

DEVELOPER'S ASSESSMENT REPORT (DAR)
PHASE 3 SURFACE DRILLING EXPLORATION PROGRAM
PRAIRIE CREEK MINE

SUBMITTED IN SUPPORT OF:

Type "A" Land Use Permit Application
Originally as an amendment to **LUP MV2001C0022** Dated March 2, 2001
Now referred to by **MVLWB** as **LUP MV2004C0030** Dated June 1, 2004
MVEIRB file EA 0405-02

SUBMITTED TO:

Mackenzie Valley Environmental Impact and Review Board
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May, 2005

EXECUTIVE SUMMARY (NON-TECHNICAL)

DETAILED PROJECT DESCRIPTION AND DEVELOPER'S ASSESSMENT REPORT

The Prairie Creek property is owned by Canadian Zinc Corporation (CZN). Substantial mineral resources have been defined in the Main Zone. There are many other mineralized zones that are known to exist throughout the 16 km long property. These zones require further mineral exploration using a diamond drill. A drilling program is proposed with the aim of finding additional mineral resources.

Further drilling of the Main Zone is already planned under an existing Land Use Permit. At the same time, CZN proposes to drill in the other areas of the property as defined by existing Mining Leases and mineral claims. Substantial mineral exploration has already occurred in these areas by digging trenches, drilling holes, doing geophysical surveys and excavating tunnels. The proposed exploration program will consist of diamond drilling at up to 60 drill sites, with an average of 1-2 holes per site. The existing camp will be used as a base. Drilling is planned in areas south of the camp (on the south-west side of Prairie Creek), in the Rico Zone north of the camp (near Casket Creek), and in the Gate claims west of the camp (also west of Prairie Creek). The areas where drill holes are proposed are only a small part of the leases and claims, and are mainly upland areas and away from creeks.

Access to the drilling areas will be gained by using some of the roads in an existing network. These roads were built and used several times in the 1980's and 1990's. Some sections on these roads are eroded and will need repair before they are used. New road extensions up to 100 m long from the existing roads may be needed for some of the new drill sites. Access to the areas south of the camp will require crossing Prairie Creek. A previously used crossing location at Galena Creek will be used. The stream bed at the crossing location is made of cobbles and is not used for spawning. While fish may swim through the crossing, they do not use it for spawning. Arctic grayling may move through the crossing in the spring on their way to spawn. Because of this, CZN will not cross the creek with heavy equipment (dozers, drill rigs) until after June 15. Before crossing Prairie Creek, heavy equipment will be cleaned using steam under high-pressure, and manually cleaned before return crossings. A new road section is planned on the west bank of Prairie Creek to avoid crossing Galena Creek. Fisheries and Oceans Canada (DFO) will make an inspection and provide advice for the protection of aquatic resources and habitat.

The Prospector's and Developers Association (PDA) is the largest industry organization for Canadian exploration firms. The PDA recently developed the *Environmental Excellence in Exploration (E3) guidelines*. CZN will use the guidelines to help avoid or minimize any environmental impacts related to the drilling program. Vegetation clearing and new road construction will be minimized. Where it occurs, storm water flow and erosion controls will be included. These controls will also be applied to the existing roads that are used, and will be maintained in the disturbed areas. Soil and vegetation will be replaced in all areas when CZN has finished using them. CZN will have the ability to modify the program to avoid specific environmental sensitivities. Some sensitivities are related to timing, such as periods of high

rainfall and water levels, and the proximity of Dall's sheep during lambing. CZN can change the order of sites that it drills at, and therefore the timing in these areas. Site selection can also be modified as the drills can make holes at different angles, and this allows some flexibility with the location of sites at the surface.

The furthest areas to the south and the Gate claims will be drilled using a drill rig that can be moved by helicopter (heli-drilling). The roads are not well developed in the far south, and there are no roads to the Gate claims. Helicopter use will be minimized, and will be limited to the immediate area of the camp and drill sites. Heli-drilling would not necessarily mean a lower potential for impacts when compared to using road access for drilling. Use of a helicopter presents a potential for disturbance to local wildlife if the flight path is too close. The helicopter pilot will be advised to avoid sensitive Dall's sheep locations, and select a flight path away from steep valley slopes and other areas commonly used by wildlife. Grizzly bears are not expected to be impacted because they have large ranges and can use other parts of these.

All drilling will take place within the drainage basin of Prairie Creek, and in areas where exploration occurred previously. An assessment of potential environmental impacts has identified the possibility for negative impacts associated with creek crossings and vegetation clearance, and the use of a helicopter for drill site access. The potential for impacts will be minimized by using the measures described above. CZN will continuously monitor its drilling activities to ensure measures are effective in minimizing environmental impacts. Adjusts will be made as necessary. Water samples will be collected from Prairie Creek to make sure sediment levels are not high.

The potential for significant impacts to fish and other aquatic resources is considered to be low because, even if local soils produce sediment, control measures will manage this. The significance of Prairie Creek crossings will be low as they will only occur after June 15 when any spawning grayling will have passed through.

The potential for significant impacts to wildlife and wildlife resources is considered to be low because of the small area and temporary nature of the land disturbance, and a commitment to manage and monitor soil and vegetation replacement. The potential is also low because helicopter activity and flight paths will be managed. A biologist will be hired to advise the company.

The project would provide a small amount of employment for locals. The potential for negative impacts on the Nahanni National Park Reserve is low because water quality and wildlife will not be impacted. Based on previous activity, there is a low potential for heritage/artefact resource occurrence.

A cumulative effects assessment was completed. The conclusion was such effects are unlikely. CZN is planning to improve water management at the site this year, and the quality of water leaving the site should be better. Any water quality impacts associated with the drilling will be limited in size and extent. Helicopter use will be a small addition to existing fixed-wing flights into the site and the two landing strips in the Nahanni National Park Reserve, which is approximately 13 km south-west of the Prairie Creek property at its nearest point.

EXECUTIVE SUMMARY (TECHNICAL)

DEVELOPER'S ASSESSMENT REPORT

This Developer's Assessment Report (DAR) responds to the Terms of Reference and Work Plan (TOR) issued by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Canadian Zinc's (CZN) proposed Phase 3 drilling program. The MVEIRB noted that the main differences between the Phase 2 and Phase 3 drilling programs are drilling over the larger expanse of land represented by CZN's mineral claims and mining leases, use of existing roads in these areas, crossings of Prairie Creek and other creeks, and use of a helicopter-portable drilling rig in areas not readily accessible by heavy machinery.

CZN plans to drill at up to 60 drill sites, with an average number of holes drilled per site between one and two. CZN would use many of the existing roads, but by no means all of them. Some roads have eroded sections that will require rehabilitation before they can be used. All roads used will have runoff and sediment control structures. New road construction will be minor. A new road section is proposed on the west bank of Prairie Creek to avoid crossing Galena Creek. Industry guidelines will be used for road management and reclamation. Fisheries and Oceans Canada will make an inspection and provide advice for the protection of aquatic resources and habitat.

CZN will have the ability to modify the program to avoid specific environmental sensitivities. Some sensitivities are related to timing, such as periods of high rainfall and water levels, and the proximity of Dall's sheep during lambing. CZN can change the order of drilling sites to accommodate this. Site selection can also be modified as different angles of drilling provide some flexibility. CZN will monitor conditions and make changes to the program as appropriate. Water samples will be collected in Prairie Creek and analysed for suspended solids. The intent is to confirm and provide demonstrable evidence of environmental protection. A qualified biologist will also be hired to survey wildlife and vegetation in the area in order to provide guidance on appropriate mitigation procedures, and assist with reclamation planning. All roads used by CZN during the program will be reclaimed after they are no longer needed, consisting of replacement of any removed soil and use of a native species seed mix.

Heli-drilling would not necessarily mean a reduced potential for overall impacts when compared to using road access for drilling. Use of a helicopter presents a potential for disturbance to local wildlife if the flight path is too close. The helicopter pilot will be advised to avoid sensitive Dall's sheep locations, and select a flight path away from steep valley slopes and other common habitats frequented by wildlife. Grizzly bears are not expected to be impacted because they have large ranges and can use other parts of these.

The potential for significant impacts to aquatic resources and habitat is considered to be low because, even if soils are erodible, mitigation strategies will be effectively applied and will provide adequate protection. The significance of Prairie Creek crossings will be low as they will

be confined to the period after June 15, and the existing crossing location near Galena Creek will be used which consists of low-value, cobble migration habitat.

The potential for significant impacts to wildlife and wildlife resources is considered to be low because of the small area and temporary nature of the land disturbance, and a commitment to manage and monitor reclamation. The potential is also low because helicopter activity and flight paths will be managed.

The project would provide a small amount of employment for locals. The potential for negative impacts on the Nahanni National Park Reserve is low because of the effective mitigation of water quality and wildlife impact potentials. Based on previous activity, there is a low potential for heritage/artefact resource occurrence.

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1.0 INTRODUCTION AND CONFORMITY TABLE

Land Use Permit MV2001C0022 authorizes Canadian Zinc Corporation (CZN) to drill up to 60 holes within 1,000 metres of the mine site (termed the Phase 2 drilling program). CZN applied for an amendment in order to drill on the remainder of its claims and leases in the area. The request was referred to environmental assessment (EA 0405-002). The first step in the process was the submission of a Detailed Project Description (DPD), dated December, 2004. After review of this document and consideration of comments by interested parties, the Mackenzie Valley Environmental Impact Review Board (MVEIRB) finalised a Terms of Reference and Work Plan (TOR) for a Developers Assessment Report (DAR). This document is CZN's DAR based on the TOR.

The MVEIRB concluded that much of the information it would normally require in a DAR was already provided in the DPD. The MVEIRB noted that the proposed (Phase 3) drilling program consists of up to 60 sites covering the larger expanse of land represented by CZN's mineral claims and mining leases. The proposed program will be carried out in two ways:

- With skid-mounted drill rigs that will be dragged into place by a D-8 Cat on the existing road network, and newly constructed road spurs with a maximum extension of 100 metres from existing roads; and,
- With a helicopter-portable drilling rig, proposed for use in areas not readily accessible by heavy machinery.

The MVEIRB has defined the scope of the development to consist of the following physical works or activities:

- Surface-based diamond drilling activities that use various types of drill rigs, including ground and helicopter transported drill rigs;
- Activities in support of drilling, including drill and helicopter pad construction, sump construction and operation, water use and hydrocarbon use and storage;
- Re-establishment of old road network, road construction, road maintenance, alteration of drainage patterns, erosion prevention activities, excavation and stockpiling of soils;
- Clearing of vegetation; from both undisturbed and previously disturbed areas;
- Use of the camp and infrastructure as required for the purposes of the Drilling Program, and separate from support for already permitted activities;
- All aspects of transportation to and from the drilling locations, including use of heavy equipment, steel skids to drag drill rigs from site to site, trucks, ATVs and helicopters;
- Transportation of equipment and supplies to and from the mine site, as required for the purposes of the Drilling Program (e.g. method of transportation; equipment, supplies and personnel; number of expected transportation trips);
- Stream crossings; and
- Efforts to reclaim areas and infrastructure disturbed by the above activities.

The MVEIRB provided specific terms of reference in Section 4.2 of the TOR. This document responds to those terms of reference.

The TOR requested a conformity table to cross reference the items requested in the TOR with the relevant sections of the Detailed Project Description and/or the DAR. Table 1 below provides that table.

TABLE 1: CONFORMITY TABLE

SPECIFIC ITEMS OF TOR	LOCATION
A-1	DAR - Executive Summary
A-2	DAR - Table 1
B-1 a), b), d), e)	DAR - Section 2.1.1
B-1 c), f)	DAR - Section 2.1.2
B-2	DAR - Section 2.2
B-3	DAR - Section 2.3
B-4	DAR - Section 2.1.3
C	DAR - Section 3
D	DAR - Section 4
E-1	DAR - Section 5.1
E-2	DAR - Section 5.2
E-3	DAR - Section 5.3
E-4	DAR - Section 5.4
F-1	DAR - Section 6.1
F-2	DAR - Section 6.2
F-3	DAR - Section 6.3
G	DAR - Section 7

2.0 DEVELOPMENT DESCRIPTION

2.1 ROADS

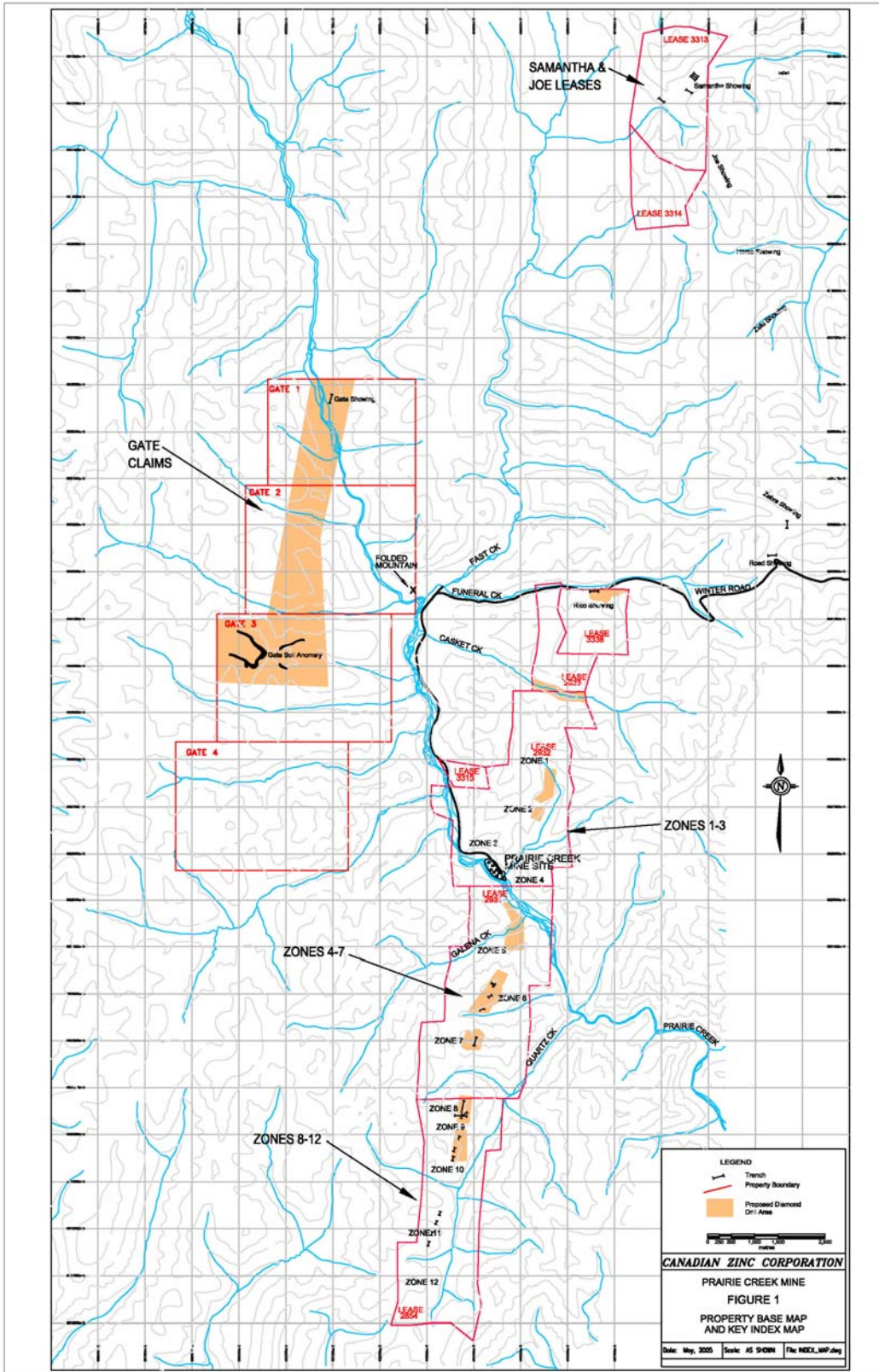
2.1.1 Roads to be Used

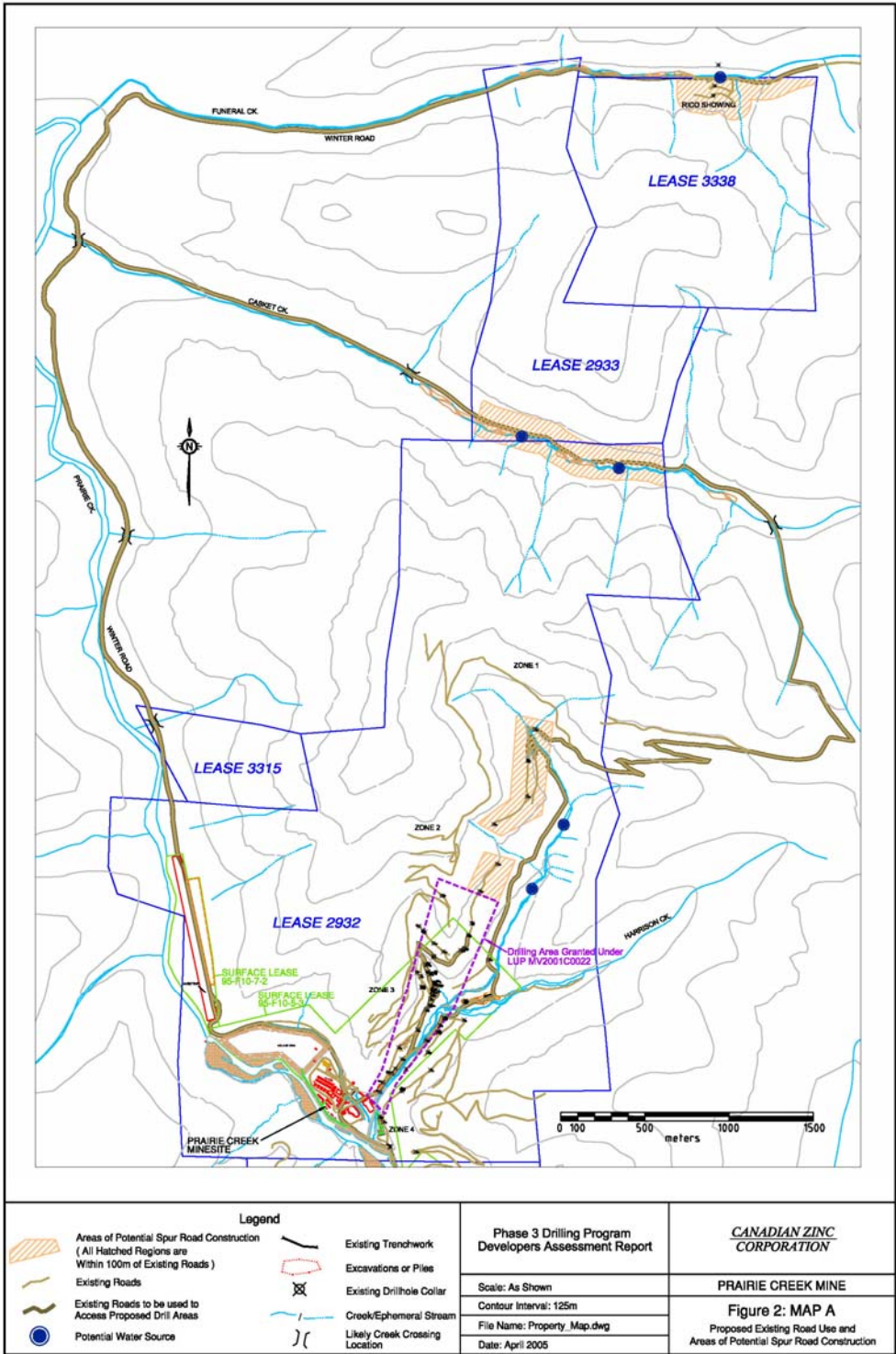
The total linear distance of all roads in the network entirely within the existing Prairie Creek property is 84.6 km. The total linear distance of the entire road network in the Prairie Creek area up to kilometre 16 on the Winter Road is 114.3 km.

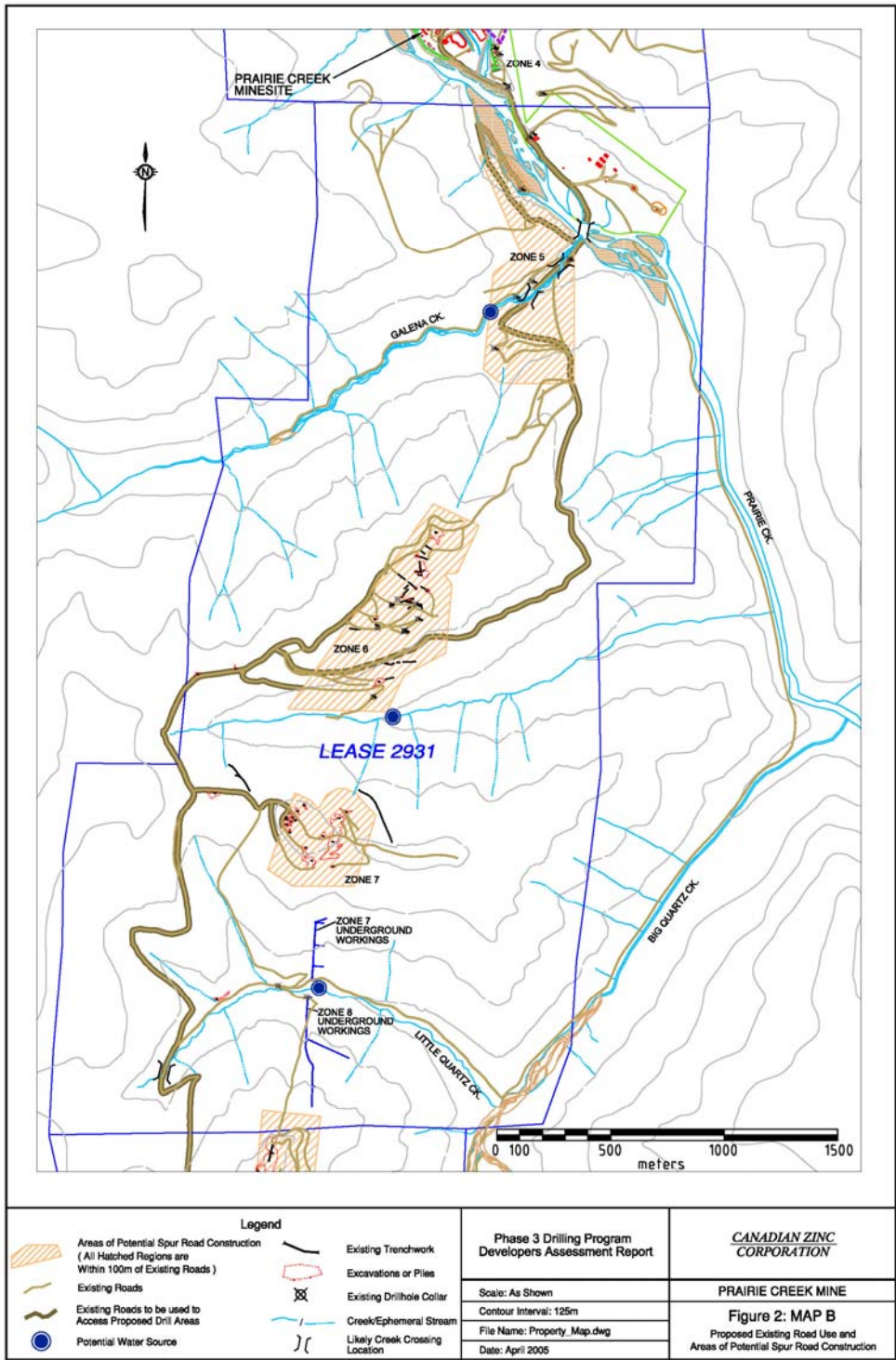
The areas targeted for future drilling were previously highlighted in yellow on the maps within the DPD. Figure 1 in this document (the DAR) shows all of CZN's mineral claims and mining leases. Roads exist on all of these except the Gate claims. Figure 2 (Maps A, B and C) show the other claims and leases, and those portions of the existing road network CZN may use in the drilling program. The preliminary plan is for initial drilling to take place within Zones 6, 7 and 8 (Maps B and C). There will be 5 drill sites (pads) in Zone 6, 4 in Zone 7, and 3 in Zone 8. There would be 2 holes completed from each of these sites. Drilling using a heli-portable rig would occur at 4 sites in each of Zones 7 and 8.

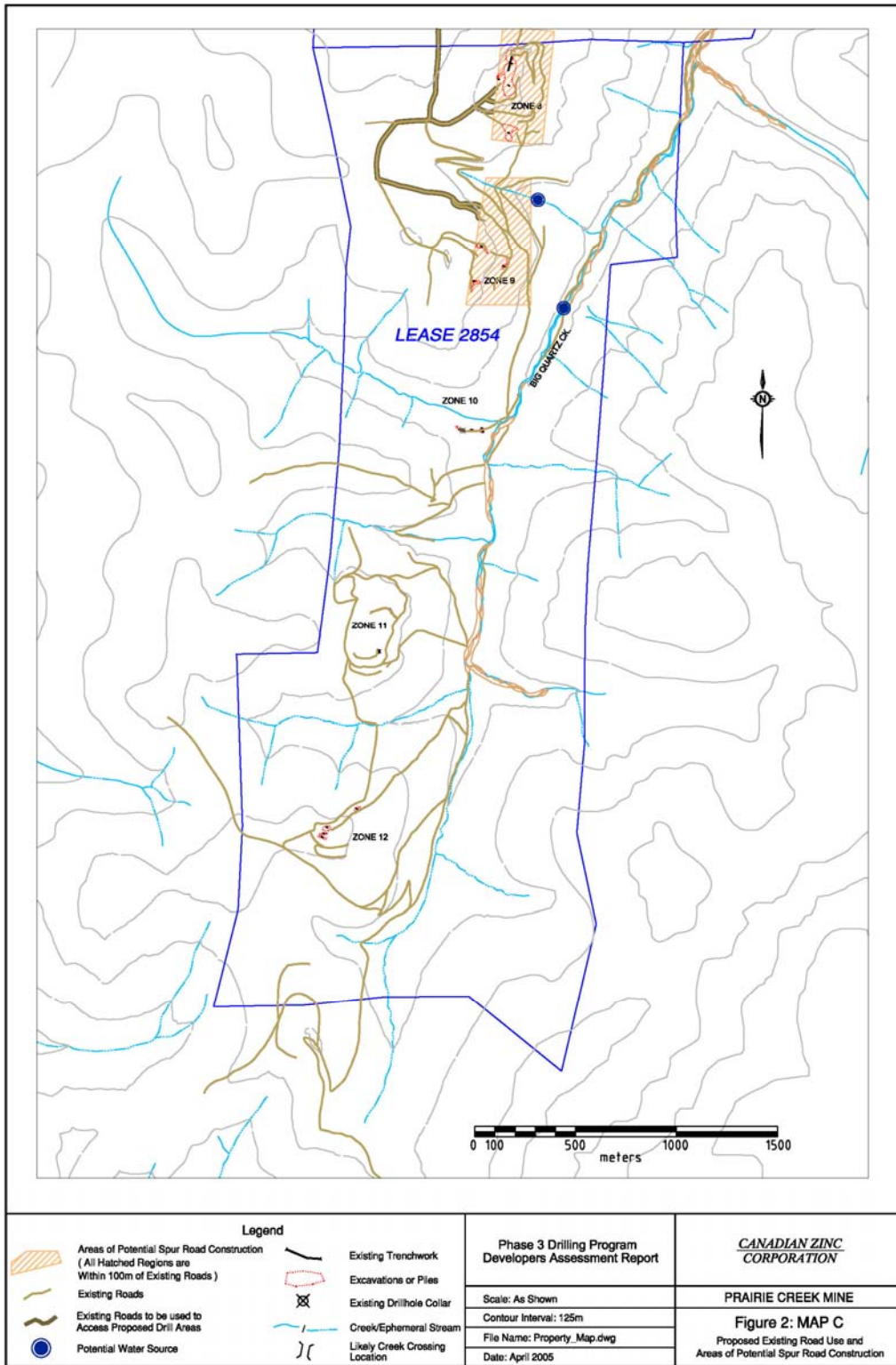
Figure 2 (Maps A, B and C) also shows the areas of potential spur road construction. These areas are derived by overlapping the yellow drilling zones indicated previously with a 100 m perimeter around the existing road network. The resulting areas are therefore also the areas of drilling using skid-mounted rigs.

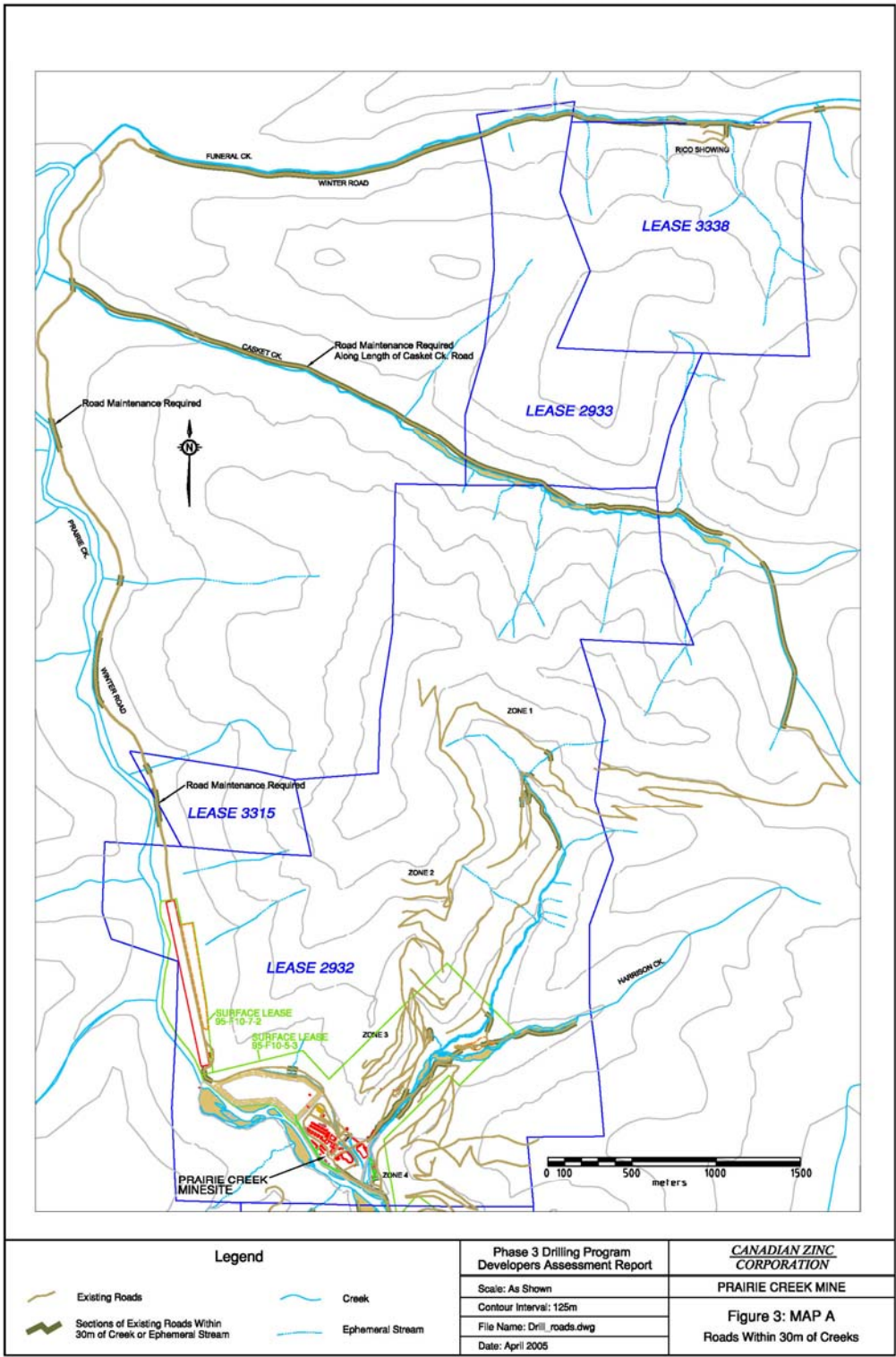
Figure 3 (Maps A, B and C) shows the sections of the existing road network that are within 30 m of creeks. All road sections meeting this criterion are shown, irrespective of whether the road is to be used in the proposed drilling program or not. To determine road sections within 30 m of creeks that may be used, Figures 2 and 3 will need to be considered together.







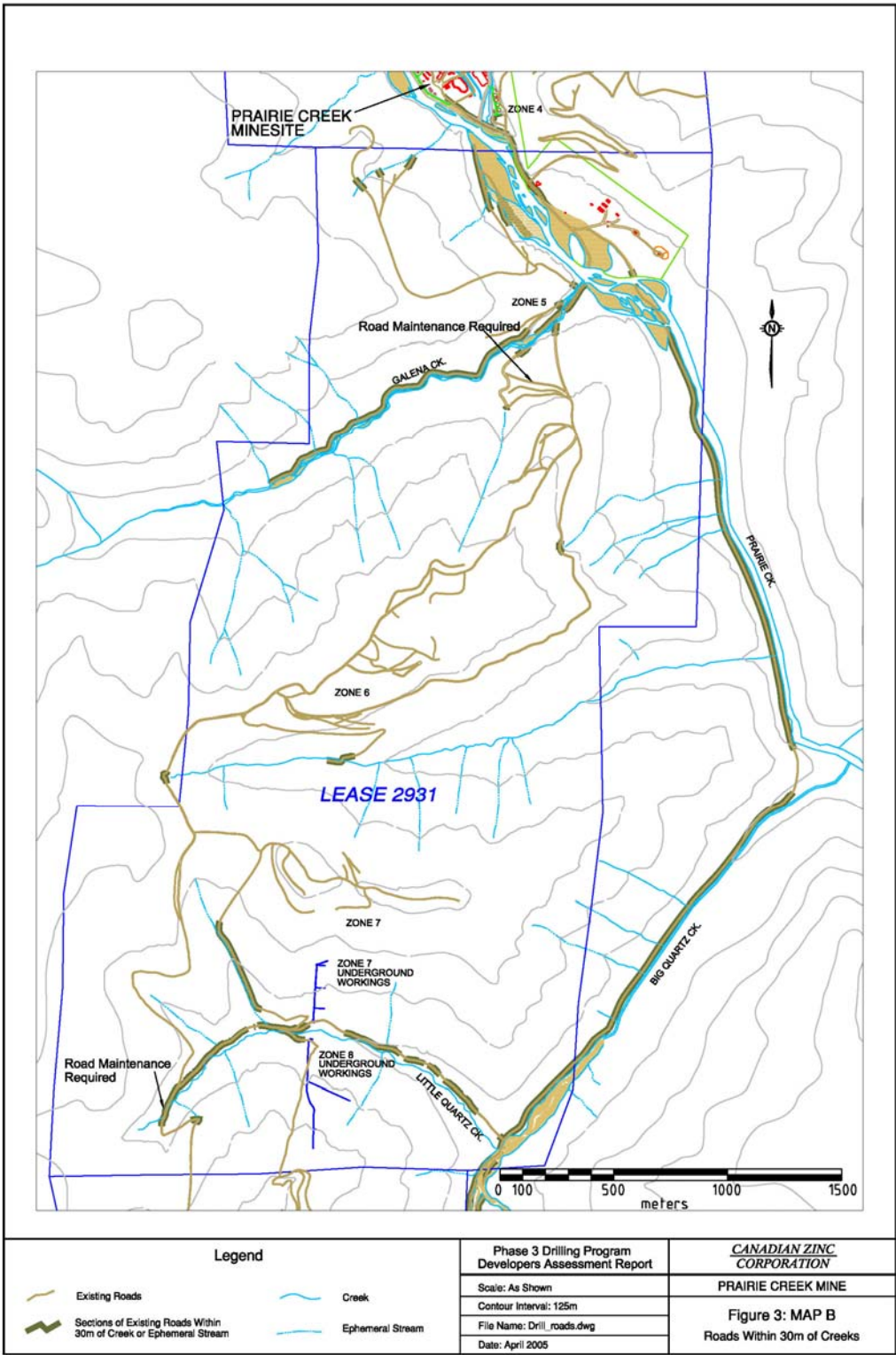


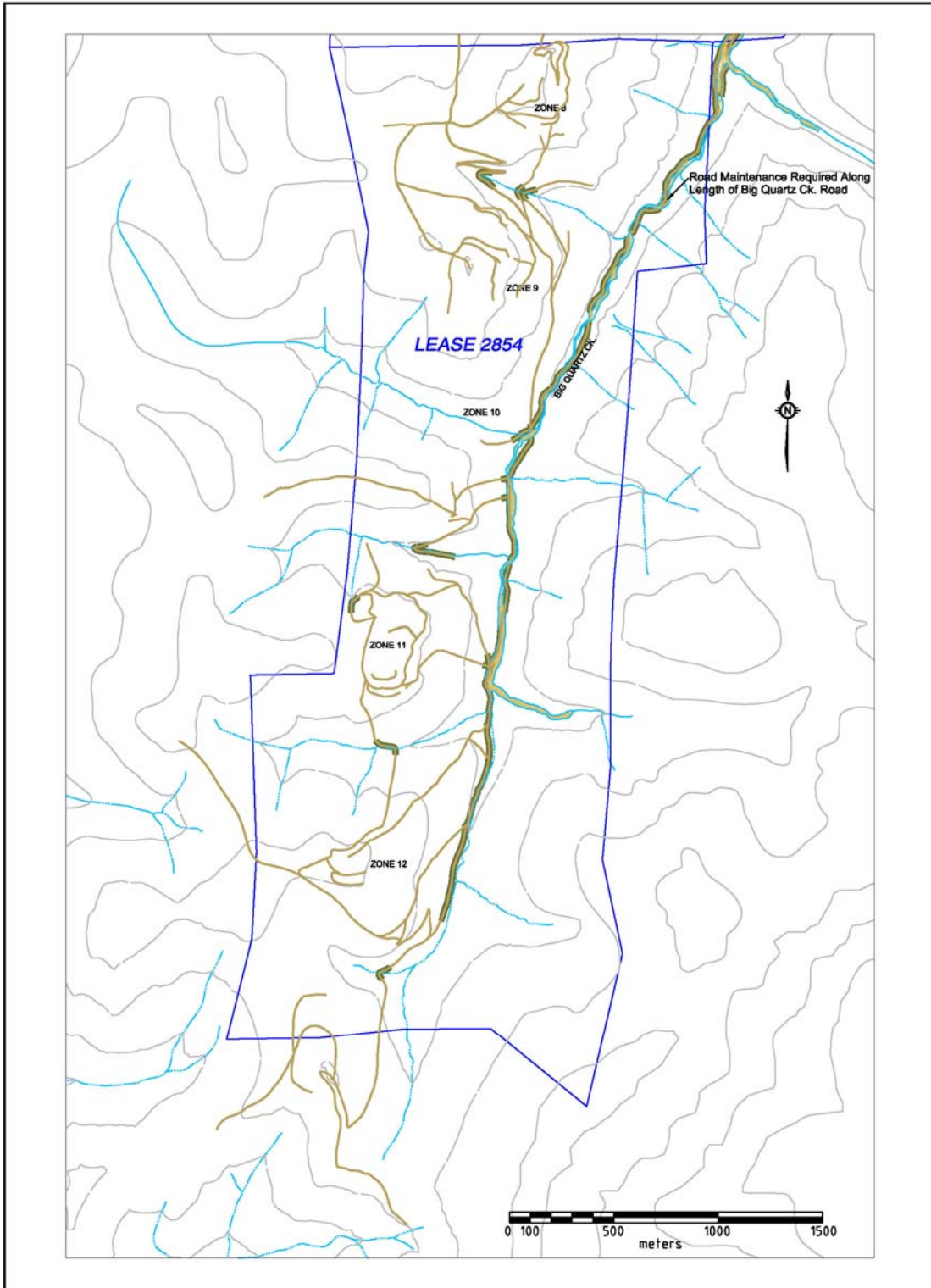










Legend		Phase 3 Drilling Program Developers Assessment Report		<i>CANADIAN ZINC CORPORATION</i>	
	Existing Roads		Creek	PRAIRIE CREEK MINE	
	Sections of Existing Roads Within 30m of Creek or Ephemeral Stream		Ephemeral Stream	Figure 3: MAP A Roads Within 30m of Creeks	
		Scale: As Shown			
		Contour Interval: 125m			
		File Name: Drill_roads.dwg			
		Date: April 2005			





Legend		Phase 3 Drilling Program Developers Assessment Report		<i>CANADIAN ZINC CORPORATION</i>	
	Existing Roads		Creek	PRAIRIE CREEK MINE	
	Sections of Existing Roads Within 30m of Creek or Ephemeral Stream		Ephemeral Stream		
		Scale: As Shown		Figure 3: MAP C Roads Within 30m of Creeks	
		Contour Interval: 125m			
		File Name: Drill_roads.dwg			
		Date: April 2005			

2.1.2 Road Erosion, Stability and Construction

Item B-1 c) of the TOR asks CZN to identify where road conditions or road alignment is a potential concern in terms of stability and erosion. Figure 3 also shows locations on the existing road network where there are known erosion issues.

Access to the areas south of Prairie Creek is gained by fording the creek where Galena Creek enters the main stem from the south-west. The road on the south-west bank then crosses Galena Creek several times over a steep 400 m stretch. The steepness of this road section is a problem for equipment, and proximity to and crossing Galena Creek is not ideal. CZN intends to construct a new road section to avoid this existing section of road. Alternatives are limited because the valley climbs steeply from Prairie Creek upstream and downstream of the crossing location. CZN believes that a suitable road can be built just downstream on Prairie Creek from the existing one. After crossing Prairie Creek, the new road section would head almost due south upslope, away from Galena Creek and avoiding the crossing of it.

Also south of Prairie Creek, an existing road follows Little Quartz Creek, and is located on a bench on the north bank. While not in the creek bed, this road is within 30 m of the creek over most of its length. As this road will likely be used in the drilling program, it will be inspected at the outset to assess whether any realignments are required and feasible, and to review requirements for runoff and sediment control.

Drilling will take place in proximity to Casket Creek. The preferred access route to this area is via the winter road between the airstrip and Casket Creek, and then the road which runs parallel and close to Casket Creek. However, there are two places on the winter road section where Prairie Creek has encroached and 'reclaimed' the ground. Therefore, access to the area will likely be gained by using the road that travels east and then north from Zone 1. There are several switch-backs on this road which are prone to erosion. The road will be inspected for runoff and sediment control requirements before use, at the switch-back locations in particular.

Also north of the mine, drilling may occur on the Rico claim. In addition to the winter road sections that are missing, the road that parallels Funeral Creek on the way to Rico is within 30 m of the creek for nearly all of its length. Field inspection will be required to determine if and how this existing road can be used if a skid-mounted rig is to drill at Rico.

CZN invited Fisheries and Oceans (DFO) to visit the site and provide advice and guidance regarding creek crossings, existing road management and new road construction. DFO plan to visit in June 2005, the exact timing to be subject to the schedules of DFO and CZN staff, and the absence of snow cover to allow unobstructed observation of conditions. CZN look forward to DFO's visit and comments, and will make program planning and construction adjustments based on the comments as appropriate.

Item B-1 f) of the TOR asks CZN to provide any protocols or practice codes that CZN uses to identify problems with the road network, and mitigation measures proposed to alleviate the situation. To date, CZN has not used any such protocols or practice codes. As stated on page 24 of the DPD, CZN will use the new Prospectors and Developers Association of Canada's (PDAC)

Environmental Excellence in Exploration (E3) e-manual for drilling. The manual describes approaches to avoid or minimize impacts from vegetation clearance and road construction, and provides guidance for runoff and sediment control. The manual will be used for all new road construction, and for 'retro-fitting' existing roads where they are used. The most relevant section of the manual has been reproduced in Appendix A for reference. In their response to the draft TOR, DIAND offered to provide references for documents relating to road construction and reclamation in mountainous areas of BC and Yukon. CZN has made a request to DIAND to provide these, and intends to acquire the documents and study their contents for potential application to the drilling program.

Regarding material for road construction, local areas of excavation generally provide sufficient roadbed materials for requirements. Talus cover is found near bedrock exposures and along most hillsides throughout the property. This talus cover consists of an irregular mix of various sizes of eroding bedrock, ranging from large slabs to 10-40 cm size rocks in a gravelly to sandy matrix. Soil development is minimal. Perma-frost occurs sporadically throughout the area, especially on north facing slopes, and creates more difficulty in accessing roadbed materials in these areas. CZN consults with the DIAND inspectorate regarding its need for road maintenance and the locations and extent of roadbed material excavation.

2.1.3 Road Network Responsibility

There is no bonding in existence for reclamation of existing roads associated with the Mining Leases at Prairie Creek. CZN anticipates that, at the regulatory stage, bonding requirements will be discussed for the reclamation of roads used for the Phase 3 drilling program.

CZN undertook a review of old files to find any information on Inspector's directions in regards to the condition and use of the existing road network. No such information was found.

2.2 AERIAL PHOTOGRAPHIC IMAGES

Copies of 1964 air photographs (figure 4 and 5) have been provided to the MVEIRB in electronic format. The exact date of these is not known, but they likely date from the early 1960's (probably 1964). These aerial black and white photographs are on a large scale, approximately 1:50,000. The Prairie Creek area is shown prior to any significant exploration and development.

Copies of black and white orthophotos at a scale of 1:2,000 (figure 6) and dated July 1994 are also provided in electronic format. These detailed air photographs consist of a series of 11 photographs which have been stitched together in a continuous north-south fashion. The air photographs show 25 m contour intervals and the road system at the site prior to the 1994/5 exploration program. A number of "spur" roads were built during the 1995 program.

The aerial photographs provided are considered proprietary by CZN, and we request that they be treated as confidential.

2.3 DRILLING AND DRILLING SITES

As stated in the DPD, the proposed exploration program will consist of diamond drilling at up to 60 drill sites. At each site, up to three holes would be drilled. The number of holes per site will vary based on a number of factors, such as: what is discovered in the first hole; how much detail is needed for confident geological interpretation; and, how accessible the surrounding ground is for drill sites. CZN does not envisage three holes at every site. Most likely, the total number of sites will be less than 60, and the average number of holes per site will be between one and two.

As noted on page 30 of the DPD, each drill rig has a steel tank for water supply and additive mixing, if necessary. At each drill site, a shallow pit is dug for drill water returning at the hole collar to settle out drill cuttings. Only one such pit will likely be needed per drill site, the pit having the capacity to service multiple holes. If, because of physical constraints, a large enough pit cannot be excavated, then an additional pit will be dug and linked to the first.

During the drilling process, additives may be used. These are supplied by West Coast Drilling Supplies of Delta B.C. The additives are used to maintain drill water circulation, protect the drill bit, and lubricate the ‘string’ of drill rods and coupling/uncoupling tools. The different additives and their functions are as follows:

- 550X Polymer. Concentrated, granular copolymer of sodium acrylamides/acrylates used to stabilize hole walls, lessen torque, increase penetration and reduce water consumption.
- GSX 20 Bit Coolant. Sulphured biodegradable complex. Provides constant cooling by instant heat transfer, and hence reduces wear. It is only used in certain down-hole cases.
- Calcium Chloride. Used to prepare brine solutions, weight polymer muds and keep fluids from freezing.
- Linseed Soap. A mixture of linseed oil, fatty soaps and surfactants. It increases core recovery and drill bit life.
- Big Bear Rod Grease. Specially thickened extreme pressure grease with additives that provides corrosion, wear and oxidation resistance.
- Kopr Kote. Powdered lead particles fused with micro-sized copper flakes and amorphous graphite. Used on tool joints to prevent seizing and damage to rod threads and collars. Very small quantities are used.

Each of the skid-mounted drill rigs is approximately 7 metres long and 4 metres wide, and has an 8 metre tower that is fully adjustable to accommodate vertical or inclined holes. The drill is contained within a wood-frame shack. Drill rods and other equipment are contained in separate sloops adjacent to the rig. Prepared drill pads vary in size depending on the terrain as they must be large enough to manoeuvre the drill into position and accommodate the accessory equipment. The pad would need to be at least twice the length and width dimensions of the rig. Therefore,

the typical pad area is approximately 112 m², and will not change if multiple holes are drilled from it.

The area designated under LUP MV2001C0022 for the Phase 2 surface exploration drilling program is shown on Figure 2.

Since CZN has owned the property (including its predecessor San Andreas Resources), 161 diamond drill holes have been completed from the surface. The company has not been involved in any surface blasting of trenches or advancement of any underground development. Prior to San Andreas, Cadillac Mines and their predecessors are estimated to have completed over 130 surface diamond drill holes throughout the property, along with over 5 km of underground development within the Main Zone area and 500 m of tunnelling in Zones 7 and 8. Numerous trenches were also blasted and excavated within Zones 1 through 12 during this time.

3.0 PROJECT RESPONSE TO ENVIRONMENTAL SENSITIVITY

Item C of the TOR asks CZN to identify how it will modify its drilling program in response to environmental sensitivity. In the DPD, CZN identified a number of approaches that were designed to account for environmental sensitivity. The more important ones are as follows:

- Because of the potential for Arctic grayling migration up Prairie Creek in the spring (although existing data suggests they do not migrate beyond the mouth of Prairie Creek), CZN undertook not to cross Prairie Creek with heavy equipment until after June 15.
- Because heavy equipment in particular can have hydrocarbon residues on the undercarriage which could impair water quality during creek crossings, CZN plans to steam-clean all such equipment at a permanent cleaning station adjacent to the Tank Farm before the equipment crosses Prairie Creek, and hand-clean the equipment before return crossings.
- Rather than undertake extensive road building to access the southern-most zones and the Gate claims, CZN opted to use a helicopter-portable drill rig for drilling in these areas.

In addition to the above, there remains flexibility in the drilling program to make modifications in response to perceived environmental sensitivities. The main modifications that can be made are the timing of drilling at specific locations, and the selection of specific drill site locations given that the ability to adjust the angle and direction of drilling allows some flexibility in terms of the location of the drill collar at surface. The timing of drilling at specific sites can be adjusted to avoid issues such as creek crossings during high flows, wet or unstable ground, or the proximity of wildlife at a sensitive time, Dall sheep during lambing for example. At any particular time, CZN will have a number of drill targets in an area. Within reason, there will be latitude to alter the preferred order of drilling so that time can elapse to allow an environmental sensitivity at a specific site to pass, reduce or be mitigated. If there are persisting problems with some sites, it should be possible to select different sites, or drill at angles from other sites in order to test the targets of interest. Another modification that can often be made is related to access. For many locations, there is more than one route to the drill site, providing an alternative access if there is a sensitivity associated with one route.

A number of sensitivity criteria were listed in the TOR for consideration of project responses. Each of these is discussed below. It is understood that thresholds need to be considered when evaluating the criteria. To this end, CZN believes the thresholds should be measurable where possible, and not arbitrary. With measurable thresholds, there should be less chance of a misunderstanding later, and greater confidence in the application of the sensitivity criteria in fostering real environmental impact reduction.

Steep Topography

As noted above, there are two locations where the topography to be crossed is particularly steep, the south-west bank of Prairie Creek at the creek crossing location near Galena Creek, and the switch-backs on the road that accesses the area near Casket Creek. To access the areas south-west of Prairie Creek, the choice of road alignment options is limited. The best alignment appears to be on the south-east side of Galena Creek. This alignment will still be quite steep, and appropriate erosion and sediment control measures will need to be incorporated into the road construction given the proximity of Prairie Creek. Similar measures may need to be retro-fitted to the switch-backs on the road to Casket Creek, although this location is a lesser concern because it is distant from the nearest creek, which is Harrison Creek. The flow in this creek disappears into the stream bed in the Mill area which would also limit dispersal of any suspended sediment.

CZN agrees that there should be suitable thresholds, the exceedence of which would indicate a need for additional control measures. For steep topography as that described above, the main concern is erosion and sediment production. Observation of a plume of suspended sediment in receiving waters that can be directly correlated with the drilling program would indicate a failure of control measures, and should trigger an immediate revision of those measures to rectify the situation. However, this approach relies on detection, observations, and the good faith of the operator. Therefore, in addition, CZN will endeavour to comply with federal suspended sediment guidelines for the protection of aquatic life. These guidelines specify that, during low flow periods, suspended sediment concentrations should not increase more than 25 mg/L from background concentrations, and during high flow periods, the same guideline applies for background concentrations of 25–250 mg/L. For background concentrations in excess of 250 mg/L, concentrations should not increase by more than 10%.

CZN proposes to collect water samples on a weekly interval from Prairie Creek when Phase 3 drilling operations are in progress. Three locations will potentially be sampled: a location upstream of activities to serve as a reference; just downstream of Galena Creek when either Prairie Creek is being crossed or drilling is in progress in the Galena Creek catchment using a skid-mounted drill rig; and, just downstream of Big Quartz Creek when drilling is in progress in the Big Quartz Creek catchment using a skid-mounted drill rig. Sampling will occur 2 weeks before drilling is due to commence to acquire ‘baseline’ data. Sampling at the Galena Creek and Big Quartz Creek sites will only occur when skid-rig drilling is active in those catchments. This approach will confirm the demonstrable protection of Prairie Creek water quality.

Soils with High Erosion/Compaction/Sedimentation Potential

CZN is presently not aware of any areas proposed for drilling that have soils with a high potential for erosion, compaction or sedimentation. The soil cover in the area is thin (typically less than 0.1 m), and there is rock exposure in many places. Where natural erosion of exposed rock has occurred, the eroded material is predominantly sand and gravel size particles. Therefore, the risk of water quality impact from the erosion and sedimentation of fine particles would appear to be limited. However, CZN will not rely on this, and will apply mitigation measures for all work areas as a safeguard, with a focus on road construction and use.

If soil erosion and sedimentation problems are encountered that do not respond sufficiently to mitigation measures (based on observation of runoff and/or increased sediment levels in local creeks), CZN will consider the increased use of heli-drilling. Because of the potential for impacts associated with road construction, CZN is already planning to use a helicopter to drill in Zones 10-12 in the south, and on the Gate claims. There are practical limitations with heli-drilling. Because the rig will be smaller, its productivity will be lower, and drilling cannot continue beyond about 300 m. Because the more accessible, lower risk areas are mostly on hilltops, the drilling requirements are such that skid-mounted rigs are preferable.

CZN is planning to drill in the upper catchment areas of Casket Creek and Little Quartz Creek. The roads in these areas may be within 30 m of the creeks. CZN will inspect these areas before drilling to assess conditions, and decide whether the roads should be moved, or whether adequate mitigation can be implemented. The timing of drilling will also be considered given that creek flows are very low and perhaps zero in these upper catchment areas in the summer. The input of Fisheries and Oceans (DFO) will be sought in this decision-making process, as it will for the Prairie Creek crossing and access to the areas adjacent to Galena Creek.

CZN may want to use a skid-mounted rig to drill at the Rico claim to the north. Drilling depths may be beyond the capability of a heli-drill. Access to this area will require road repairs adjacent to Prairie Creek and Funeral Creek where creek encroachment or erosion has occurred. These roads are also likely to be within 30 m of the creeks. On-site discussions will be held with DFO regarding use of these roads and if and how repairs should be undertaken. CZN is aware that regulatory approval may be required for the repair works since the works may be sufficiently close to the creeks and/or within the active floodplain.

Above Average Stream Flows – Crossings

This item refers to the Prairie Creek crossing since there are no other significant creek crossings in terms of stream flow. CZN has stated that it will not cross Prairie Creek until after June 15 to avoid the possibility of interfering with potentially migrating Arctic grayling. This delay will also mean that the period of peak spring flows will also be avoided. Above average stream flows are also possible after intense rain storms. CZN is unlikely to attempt creek crossings during such flows because the water will be too deep, potentially submerging portions of engines. During storms, the suspended sediment load in Prairie Creek is quite high, producing very turbid waters. Creek crossings, if they are practically feasible, are unlikely to significantly alter the suspended loads. Therefore, this criterion is not considered to be a useful tool for environmental protection.

Flood or Extreme Storm Events

During flood or extreme storm events, there is clearly a greater potential for erosion and sediment transport, especially from unvegetated roads. Road traffic could exacerbate the problem by liberating a greater sediment load for transport. This would not be a concern in upland areas where flow rates would be lower, and road drainage features direct any sediment-laden runoff to vegetated areas for dissipation. However, areas proximal to creeks would be a concern since

there is a greater potential for sediment transport into receiving waters, particularly if drainage structures are at or above capacity. During such events, CZN will limit travel to the upland areas, and only travel in areas proximal to creeks where drainage features are robust or readily capable of managing runoff without impacts to adjacent creeks. If conditions are particularly bad, CZN would likely keep the skid-mounted rigs in upland areas, and use the helicopter on site to ferry crews, thus significantly limiting road use.

Areas of Unique Aesthetic Quality

CZN considers this to be a subjective criterion. Different people are likely to have very different perspectives on what is representative of aesthetic quality, and for different reasons. In the areas proposed for drilling, there is no single area that is markedly different from any other. All areas deserve the same level of environmental protection. The only differences that may occur would be related to a specific vegetation occurrence, or the presence or proximity of sensitive wildlife. These are dealt with in the sub-sections below.

Areas Utilized by Fish

Previous data indicated that Bull trout may be present in Prairie Creek near the mine, especially in the mouths of Galena Creek and Quartz Creek, and particularly in Funeral Creek. Grayling have not been detected near the mine. Previous studies also indicate that the occurrence of benthic organisms in Prairie Creek is low, possibly explaining the absence of grayling above the mouth. All sections of Prairie Creek are a concern with respect to sediment discharge, but this has been addressed elsewhere. Therefore, this section is specific to the only significant stream crossing, the Prairie Creek crossing location near Galena Creek. As stated in the DPD, the stream bed at the crossing location is characterised by cobbles and coarse gravel, and is considered to be migration habitat i.e. fish are not expected to reside there, but potentially pass through. Therefore, there appears to be a low potential for significant impacts associated with the use of the crossing after June 15. The crossing of Galena Creek near its mouth would be a greater concern. For this and other reasons, CZN intends to build a new route up the bank on this side of Prairie Creek to avoid crossing Galena Creek. The Prairie Creek crossings are not expected to affect the spawning or rearing of fish in the area, or their food supply.

Areas Used by Wildlife

As noted in the DPD, a variety of wildlife is present in the area, especially Dall's sheep and grizzly bears. Dall's sheep are quite common. The locations, density and habits of the sheep are reasonably well known from observations during site operations. For example, the sheep frequent the rugged terrain east of the mine, and a grizzly bear is occasionally sighted near the mine area (roughly once a year). At the present time, CZN is not aware of specific areas to avoid, or what thresholds should be used to determine if and when project activities should be modified to minimize impacts. For these reasons, CZN will engage a qualified biologist to undertake a survey of the proposed area of drilling. The biologist will be instructed to characterize the use of land by wildlife, and provide guidance on avoidance, thresholds to dictate operational changes, and other mitigation approaches.

Vegetation Communities

As for wildlife, CZN is not aware of specific areas of sensitive vegetation to avoid, or what thresholds should be used to determine if and when project activities should be modified to minimize impacts. The biologist to be engaged to provide advice on wildlife issues will also be responsible for assessing habitat conditions and identifying any particularly vulnerable plant communities in the proposed exploration area, and providing guidance to the exploration team on how to minimize the potential for impacts to any sensitive plant communities.

4.0 PUBLIC CONSULTATION

Phase 3 Drilling

With respect to the consultations undertaken relative to this specific drilling project and outlined in Section 4 of the Detailed Project Description (communities and government), the following issues were raised;

- Mitigating the potential for erosion on the road system, especially in areas close to streams;
- Critical need for employment and business opportunities in the communities; and,
- Why an amendment application to an exploration program would be subjected to a lengthy and costly delay, and the negative message this sends to the industry.

In addition to Section 2.2.2, "Drill Site Access" of the Detailed Project Description, and at the invitation of CZN, Fisheries and Oceans Canada (DFO) and Indian and Northern Affairs Canada (DIAND) officials have agreed to come to Prairie Creek during the summer of 2005 to inspect the road system and creek crossing locations, and review project proposals. The objectives are to identify specific areas where potential erosion problems may arise, and to provide advice regarding the development of mitigation plans.

Deh Cho Land Use Planning Committee

CZN has developed a close working relationship with the Deh Cho Land Use Planning Committee and has agreed to participate fully in the process of helping the Committee develop a workable Land Use Plan for the Deh Cho.

CZN gave Committee staff a tour of the mine site, including drilling operations, during the summer of 2004.

In our discussions to date, no significant conflicting land use goals have arisen as the company's mineral rights, including its right of access, have been protected and maintained under the Deh Cho First Nations Interim Measures Agreement (Sections 19 & 23).

Our joint discussions to date have and will continue to focus on the types of measures CZN would employ to protect the land should it be given authority to develop the mineral property.

5.0 PHYSICAL AND BIOLOGICAL ENVIRONMENT

5.1 AQUATIC RESOURCES AND HABITAT

Potential water source locations (non-ephemeral) to supply the drills are shown on Figure 2. Likely creek crossing locations are shown on Figure 3.

Heavy equipment is required to move the drill rigs and establish drill pads. This equipment would mobilize and demobilize from the mine site for this purpose, and would sporadically be required at the mine site for other activities. The number of Prairie Creek crossings per season would likely be approximately six. Small trucks transporting drill crews and supplies to the drill sites would have at least 2 return trips per day. Supervision of the activity would require an additional truck return trip at least daily, although this may be done with a much smaller quad bike (ATV).

As stated on page 2 of the DPD, crossings of Prairie Creek by heavy machinery will not occur until after June 15 each year because of the possible migration of Arctic grayling. As a result, this also means that any similar crossings of Galena, Little Quartz and Big Quartz creeks will also occur after this date because Prairie Creek has to be crossed before these creeks can potentially be crossed.

Mean monthly flows in Prairie Creek, as monitored at the Water Survey of Canada (WSC) station adjacent to the site over the period 1974-1990, are given in the table below:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Mean Flow (m ³ /s)	1.07	0.77	0.62	1.65	24.97	34.82	23.80	18.86	12.76	5.58	2.61	1.69	9.33

CZN has detailed comprehensive measures to avoid or limit sedimentation in local creeks in Sections 2.2.2 and 3.4 of the DPD, and has further described sedimentation limitation approaches in Section 3 of this document. CZN is confident that application of the techniques thus described will ensure any impacts from increased sedimentation associated with the drilling program will be limited in extent and minor in magnitude. The proposed water quality monitoring for suspended sediment is intended to help confirm this.

Four aquatic surveys of the project area have been undertaken previously, in 1980, 1981, 1994 and 2001, involving eight fieldwork visits. The existing aquatic database is considered to be substantial from the perspective of supporting stream crossings and mitigation plans. No further aquatic surveys to support the proposed drilling program are considered necessary or are being contemplated.

5.2 WILDLIFE AND WILDLIFE HABITAT

Data on helicopter noise was provided by Canadian Helicopters (see Appendix B). The noise level varies with helicopter size and distance from the source. The ambient or steady-state noise level in close proximity to (within 3 feet) the aircraft engine is listed as approximately 110 dBA. However, a small helicopter at a height of 1,000 feet (~305 m) emits approximately 62 dBA.

The American Society of Safety Engineers publish the 'HEARS' noise data for various equipment. Listing II is also given in Appendix B. This listing gives a steady-state noise level for a D8 Cat (the dozer at Prairie Creek used to drag the skid-mounted drills) of 103 dBA. For comparison, an Evinrude snowmobile is listed at 96-110 dBA, and a 1.25 ton truck at 90 dBA.

A single diamond core drilling rig with a standard muffler emits around 83 dBA at 50 feet (~15 m). The standard practice in noise analyses is to use the "inverse-square" rule of sound propagation, which is accurate within 1,000 feet of the noise source. This rule posts a 6 dBA noise reduction for each doubling of distance between source and receiver. The result is 65 dBA are emitted at 400 feet (~120 m) from the source, and 59 dBA at 800 feet (~245 m).

The TOR requests that a comparison analysis be undertaken on the potential disturbance of wildlife by the transportation and operation of a helicopter-portable drill versus a skid-mounted rig transported overland. CZN presumes that this comparison should be based on a drill site not immediately accessible from an existing road, but within 100 m of one. Using a heli-drill would avoid the construction of a spur road. However, using a skid-mounted drill would avoid the use of a helicopter which may negatively impact wildlife if they are in proximity.

Operations at the drill site would be comparable in terms of activity and noise level and duration from the drill engine, irrespective of whether the drill is transported by surface or by air. CZN believes the intent of this comparison is to define situations where impacts from road construction can be avoided by use of the heli-drill, perhaps in locations where road construction and runoff management would be more difficult, or where a creek has to be crossed (which can be regarded as a positive impact management measure since road length is reduced).

As can be seen from Figure 2, the majority of the drilling is to be undertaken in upland areas. Road construction and runoff management in these areas should not be problematic, and any creek crossings would be close to headwaters and thus devoid of fish populations and sensitive fish habitat. Hence, heli-drilling in those situations would not necessarily mean a reduced potential for overall impacts when compared to using road access for drilling.

Use of a helicopter presents a potential for disturbance to several species of local wildlife. This could occur in proximity to the helicopter pad at the site, en route to drill sites if the flight path is close to wildlife locations, and at the drill site itself. CZN will provide a copy of "Flying in Sheep Country: How to Minimize Disturbance from Aircraft" (Leberge Environmental Services, 2002, Mining Environmental Research Group (MERG) Yukon Report 2002-6) to the helicopter pilot and encourage compliance with it. The helicopter pad will be at the existing airstrip where the Prairie Creek valley is broader, and wildlife occurrence is infrequent. The helicopter pilot will be instructed to ascend to a suitable altitude before veering in a particular direction. The

intent is to avoid being proximal to any sensitive wildlife present on the adjacent valley slopes. Where feasible, the helicopter flight path will avoid valley slopes and known areas of wildlife concentrations, especially the resident Dall's sheep population. The helicopter pilot will also be instructed to descend from a suitable altitude to a specific drill location in order to not unduly disturb wildlife in the area. The intent is to not frighten or stress wildlife in the area.

For drilling activity at any one location, it is assumed that wildlife will simply choose to avoid the area of drilling activity and noise. For example, grizzly bears have a sufficiently large range that they will use parts of their range where the disturbance is less, if in fact they are disturbed by localized, short-duration drilling activities.

No matter which approach to drilling is used, CZN believes that the potential for negative impacts on wildlife can be satisfactorily mitigated such that this should generally not be the basis for decision for access to specific drill sites. CZN indicated in the DPD that certain areas would be 'heli-drilled' because of the difficulty of ground access (to the southern-most zones), or lack of existing ground access (to the Gate claims). With the application of the mitigation measures described in the DPD and this DAR, CZN feels it should be able to select the approach to drilling at a particular site based on other constraints, such as rig availability and the required penetration conditions. In any case, the biologist will develop a set of guidelines to deal with specific situations that could arise (e.g., if grizzly bears or Dall's sheep are near a particular helicopter accessible drill site, or along the flight path). These guidelines will be explained to the exploration crew.

The only aquatic habitat in the proposed exploration area consists of Prairie Creek and tributary streams (i.e. there are no wetlands). Known waterfowl that utilize the area include American widgeon and green-winged teal. In terms of migrating and breeding birds in the area, the presence of several other species of ducks is possible. Spotted sandpipers have also been recorded and are commonly associated with stream habitat. Several species of songbirds and raptors are also known or expected to breed in the area. Given the nature of the proposed exploration activity, impacts to migratory birds are not expected. Drilling activity will occur removed from Prairie Creek and its floodplain, and will be localized at upland sites. The crossing of drill rigs and vehicles is not likely to affect waterfowl or shorebirds using the Prairie Creek floodplain, nor is helicopter supported drilling operations. Helicopters are quite adept at avoiding waterfowl and other birds.

The frequency of aircraft at Prairie Creek varies depending on the activity taking place on the site at the time and its demands for supplies. During recent care-and-maintenance activities, service flights have been once per week on average. An average drill program requires a minimum of 2 flights per week for personnel and supplies. A single rotary aircraft would be required at the site if a heli-drill was operating. An aircraft will pass over on the way to Virginia Falls once or twice a week.

Given the normal frequency of fixed-wing flights into the site for camp care-and-maintenance activities, and the additional flights that could occur to service the pilot plant and underground decline development and drilling projects that have already been permitted, the possible increase in flights to service the Phase 3 drilling program would be minor, and are not significant in terms of potential for wildlife impacts. The use of a helicopter in the area does represent a potential for impacts to local wildlife. However, with the mitigation methodology described above, and an undertaking to conduct a wildlife survey to identify any sensitive areas and times of the year, the

potential for such impacts can be minimized and managed.

5.3 RECLAMATION

At present, since CZN does not have a valid Land Use Permit for the Phase 3 drilling area, and there are no provisions for reclamation within the existing Mining Leases and Mineral Claims. Consequently, CZN has no authority to reclaim the existing roads.

Any roads and drill pads utilized by CZN during the course of the drilling program will be reclaimed once the company is confident that it has no further use for them. It is assumed that bonding requirements at the licensing stage will ensure that funds are available for such reclamation. After roads and drill pads have been used, CZN will maintain them such that runoff is managed and sedimentation is minimized until the company is ready to proceed with reclamation.

CZN considers immediate reclamation on specific parts of the road network to be premature since there remains a substantial amount of exploration work to be completed in order to fully evaluate mineral potential and further assess possible mining considerations throughout the property. Any road that may presently be in a more sensitive location, such as near a creek, may still be considered for use in the future as long as proper construction and engineering of the road is completed to sufficiently minimize the potential for environmental impacts.

Section 2 of this DAR described locations on the existing road network that will require rehabilitation in order to be used. These locations were identified on Figure 3.

The “poor condition” of certain road sections should not be the deciding factor in determining whether the road should be immediately reclaimed. The sections in poor condition can be rehabilitated for use, whether or not they are proximal to environmentally sensitive areas. CZN understands that the entire area is environmentally sensitive, and believes that unacceptable impacts are not occurring at present despite a lack of road maintenance for several years. Any road repair and re-use is unlikely to cause a deterioration of these conditions. In some cases, such as in Zones 11 & 12, it is possible that there is a greater potential for impact in gaining ground access to the roads in order to undertake reclamation than to let vegetation naturally invade and provide additional stabilization.

The TOR requested a discussion on the feasibility of ecological restoration. As mentioned above in Section 2, soils in the upland areas where road and drill pad construction will occur are thin, and are likely not very productive. The prevailing vegetation is not expected to be rare, although this will be confirmed with a survey by a qualified biologist. Given these parameters, the prospects for full ecological restoration are considered to be good, despite the limiting factors of climate (short growing season), precipitation (infrequent and occasionally intense in the summer), low natural soil fertility and topography. A soil amendment or slow-release fertilizer could be blended into the soil when it is replaced during reclamation. A seed mix of native vegetation will be selected to quickly re-establish stable conditions and plant cover. An appropriate level of effort will be exerted in all areas where reclamation will be undertaken in order to achieve pre-determined goals. More effort may be needed in some areas where limiting factors are greater, north facing slopes for example. The biologist undertaking the vegetation survey will also be asked to provide recommendations for reclamation and revegetation, and will

assist in selecting the appropriate soil management and seed mix decisions.

For reclamation and revegetation of disturbed areas, the process begins with conservation of cleared vegetation and topsoil, if any, at the construction stage (see E3 guidelines, p. 19). Cleared vegetation is stored for later use either as a sediment control material, or as mulch over replaced and seeded soil. Topsoil, if it is sufficiently developed, is removed separately from the underlying, less fertile subsoil, which at Prairie Creek will likely be weathered rock. For reclamation, after scarifying and contouring the surface, any topsoil removed would be replaced, amended with a fertilizer if necessary, and seeded with a native mix. Mulch may then be placed to stabilize the surface and protect the seed until it has taken root. Roads that were used at Prairie Creek in 1994/95 are still visible in the upland areas. This indicates that 'non-managed' revegetation will take in excess of 10 years in these areas. By managing the reclamation process as described, a self-sustaining vegetation cover should be achievable in much less time. However, CZN does not have the necessary data at present to estimate the time required. When the revegetation strategy and seed mix is discussed with the biologist, an estimate of this time can be developed.

5.4 ENVIRONMENTAL MONITORING

Sediment and Erosion Control

While drilling is in progress, CZN will regularly inspect all roads and drill pads used during the drilling program to ensure erosion control measures are functioning properly, with a minimum inspection frequency of once per week. A full inspection will also be undertaken after significant storm events to ensure repairs are made as necessary, and any erodible material is removed or stabilized. Inspections will continue during the open water season after the drilling program has been completed, but at a progressively reduced frequency as confidence is gained that all areas are stable. Any potentially unstable areas will be attended to, and/or will be subjected to more intensive inspection. Regular monitoring will be suspended in a particular area once that area has been stable for a full year without intervention.

As stated in Section 3 above, CZN proposes to collect water samples on a weekly interval from Prairie Creek when Phase 3 drilling operations are in progress. There will be three locations of sampling; a location upstream of activities to serve as a reference; just downstream of Galena Creek when either Prairie Creek is being crossed or drilling is in progress in the Galena Creek catchment using a skid-mounted drill rig; and, just downstream of Big Quartz Creek when drilling is in progress in the Big Quartz Creek catchment using a skid-mounted drill rig. Baseline sampling will occur 2 weeks before drilling is due to commence. Sampling at the Galena Creek and Big Quartz Creek sites will only occur when skid-rig drilling is active in those catchments.

Stream crossings

Stream crossings will be monitored for visible evidence of significant suspended sediment in downstream water after a crossing, assuming the upstream water is not turbid, or for a significant increase in the suspended load if the water upstream is already turbid. Evidence of increased turbidity would indicate that the crossing was too rapid and unduly disturbed the bed load, or the

crossing occurred when the water level was too high, or the bed load is easily erodable. In the first case, crossing speed will be reduced. In the second case, crossings will be delayed until water levels are lower. In the latter case, stream bed protection may be required to limit sediment suspension, or a different crossing found.

Note that the Prairie Creek crossing will also be the subject of suspended sediment sampling downstream.

Reclamation and Revegetation

Areas being reclaimed and revegetated will be monitored closely (weekly) during the process to ensure placed material is stable and seeds are germinating. Any instability will be addressed, and if germination is not occurring, additional seeding and/or fertilizer addition will take place. Once germination has occurred, monitoring frequency will reduce to 2-3 weeks to check on the progress of vegetation growth. Monitoring will cease when vegetation has grown sufficiently to be self-sustaining.

6.0 HUMAN ENVIRONMENT

6.1 ECONOMIC IMPACTS

The company has been in discussions with the local college in Fort Simpson about training opportunities in relation to diamond drilling, catering and camp maintenance. Any drill contractor hired for the program would be encouraged to enter into a business arrangement with the local communities. In-direct services, such as air service support, expediting and general camp maintenance, may also be applicable.

The 2004 diamond drill program provided seasonal jobs for 10 northern residents, and an expense of almost \$700,000 was incurred directly in northern wages, contractors and service providers. This represented approximately 30% of the total program budget. Depending on the scope of the proposed drill program, a similar proportion of expenditure in the north would probably result.

Job opportunities would be available as drillers or drill helpers after suitable training has been completed by the applicants. The company would prefer to hire locals, however, candidates must possess the skills and attributes required to safely and efficiently carry out the program. In-direct job opportunities relating to support services such as camp maintenance, heavy equipment operation, air services and catering would also be considered.

6.2 AESTHETIC QUALITY OF THE PRAIRIE CREEK PROPERTY

Consistent with Dene Values, CZN is committed to treating the land with respect by maintaining a clean and well ordered work place over the entirety of its Prairie Creek mineral property.

In addition to ensuring that the property is kept clean and that operations are undertaken in the manner authorized, CZN will also ensure that the affected community leadership is fully informed well before the commencement of any and all operations.

CZN has approached Parks Canada with the aim of exploring the potential for concluding a Cooperation Protocol, which could include, amongst other matters, a sharing of CZN transportation and related supply infrastructure, CZN's on-site medical capabilities and provide Parks Canada with support in pursuing its priorities for further research and interpretation with respect to the Nahanni National Park Reserve.

6.3 CULTURAL AND HERITAGE RESOURCES

The TOR asks CZN to discuss the feasibility of having an archaeologist, or someone capable of identifying heritage sites and artefacts, present during any major soil disturbances. As stated previously, only spur road construction is contemplated as part of the drilling program, and along with drill pad preparation, soil disturbances will likely be fairly minor. The majority of activity will occur in the upland areas where soils are thin. This will further reduce the possibility of soil

disturbance. During past exploration campaigns, including in 1994/95 when significant access road construction occurred, no evidence of heritage sites or artefacts was found. Therefore, it does not appear to be necessary or warranted to have an archaeologist present for the drilling program. As noted in the DPD, project staff and drill crews will be alerted to the potential for presence of archaeological remnants, to not disturb them, and to notify the camp manager if any are found.

CZN is receptive to the initiative of having an environmental monitor present during the drilling program. The monitor would preferably be a First Nations resident of the area, with an understanding of the issues associated with the program. If such a monitor can be found and engaged, one of the person's tasks could be the observation of areas of disturbance for the possible presence of archaeological remnants.

7.0 POTENTIAL IMPACTS

Potential impacts associated with each of the subject areas discussed in the TOR under physical, biological and human environment are discussed below. A table format has been used, and the discussion is based on the common list of criteria for each subject, as requested in the TOR.

7.1 AQUATIC RESOURCES AND HABITAT

Issues	Erosion of roads and drill pads, sedimentation of creeks. Creek crossings.
Direction	Negative.
Magnitude	Sedimentation potentially significant if erosion is severe in proximity to Bull trout populations. Crossings of Prairie Creek in spring during potential Arctic grayling migration to spawn could interfere with some individuals.
Geographical Extent	Sedimentation could extend from Funeral Creek in the north to a short distance downstream of Big Quartz Creek. Unlikely to extend to Nahanni River.
Duration	Erosion might persist for duration of drilling program, dissipating progressively thereafter.
Frequency	Sedimentation could be continuous, although exacerbated during storm events. Crossings would be of very short duration, but multiple.
Probability	Sedimentation depends on mitigation measures and soil type. Proper road and pad construction with mitigation measures, and retro-fitting measures to old roads used, should limit probability to low end. In any event, soils may not be erodable. Probability of impact from crossings reduced to low end by avoiding crossings until after June 15, even if grayling actually migrate – existing data suggests they do not utilize Prairie Creek above the mouth.
Reversibility	Sedimentation, if it occurs, would dissipate after program is completed. Sediment would readily be adsorbed in spaces between gravel and cobbles common in the creek bed. Possible impact from crossings would cease immediately after crossings cease.
Cumulative Effect	Project activities presently do not cause any sedimentation of Prairie Creek – site runoff is controlled by Catchment Pond – discharge is clear. No present crossings of Prairie Creek. Conclusion – no cumulative effect.
Significance	If soils are erodable, significance will be low if mitigation strategies effectively applied to land disturbance near creeks. If soils are not erodable, significance will be low in any event. Significance of Prairie Creek crossings will be low if they are confined to period after June 15, and the existing crossing location near Galena Creek is used as it consists of low-value, cobble migration habitat.

7.2 WILDLIFE AND WILDLIFE HABITAT

Issues	Disturbance from helicopter activity. Disturbance from drilling in areas more remote from camp site.
Direction	Negative.
Magnitude	Magnitude moderate if activity exerts undue stress on Dall's sheep, which use traditional ranges. Low for other species which would likely use other parts of their natural ranges.
Geographical Extent	Limited to the helicopter flight paths and drilling locations.
Duration	Helicopter use would be infrequent, restricted to drill crew shift changes, fuel supply runs, rig moves and other helicopter uses in the area. Applicable to the period of the heli-drilling operation only. Drilling would be largely continuous during period of program operations, ceasing on program completion.
Frequency	During operations, helicopter flights would likely average 5-6 per day. Drilling would be largely continuous at 2-3 sites.
Probability	With helicopter pad location at the airstrip, and flight paths restricted to areas away from ridges where Dall's sheep reside, or where they are located during the natality period, probability of significant impacts should be low. Impacts from drilling locations should be low since sheep usually inhabit steep terrain east of the mine site which is not likely to be targeted by drilling operations. Other wildlife species will use other parts of their natural ranges.
Reversibility	As the potential for disturbance is very short term, any impacts would be reversible after a short period after disturbances have stopped.
Cumulative Effect	Since there is limited potential for residual effects on wildlife, cumulative effects on wildlife are not expected. There is no current helicopter use by CZN, and other such traffic in the area is very infrequent. On-going camp operations appear not to have unduly interfered with wildlife. Sheep are common to the site and use the artificial lick. Grizzlies are in the area and occasionally pass through.
Significance	With management of helicopter activity and flight paths, the potential for impacts is not considered significant.

7.3 RECLAMATION

Issues	Replacement of plant cover/wildlife habitat. Revegetation of disturbed surfaces.
Direction	Negative.
Magnitude	Moderate in the locations where there is actual disturbance, but low in general because fraction of habitat and vegetation disturbed is very low even for the immediate area of the mine.
Geographical Extent	Very limited.
Duration	Extends from initial clearing to time required for vegetation to be self-sustaining.

Frequency	Continuous, although magnitude of impact progressively reduces after soil replacement and seeding.
Probability	High, localized impact will occur.
Reversibility	Completely reversible with managed and monitored reclamation.
Cumulative Effect	Impact would be cumulative with habitat loss from previous exploration programs, but amount of loss is still very minor in context of the larger area. Area affected would reduce after reclamation since existing roads that are used will be reclaimed also.
Significance	Low because of very small area and commitment to managed and monitored reclamation.

7.4 HUMAN ENVIRONMENT

Issues	1. Employment. 2. Proximity to NNPR. 3. Heritage/artefact disturbance.
Direction	1. Positive. 2 & 3. Negative.
Magnitude	1. Low at this stage because manpower requirement is low. 2. Low because site operations remain relatively unobtrusive and the NNPR is still some distance away overland and downstream on Prairie Creek. 3. Not sure how significant an impact would be if it occurred.
Geographical Extent	1. Limited because of low manpower requirement. 2. Limited to project area. 3. Limited to relatively small area of disturbance.
Duration	1. & 2. Limited to duration of drilling program. 3. Long-term if heritage or artefact resources disturbed or damaged.
Frequency	1. & 2. Continuous for drilling program. 3. Infrequent because could only occur when new roads or pads are built.
Probability	1. High probability of occurrence. 2. Low because significant impacts to water quality, wildlife and wildlife habitat will be avoided by application of effective mitigation measures and reclamation. 3. Very low because no evidence of archaeological resources have been found to date, and crews will be instructed not to disturb any archaeological resources if they are found.
Reversibility	1. Employment stops at the end of the drilling program. 2. Any environmental impacts would reverse soon after program completion. 3. Potentially not reversible if heritage or artefact resources disturbed or damaged.
Cumulative Effect	1. Cumulative with previous employment and employment on other projects. 2. Not cumulative because there have been no environmental impacts on NNPR. 3. Not cumulative because there have been no impacts to date.
Significance	Low for all three because of low manpower requirement, low potential for NNPR impact, and low potential for heritage/artefact resource occurrence.