



PCDHFC Mitigation 2020

Information to our Members and Range Users
January 2020

V1.2 Jan 16/2019



Summary

- PCDHFC received a report by the CFO of BC indicating we were not approved for certain shooting activities because of deficiencies identified in an inspection conducted in July 2018
- The deficiencies include theoretical risk of projectiles escaping the range due to degradation or previous design of berms
- PCDHFC is bound to address these concerns with mitigation: building or change in operations
- Temporarily all users (members and renters) must abide by restrictions until mitigation measures are conducted: i.e. building up berms, construction, permanent change in allowed courses of fire



Timeline 1/2

- Previous inspector had approved all activities and ranges as recently as 2017 when Range 10 was approved
- July 3 2018 PCDHC received a new inspection site visit as part of a BC-wide round of inspections of all ranges
- During the inspection and in following months the inspector delivered preliminary recommendations and gave an interim approval to continue operating while a report was in progress
- During this time, PCDHFC acted on the notes and made some preliminary changes including rebuilding side berms on lower ranges, repairing materials, repairing berms on Range 7, adjusting target placement and delivering new operational notes to committees and law enforcement renters, as well as responding to the notes of the inspector with corrections and requests



Timeline 2/2

- Mid-December 2019 the inspector finally delivered the inspection report
- A meeting of the trustees was called the same week. A mitigation committee was struck
- As soon as the report was internalized, letters were sent / emailed to all range users with immediate operational changes so that we could be in compliance with the CFO
 - Including: Range 10 was temporarily closed,
 - pistol shooting was suspended on Range 7,
 - 200m was suspended on Range 7,
 - various other distance restrictions were put in place on Ranges 1 and 3
- The mitigation committee immediately began researching solutions
- January 14th: Directors discussed the recommendations of the committee and have approved in principle mitigation plans pending professional surveying and engineered designs



Deficiencies identified by Inspector

- Range 1, Range 3, Range 7, Range 10:
 - Insufficient height of backstop berm to prevent escape of projectiles within angle of error of rifle users and pistol users from the furthest firing line
 - Backstop insufficient to prevent escape in the event of ground strikes (rounds hitting range floor in error and ricocheting at 30 degree angle from shots taken from furthest firing line)
 - PCDHFC cannot restrict activities in areas beyond our properties affected by possible escape
- Law Enforcement activities:
 - No special dispensation allowed to law enforcement renters
- Other deficiencies listed:
 - Were already addressed in preliminary maintenance and work prior to report
- Discrepancies in report:
 - Errors, corrections in report will be addressed as a second priority



R1

R3

R10

R7

Port Coquitlam & District
Hunting & Fishing Club
14 min drive - work

Coquitlam
British Columbia
49.315630, -122.749124



Deficiencies explained

From RCMP: “Range Design and Construction Guidelines”

1.2.2 OVERTSHOT AND RICOCHET PROJECTILES

An overshoot is defined as a bullet (or projectile) that carries over, or beyond, a backstop that was intended to stop it. By definition, an overshoot projectile will not have struck any downrange object before travelling beyond the backstop. Overshoots are distinctly different from ricochets.

Ricochets are bullets (or projectiles) that have struck a surface or object and had their trajectory altered as a result. Ricochets may *or may not* clear the backstop; however, due to their unpredictability, a worst case scenario will be applied.

In the report risk of ricochets as pertains to PCDHFC are from “ground strikes”. Shots hitting the ground and theoretically leaving the range.



Deficiencies Explained

From RCMP: "Range Design and Construction Guidelines"

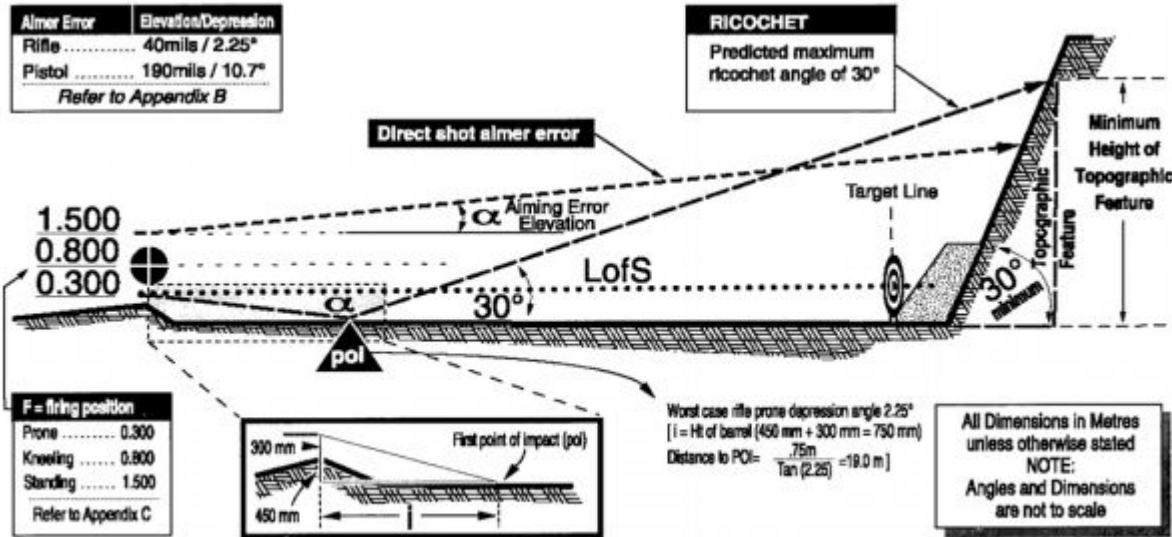


Figure 20: Calculating Total Backstop Heights (Flat Range Floor)



Mitigation Solutions available 1/6

<i>Solution</i>	<i>Challenge</i>
Raise berms and backstop to counter overshoot and ground-strikes	<ul style="list-style-type: none">• Need enough base in topography to build up berms. Earth berms are built up like pyramids. Additional height requires more base.• More earth means more building means more material needed means more \$\$\$• There may not be space for increasing base / height on R1• R7, R1, R3 may have large requirements• (Employing “Hesco” baskets or walls may alleviate this)



Mitigation Solutions available 2/6

<i>Solution</i>	<i>Challenge</i>
Overhead baffles	<ul style="list-style-type: none">• Need engineering to design baffles to adequately encapture errant rounds from <u>all</u> approved calibres• Angle of error for pistols is greater than rifles and need specific baffles for pistols• Overhead baffles will reduce member view / outdoor experience ie. “no blue sky”• Overhead baffles will <u>not</u> be compatible on R3 with Trap and Skeet• \$\$\$ needed to build at all possible positions if present distances are to be preserved



Mitigation Solutions available 3/6

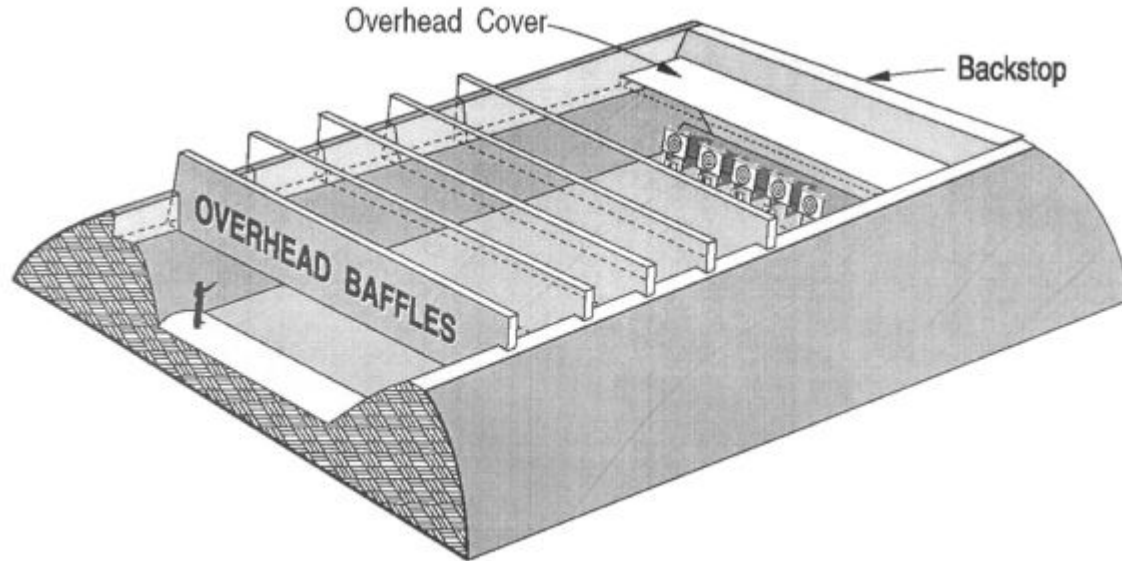


Figure 42: Type II Baffled Handgun Range



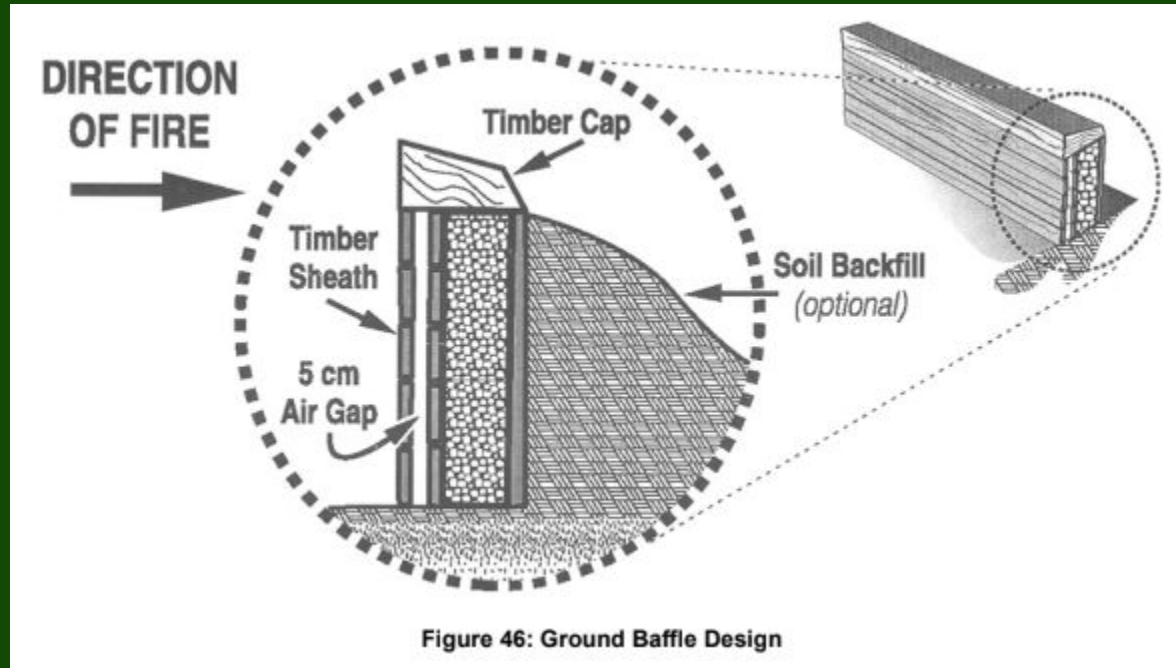
Mitigation Solutions available 4/6

<i>Solution</i>	<i>Challenge</i>
<p>Ground baffles - low barriers placed at ground that capture ricochets or angle of error rounds hitting the ground</p>	<ul style="list-style-type: none">● Not as hard to build or engineer● Possibly solved by low earth berms of sufficient angle with building forms● But will create movement problems for users walking the floor / law enforcement users and committees (IPSC / dynamic shooting) on lower ranges because of tripping hazard which will require changes to courses of fire● Will obstruct prone shooting unless platforms can be utilized (as second priority)● Will require constant maintenance



Mitigation Solutions available 5/6

From RCMP: “Range Design and Construction Guidelines”





Mitigation Solutions available 6/6

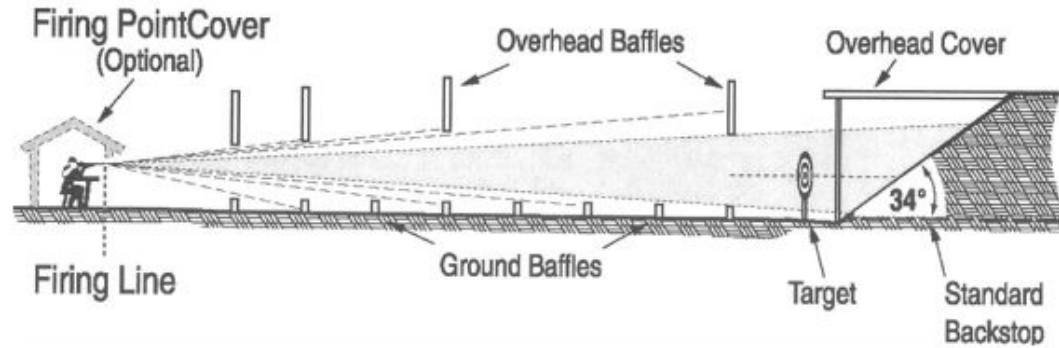
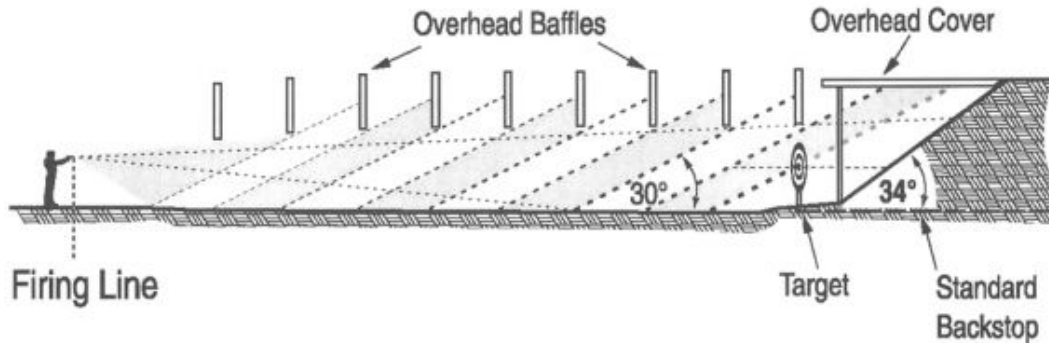


Figure 44: Type I Baffled Range





Mitigation Solutions not achievable

Possible solutions suggested by the CFO:

<i>Solution</i>	<i>Challenge</i>
Fully enclosed ranges	<ul style="list-style-type: none">• Given the present lifespan suggested by the lease (three years + wind down period of two years) the club cannot borrow funds to create structures that we will have to remove• Recent fully enclosed ranges now used by law enforcement locally have cost taxpayers up to \$20m
Raising backstop berms <u>alone</u>	<ul style="list-style-type: none">• Possibly huge height / base increases on R7 and R1 based upon CFO inspector's measurements



Mitigation Plan 1/7

Addressing projectile escape for both overshoot and ground strikes will require a combination of both increasing berm / backstop height *and* ground baffles / overhead baffles.

Employing baffles will reduce need for extreme height increases in berm / backstop.

Least desirable solution is shortening distances.



Mitigation Plan 2/7

Immediately: professional surveying will be conducted on R1, R3, R10 and R7 to verify requirements. After surveying, exact berm/backstop increases will be known as well as placement of ground / overhead baffles as needed and budget determined.

The board will engage engineers to design overhead baffles that meet range construction guidelines.

Ground baffles can be built up without engineering as soon as exact placement is discovered through surveying.



Mitigation Plan 3/7

Range 7

<i>Solution</i>	<i>Details</i>
Backstop / Berm:	<ul style="list-style-type: none">● Raise height by X metres
Ground baffles:	<ul style="list-style-type: none">● Construct X ground baffles at:<ul style="list-style-type: none">○ X distances○ Construction of ground baffles will be completed as soon as surveying is complete
Overhead baffles:	<ul style="list-style-type: none">● Overhead baffles to be constructed at:<ul style="list-style-type: none">○ X distance● Pistol to be allowed only at bays X-Y<ul style="list-style-type: none">○ Pistol baffles to be constructed at X distance○ Pistol only users to be directed to R10
Additional:	<ul style="list-style-type: none">● Lower all target heights by X metres, especially at 200m● Prone platforms to be constructed for bays X-Y



Mitigation Plan 4/7

Range 10

<i>Solution</i>	<i>Details</i>
Backstop / Berm:	<ul style="list-style-type: none">• Reduce range distance to < 25m• Raise berm to required height given shortened distance
Ground baffles:	<ul style="list-style-type: none">• Construct X baffles at:<ul style="list-style-type: none">○ X distances
Overhead baffles:	<ul style="list-style-type: none">• Overhead baffles to be constructed at:<ul style="list-style-type: none">○ X distance
Additional:	<ul style="list-style-type: none">• With new firing line, a new foundation / shelters will need to be built for comfort of users• All pistol-only shooters directed here



Mitigation Plan 5/7

Range 10

Temporarily: all pistol-only users will be allowed to shoot at Range 10 with staff supervision and with coordinated radios

- Targets will be moved up to the berm / backstop
- A new firing line will be established at < 25m
- When building is ready to begin, R10 will be closed until end of construction



Mitigation Plan 6/7

Range 1

<i>Solution</i>	<i>Details</i>
Backstop / Berm:	<ul style="list-style-type: none">● Increase height by X metres
Ground baffles:	<ul style="list-style-type: none">● Construct X baffles at:<ul style="list-style-type: none">○ X distance○ Y distance
Overhead baffles:	<ul style="list-style-type: none">● Overhead baffles to be constructed at:<ul style="list-style-type: none">○ X distance
Additional:	<ul style="list-style-type: none">● Special instructions to LE renters● Dynamic courses of fire need to account for existence of ground baffles



Mitigation Plan 7/7

Range 3

<i>Solution</i>	<i>Details</i>
Backstop / Berm:	<ul style="list-style-type: none">• Increase height by X metres
Ground baffles:	<ul style="list-style-type: none">• Construct X baffles at:<ul style="list-style-type: none">○ X distance○ Y distance
Overhead baffles:	<ul style="list-style-type: none">• Overhead baffles to be constructed at:<ul style="list-style-type: none">○ X distance
Additional:	<ul style="list-style-type: none">• Special instructions to LE renters• Dynamic courses of fire need to account for existence of ground baffles



Other Pre-Building Interim measures

<i>Problem</i>	<i>Interim measure</i>
R7 Pistol users cannot shoot on R7 or R10	<ol style="list-style-type: none">1. Increase <i>Range User Course</i> frequency so that members with RUC can use their pistols at lower ranges self-supervised2. Firing line temporarily moved up to berm on R10. Steel targets moved to backstop.
R7 No shooting to 200m	<ul style="list-style-type: none">• No interim solution until berm height is raised
R7 No prone shooting	<ul style="list-style-type: none">• Platforms to be built for prone shooters that raises shooter height. Design TBD after surveying.



CALL FOR VOLUNTEERS

In order to keep costs down, especially in lieu of our need to preserve funds for future club plans, we are asking for members with the following expertise to step up to help in the mitigation.

If you have expertise in the following areas:

- Engineering
- Landscaping
- Construction
- Surveying

please submit your contact information to the following form:

<http://pcdhfc.com/volunteering-and-work-parties/>

Or write to secretary@pcdhfc.com



YOUR SUPPORT IS
CRITICAL TO KEEP
OPERATING



Feedback

Any questions or feedback please email:

secretary@pcdfhc.com or pres@pcdfhc.com

Thank you for taking the time to read and for your future actions