TERRAIN

Narrative:

Twelve students and two instructors decided to hike to the summit Mount Fester. The route began with 365 m (1 200 feet) of gentle, open slopes and ended with the summit cone consisting of 60 m (200 feet) of challenging Class Three boulder hopping. During the climb, the group became spaced out with one instructor at the front and the trip leader in the back with the slower students. One student in the rear began to complain of having a headache and feeling dizzy and nauseous. The leader yelled to the students ahead to let the instructor in front know that he was stopping. The message was slowly passed up the line, and it reached the instructor when she was at the base of the challenging cone. The message she heard was, "You go ahead; I'll be up later." There was no mention of an ill student.

Over the course of the next half hour, the leader had the ill student drink water and eat some snacks. He reported feeling better but not strong enough to continue the climb. The leader left him with a sleeping bag and headed up the peak. The leader met the rest of the group. They had not reached the summit because the instructor had decided it was too difficult to supervise 11 students on her own on the difficult terrain.

The leader thought he might be able to make it to the top with a smaller group. He told the instructor to pick up the ill student during the descent to camp. The leader then continued to the summit with two students.

The instructor, however, did not find the resting student. She figured the student might have returned to camp on his own, but when she and her group arrived at camp, the ill student was nowhere to be found. The instructor then climbed back up the mountain to search for him.

During this time, the other leader and his group descended to camp by a different route. When he got to camp and learned about the situation, the leader returned on his own to the location where he had left the student. The missing student was still there, sleeping. He said he felt fine and returned to camp. An hour later, the other instructor and her search group returned to camp.[3]

[3] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (pp. 40–42), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #4

GROUP LOST ON FIRST DAY OF EXPEDITION

Narrative:

Charlie and Henry, wilderness instructors for a wilderness program, arrived with their students at their planned drop-off point late one afternoon. The previous day, preparation day, had been difficult for the instructors. Henry, the trip leader, had been assigned to the course at the last minute, and was not happy about it. He complained about leading adolescents and suspected that this assignment was punishment for complaints about his previous trip, on which students said he was short-tempered, distant and difficult to approach.

During the preparation day, Henry criticized Charlie for miscalculating the amount of stove fuel they would need. Then, after Charlie had evenly distributed the group's gear, Henry reorganized all of it in front of several staff members while grumbling about poorly-trained new staff. Charlie's explanation that he had divided the gear as instructed fell on deaf ears.

The drop-off point was in thick forest with rolling hills and few distinct landmarks. As the van pulled away, Charlie and Henry looked at their maps and prepared to hike to the "X" (the destination for camp) in separate groups. Henry pointed to where they were, and marked an "X" where he wanted them to meet in a few hours. Charlie was concerned. He didn't think they were starting where they thought they were. He mentioned this to Henry, who replied irritable, "No, we are at the correct spot. I've been here several times before."

Unconvinced, Charlie used his Global Positioning System (GPS) receiver and plotted their position. It showed they were 700 m (2 300 feet) northeast of where they thought they were on the map. He pointed this out to Henry who bluntly replied, "I don't need that crutch. I can read a topographical map."

Henry then left with his group and Charlie left about a half hour later. After walking through a maze of two-track dirt roads, Charlie was convinced they were disoriented and pulled out his GPS. Using this he navigated to the "X," arriving at dark. The other group was not there. Charlie did not know what else to do, so he made camp. In the meantime, Henry hiked to his "X," and of course Charlie was not there.

Charlie waited that night and all of the next day for Henry to arrive. Henry also waited for Charlie, and at noon the next day he hiked with his group back to the drop-off point thinking that Charlie would return there. When Charlie did not show up that evening, Henry called the base on his cell phone (Charlie didn't have one) and said he had lost a group. He was obviously irritated and complained about these "new instructors who can't navigate."

The support staff at the base plotted on a map the coordinates Henry gave them for the "X," and arranged for an aircraft to fly one staff person over the area first thing in the morning. After their second pass over the area, they saw a bright flash of light coming from a small clearing—it was Charlie. Support staff contacted a very irritated Henry on his cell phone and told him Charlie was in the right place waiting for him.[4]

[4] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (pp. 42–43), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #5

RAPPELLED OFF THE END OF THE ROPE

Narrative:

An instructor (Tyrell) and student (Beth) were rappelling from the top of Block Tower. The first rappel was tricky because the end of the rappel could not be seen from the top anchor and belay. Knowing that Beth would be out of sight and that communication would be difficult, the instructor gave Beth explicit instructions on what to do and what to expect. He described the rappel route in detail, including what the next rappel station would look like and how to clip into the anchor bolts.

Beth said she understood the instructions and, although she was tired, Tyrell believed she had been attentive. As Beth rappelled, he used the belay to judge when Beth would reach the anchor. Beth stopped at the anticipated belay point, then, after a few moments pause, continued to slowly descend. The belay slack disappeared and then the belay loaded. To Tyrell, it was obvious that Beth had just rappelled off the end of her rope.

Tyrell was able to tie off the belay rope and remove himself from the belay anchor. He then secured the belay rope and prepared to descend on the rappel line. This took about 10 minutes. He rappelled to a ledge where he could walk out to its outer edge and look down. He saw Beth hanging well below the ledge of the next rappel station with the rope passing directly over the anchor bolts. Tyrell quickly descended to the anchor at the second rappel station and clipped in. It was now clear that Beth had in fact rappelled directly over the anchor and, after stopping and looking at it, had for some reason continued downward.

Beth was hanging against a vertical face and could not climb up. Tyrell built an anchor and set up a pulley system using the free rappel line. He raised her to a small ledge where she could stand and then placed her on belay so she could climb an easy part of the face to his ledge. He then clipped her in, took apart the raising system and climbed back to the anchor above. After returning to the ledge, they continued to descend without incident.

Beth had no real explanation of why she continued rappelling. This was not her first multi-pitch climb, and she had previously shown attentiveness to details and reliability. She said she stopped and looked at the anchor but was having a good time rappelling and was "spacing out." She said, "It was feeling really neat," so she continued to rappel.[5]

[5] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (p. 39), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #6

PARTICIPANT KILLED IN AN AVALANCHE

Narrative:

At 9:30 am on Day Five of a 10-day backcountry ski trip in Wyoming, a group of 11 students and two leaders set out to ski 5 km to the base of Patterson Peak. They planned to break trail for their next campsite, and once there, they would mound snow for snow shelters (they had planned to move into this camp the next day).

Willy, one of the leaders, was at the front of the group. Dave, the other leader, was at the back of the group, about 15–20 minutes behind. During the morning, as they crossed some flat areas, Dave felt a collapse of the snow pack. He did not think it was indicative of any instability in the snow pack, however, and did not mention it to Willy.

About mid-morning, the group broke out onto a 20-degree open slope, facing north-northeast. They could see that it extended uphill about 30 m (100 feet), gradually increasing in steepness up to a tree band. Above the band of trees and not immediately obvious to the leaders or anyone else in the group, the slope steepened for about 120 m (400 feet) as it rose to a cliff band. Willy decided that neither the slope nor the snow pack was a danger. He made a gradual descending traverse across the slope to the valley bottom and the future camp location and the rest of the group followed.

Willy and Dave discussed whether to return by the route they had come or break a different trail back to the existing camp. Willy liked the route they had just travelled. Dave wanted to avoid crossing the same slope. He felt it would be difficult for students carrying full packs and pulling sleds when they moved camp the next day. While he did not say so, he was also concerned about a slope on the route that he thought posed an avalanche danger, and this, along with the collapsing snow he felt earlier, made him want to establish an easier route back. The two instructors had a brief conversation about which route to take but failed to reach a decision. For the next hour and a half, they busied themselves making snow shelters.

At about 1:40 pm, a student, Steve, came to Willy and Dave complaining of pain in his feet. Willy inspected Steve's feet and decided that the group needed to head back to camp. Again, Willy and Dave discussed the route. Willy felt that using the already broken trail would be more efficient and would allow them to get Steve back to camp more quickly. Dave concurred.

Willy started out leading the group back on the existing trail, and Dave brought up the rear. Willy re-emphasized to the group what to do in the event of an avalanche, including skiing downhill, struggling to stay close to the surface, and creating an air pocket. Though Willy did, by now, recognize the slope as a possible avalanche slope, he didn't think it was threatening, and so he didn't establish spotters or have the students ski across one at a time.

When Willy got across, he turned to watch the students. Suddenly he head a sound (like a crack) from up slope, and looking up, he saw the avalanche. He yelled at the students in the slide path—five of them—to "ski down!" Steve was already out of the way. Denise easily skied out of the path. Frank and Molly skied downhill and to the side, but were caught by the avalanche.

Roger looked at the avalanche and then at Willy, and then waved his arms and yelled. He did not attempt to ski down out of the slide path, even though he was a capable skier. The slide caught Roger and carried him down slope. He was on the surface for 6–8 m (20–25 feet) before being buried.

When the snow stopped moving, Frank was buried to his chest and Molly was buried to her waist. Willy saw that Frank and Molly were not in imminent danger; he focused his attention on Roger.

About five or six minutes after the slide ended, Willy located Roger by using an avalanche transceiver and quickly uncovered his face. Roger was buried about 1 m (3 feet) under the surface. He was completely encased in snow and was not breathing. There was no pulse. Rescue breathing was begun immediately and chest compressions were started as soon as his chest could be uncovered. The efforts were continued for two hours. Unfortunately, they were unsuccessful.[6]

[6] From *Risk Management for Outdoor Leaders: A Practical Guide for Managing Risks Through Leadership* (pp. 44–46), by D. Leemon & T. Schimelpfenig, 2005, Lander, WY: National Outdoor Leadership School.

CASE STUDY #7

ADAM'S STORY

Narrative:

In the summer of 1998, Adam Dzialo was 12 years old. He loved sports and was good at everything he played. When he wasn't playing a sport, he was at a sports camp. Adam's family had a busy summer planned for him. He was signed up for six sports camps, including hockey camp which was going to be his first week away from home and Team Adventure, an outdoor program run by the local community college. The Team Adventure brochure promised "five days of fun and excitement!" featuring a ropes course, rock climbing, canoeing, hiking, a river crossing and one overnight camping trip.

The Team Adventure activities were designed to introduce participants to different types of outdoor skills or experiences each day. On many of the earlier trips, participants complained about the Friday hike—it wasn't exciting enough. Heather and Patrick (the team leaders) asked for permission to alter the itinerary for the group and try a river swimming and rescue drill instead. Permission was granted. The group would hike to the summit on Thursday and on Friday, a hike to Deerfield River, where the group would complete river activities.

On Friday morning, the group broke camp and headed for the river, stopping briefly along the way to get the water release time. The river's flow was controlled by scheduled water releases from the nearby dam. Heather and Patrick wanted to time their activities so that they could be finished before the full force of water hit the group. Before the release, the river is a shallow stream. Afterward, it rises gradually and progressively as a bubble of water makes its way down the riverbed.

After obtaining the water release time, the leaders knew they had a few hours, so there was no need to rush. The group stopped for lunch and the leaders discussed how to read water and fitted everyone with life jackets. They tested each jacket by attempting to lift it over the person's head. At just under 90 pounds, Adam was a little small for an adult-sized life jacket, but it passed their test and they decided it was an acceptable fit.

The chosen location seemed like an excellent choice for a swimming and rescue drill, and had been used for that kind of activity many times by multiple organizations. On the bank, the group was split into two teams. The swimmers went upstream with Patrick while the rescuers went downstream with Heather. They were about 60 m (200 feet) apart.

Upstream, Patrick provided a briefing for the swimmers, explaining where to swim, the proper position, how to grab the throw bag, and what to do if the throw bag missed. It had been predetermined that before each boy went, Patrick would look both ways and give a thumbs-up sign to Heather to indicate he was ready. When Heather returned the sign, the swimmer would be free to go.

Downstream, Heather explained the proper use of throw bags to her group and positioned two rescuers near her side along the bank. The plan was that if the first throw bag missed the swimmer, the second person would throw their bag.

No one was required to participate and some opted out.

During mid-afternoon, the leaders brought the group together. Patrick had to drive someone upstream to meet his mother at a prearranged pick-up point. He was expected to be back in 10 minutes. Heather said she felt comfortable continuing the exercise, so some people went back upstream to take another run at the river. Heather stayed downstream with the rescuers. The signalling system would be the same, but the swimmers would decide for themselves when to enter the water.

When it was Adam's turn, the full release from the dam had arrived and commercial rafts, with guides, were beginning to appear. Adam floated in the water in a seated position. He waved to his friends downstream and then appeared to stand up. His body flipped over and he then disappeared under the water.

Heather ran upstream along the shore and tried to swim out to Adam. The current forced her back downstream. During the next few minutes, several rafting guides were ashore and joined the rescue operation. Several attempted to reach Adam. All of them were swept away by the current. Some of the guides tried to create a "human chain" to reach him, but the current was too strong.

With the aid of rope, the group created a "tag line" and a few minutes later Adam was reached. One guide was able to get a firm grip on Adam's life jacket. He let go of the rope and pulled as hard as he could. He was able to pull the life jacket free, but Adam's foot was lodged.

Because there was too much slack in the tag line, trees were added as anchor systems and additional ropes were used to pull the tag line taut. Four men attached a raft to the line across the river and manoeuvered it as close as they could to where Adam was trapped. They were finally able to get Adam's head above water and could start rescue breathing. Two other men worked to pull Adam's foot free. He had been under the water for 25 minutes.

Patrick had returned, several people had called 911 and emergency personnel had already arrived on the scene. Within minutes, Adam was transferred to an ambulance, carried to a nearby heliport and flown by helicopter to a hospital.

After the first 72 hours, the doctors told Adam's family that he would live. However, they held very little hope for a full recovery. Adam had suffered from "anoxic encephalopathy" as a result of the near drowning—the neuromuscular system that controls movement had been damaged.

After the accident, now 19 years old, Adam needs assistance with every aspect of daily living. He attends physical therapy five times a week, speech therapy four times a week and Advanced Biomechanical Rehabilitation exercises three times a week. He communicates with his eyes, laugh and smile. He cannot walk. His parents remain optimistic that he will, one day, walk and talk again.[7]

[7] From *Lessons Learned II: Using Case Studies and History to Improve Safety Education* (pp. 5–26), by D. Ajango, 2005, Eagle River, AL: SafetyEd: Safety Education for Outdoor and Remote Work Environments.

CASE STUDY #8

SEA KAYAKERS STRANDED IN DARKNESS AND FOG

Twelve kayakers and two instructors pushed off on the final expedition day of the Boundless Experiences Inc. eight-day kayaking course at Rigarogy Island, in the waters of southern Ireland's Baltimore Bay. The distance for the day of paddling from Rigarogy Island to Cleare Island was approximately 35 km (20 miles) among the islands of the bay, with several crossings of open water. There were many small craft warnings for southwest winds of 27–37 km per hour (15–20 knots). The waves were choppy and up to 1 m (3 feet) high and rain was in the forecast. In addition, the group had had a few nights of short sleep.

Shannon, the assistant trip leader, checked in with the six women and six men in the group, who ranged in age from 19–58, while they were preparing breakfast to give a pep talk and assess their physical condition as well as their spirits. She then reported to Zachary, the very experienced 40-year-old leader. They discussed the plans for the day, and he made the judgment call that, even though the weather conditions, travel distance, and group fatigue levels were not ideal, the group would go ahead with the schedule and have the final expedition day, which would be led by the students. Though all of the students received appropriate training, Zachary and Shannon knew that, given the weather conditions, they would need to stick pretty close behind the students when paddling, just in case assistance was required.

A couple of hours later after launching, the fleet of four single and five two-person kayaks were heading west across open water, Nash (in a single kayak) capsized. Instead of staying in close convoy with the rest of the group, he had once again split off from the group. But he successfully performed a wet exit, and the crew rallied quickly to get him back into his kayak. His boat was then pumped dry and the crew continued on, arriving at Hare Island, the lunch destination, at 1:30 pm.

At lunch, Zachary and Shannon wanted to update the base on the group's progress, but also wanted to save the two-way radio's batteries for emergency use because the very high frequency radio's rechargeable batteries had not been swapped at the start of the expedition for ones that would maintain charge for longer. Zach decided to use his cell phone to call the base and change the estimated time of arrival from 3:00 pm to 5:00 pm. No one answered, so he left a message and planned to call again later in the afternoon.

At 2:30 pm, Shannon tried to reach the base, this time with the radio, but had no luck. Most students opted to wear wetsuits for the rest of the day. At 3:00 pm, the crew ensured there was no trace of the visit left at the site and the group set off. There was approximately 13 km (8 miles) farther to the base.

By late afternoon, it was raining hard. The group was approaching the end of a channel, so they rafted up so that they could check their maps and compasses, since, as had often been the case, they were having trouble agreeing on exactly where they were and what course to follow.

The group made good time heading southwest past a string of small islands, though were still behind schedule. At 5:30 pm, Zachary moved up ahead of the students, taking the lead and urging everyone to keep up the pace behind him.

By 7:30 pm, the sun became lost behind the clouds and fog could be seen. There was still 5 km (3 miles) left. Twenty minutes later, in the fog and dwindling daylight, the group decided to tighten the convoy, leaving only about 30 m (100 feet) between the front and back of the line. There were wind and waves coming in from the south—the direction of travel.

Zachary called the group together and checked to see how everyone was doing and whether everyone was prepared to make the final push. He was familiar with the area and estimated that it would take 10 minutes to cross the area. None of the students spoke up.

Zachary gave the group the heading of 180 degrees magnetic and firmly stressed the need to maintain a close convoy formation. Kelly, who was tired and concerned about the coming darkness, asked that another, stronger

two-person kayak be appointed to stick close beside her and her partner, but Zachary reassured her that the entire group would be sticking together, so such a buddy system would not be needed.

A few minutes before 8:00 pm, the group was enveloped in fog and waves. Although the wind had somewhat dropped, Zachary (guided by his compass, which was mounted on his kayak) headed the convoy, with Shannon in the middle of the back half. There was now approximately 12 m (40 feet) between the front and back of the kayak line. There was a green buoy ahead to the left, but the group could not make out its number. Zachary believed it was buoy Number 13, which confirmed his sense that the group was right on course.

By this time, darkness and fog had made it impossible for Zachary to read his compass, so he tried to use the direction of the parallel rows of incoming waves as a navigational aid. He was unaware that there were refracting waves—a condition in which the lines of waves make an arc as they swing past a point of land. The result was that the waves were coming in more from the west rather than south, as Zachary was predicting.

With the size of the waves, the group was having trouble maintaining the close convoy without bumping into each other. It was also difficult to see everyone, so the group started shouting back and forth to maintain contact.

Zachary called Shannon up to his kayak to ask her to try to read his compass. The compass indicated that the group was heading west, rather than south. To make sure, Zachary borrowed a hand-held compass from the closest kayak. The compass confirmed that the group was 90 degrees off course. By this time Zachary, like the rest of the group was stretched pretty thin from fatigue, and possibly dehydration, so it was understandable when he turned his kayak around and headed north for a few minutes. He did a 180-degree turn, and the group followed him south, continuing to use voice contact to keep together.

Soon the group could only hear the sound of waves crashing into rocks. Zachary shouted for all of the kayaks to gather. Two two-person kayaks did not show up, and the rest of the group, already quite apprehensive, were screaming back and forth as they tried to bunch the kayaks together while they bounced and dipped into the waves. The students were starting to panic.

A minute or two later, at about 8:30 pm, a flare illuminated in the gloom. Zachary told Shannon to remain with the pod of kayaks, and, shouting and blowing his whistle, he rapidly set off toward the rocks in search of the missing students. Moments later he found one of the kayaks next to a rocky ledge. Martin and Margaret told him that the two women from the other kayak, Kelly and Ruth, were standing on the ledge with their kayak pulled up beside them, and that they had set off the flare. Zachary told Martin and Margaret to paddle back to the others, using whistles and shouts as a guide.

Zachary could now see Kelly and Ruth's silhouettes on the ledge, so he yelled to them to ask if they were okay. They replied that they were okay and able to stay on the ledge, in spite of the rising tide and the breaking waves. Zachary assured them that they would be helped off the ledge as soon as possible.

Zachary returned to the rest of the group and briefed them on the situation. He then tried to get his jacket and flashlight out of his rear hatch and the two-way radio from under his rear deck. He retrieved the radio and called the base. In an even voice, he informed the volunteer on duty of the situation and requested that a motor vehicle be quickly sent to assist. It was now approximately 9:00 pm. Zachary called to check on the rescue efforts and was informed that a motor vehicle was on the way. By 9:45 pm, there were still no sign that help was on the way.

Twenty minutes later, Shannon set off an emergency flare. The group could make out a large motor vehicle coming toward them. All group members were rescued.

Careful assessment by senior staff members determined that none of the students or instructors would need medical attention.[8]

[8] From *Leadership the Outward Bound Way* (pp. 213–219), by J. Garrett, 2007, Seattle, WA: The Mountaineers Books.

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