

**MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION AGENDA**

Vern Halter, Mayor

PLANNING COMMISSION

- Mary Anderson, District 1
- Jason Ortiz, District 2
- Patricia Chesbro, District 3
- Colleen Vague, Chair, District 4
- Chris Elder, District 5
- Stafford Glashan, District 6
- Sassan Mossanen, District 7



George Hays, Acting Borough Manager

**PLANNING & LAND USE
DEPARTMENT**

- Alex Strawn, Acting Director of Planning & Land Use
- Kim Sollien, Planning Services Manager
- Mark Whisenhunt, Acting Development Services Manager
- Fred Wagner, Platting Officer
- Karol Riese, Planning Clerk

*Assembly Chambers of the
Dorothy Swanda Jones Building
350 E. Dahlia Avenue, Palmer*

**August 3, 2020
REGULAR MEETING
6:00 p.m.**

Ways to participate in Planning Commission meetings:

IN PERSON. Should you wish to testify in person, please adhere to the 6-foot distance between yourself and others. It is highly recommended that you bring your own mask to wear.

IN WRITING: You can submit written comments to the Planning Commission Clerk at planning@matsugov.us.

TELEPHONIC TESTIMONY:

- Dial 1-855-225-1887; Conference ID #7854; You will hear “Joining conference” when you are admitted to the meeting.
- You will be automatically muted and able to listen to the meeting.
- When the Chair announces audience participation or a public hearing you would like to speak to, press *3; you will hear, “Your hand has been raised.”
- When it is your turn to testify, you will hear, “Your line has been unmuted.”
- State your name for the record, spell your last name and provide your testimony.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

II. APPROVAL OF AGENDA

III. PLEDGE OF ALLEGIANCE

IV. CONSENT AGENDA

Items on the consent agenda are considered to be routine and non-controversial by the Commission and will be approved by one motion. There will be no separate discussion of

these items unless a Commission Member so requests, in which case the item will be removed from the Consent Agenda and considered in its normal sequence on the agenda.

- A. MINUTES
 - 1. July 6, 2020 Minutes
 - 2. July 20, 2020 Minutes

- B. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS
 - 1. **Resolution PC 20-27**, A conditional use permit in accordance with MSB 17.70 – Regulation of Alcoholic Beverages Uses, for the operation of an alcoholic beverage package store, located at 23471 S. Parks Hwy; (Tax ID #7561000L001); within Township 26 North, Range 5 West, Section 29, Seward Meridian. Public Hearing: August 17, 2020 (*Applicant: Stephen Mierop, dba Three Bears Alaska, Inc. Staff: Mark Whisenhunt*).
 - 2. **Resolution PC 20-28**, A modification of an existing Conditional Use Permit in accordance with MSB 17.60 — Conditional Uses, for the expansion of an existing junkyard/refuse area operation, located at 572 S. Vine Road and 600 S. Vine Road (Tax ID # 6919000L002 & 6919000L001); within Township 17 North, Range 2 West, Section 10, Seward Meridian. Public Hearing: August 17, 2020 (*Applicant: Gerold Jacobsen, dba Alaska Car Crushing, Staff: Mark Whisenhunt*).

- C. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS
(None)

- V. COMMITTEE REPORTS

- VI. AGENCY/STAFF REPORTS

- VII. LAND USE CLASSIFICATIONS

- VIII. AUDIENCE PARTICIPATION (*three minutes per person, for items not scheduled for public hearing*)

- IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS (*Public Hearings shall not begin before 6:15 p.m.*)

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the following matters or request for more information from the applicant at the time of the introduction. All questions and requests submitted by the Commission shall be in writing, and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing.

- A. **Resolution PC 20-26**, A Conditional Use Permit in accordance with MSB 17.25 — Talkeetna Special Land Use District, for the operation of commercial storage unit facility greater than 6,000 square feet in size, located at 26731 S. Talkeetna Spur (Tax ID # 7909000L001); within Township 25 North, Range 4 West, Section 7, Seward Meridian (*Applicant: Gilliland, dba Alaska Self Storage, Staff: Mark Whisenhunt*).
- X. PUBLIC HEARING: LEGISLATIVE MATTERS
- A. **Resolution PC 20-12**, recommending Assembly adoption of MSB 17.68, Outdoor Shooting Facilities, in order to establish standards for commercial, educational, and nonprofit outdoor shooting facilities (*Staff: Alex Strawn*).
- XI. CORRESPONDENCE & INFORMATION
- XII. UNFINISHED BUSINESS
- XIII. NEW BUSINESS
- XIV. COMMISSION BUSINESS
- A. Adjudicatory
- B. Upcoming Planning Commission Agenda Items (*Staff: Alex Strawn*)
- XV. DIRECTOR AND COMMISSIONER COMMENTS
- XVI. ADJOURNMENT (Mandatory Midnight)
- In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an interested party. See MSB 15.39.010 for definition of "Interested Party." The procedures governing appeals to the Board of Adjustment & Appeals are contained in MSB 15.39.010-250, which is available on the Borough Internet home page, <http://www.matsugov.us>, in the Borough Clerk's office, or at various libraries within the Borough.*

Disabled persons needing reasonable accommodation in order to participate at a Planning Commission Meeting should contact the Borough ADA Coordinator at 861-8432 at least one week in advance of the meeting.

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MINUTES

**MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION MINUTES****REGULAR MEETING
July 6, 2020**

The regular meeting of the Matanuska-Susitna Borough Planning Commission was held on July 6, 2020, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:00 pm by Chair Colleen Vague.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:

Ms. Mary Anderson, Assembly District #1, Vice-Chair
Mr. Jason Ortiz, Assembly District #2
Ms. Patricia Chesbro, Assembly District #3
Ms. Colleen Vague, Assembly District #4, Chair
Mr. Chris Elder, Assembly District #5
Mr. Stafford Glashan, Assembly District #6 – remotely
Mr. Sassan Mossanen, Assembly District #7

Planning Commission members absent and excused were:

Staff in attendance:

Ms. Eileen Probasco, Planning Department Manager
Ms. Kim Sollien, Planning Services Manager
Ms. Shannon Bodolay, Assistant Borough Attorney
Mr. Mark Whisenhunt, Planner II
Mr. Joseph Metzger, Planner II
Mr. Emerson Krueger, Land Management Specialist
Ms. Karol Riese, Planning Commission Clerk

II. APPROVAL OF AGENDA

Chair Vague inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection. Need public hearing dates on introduction cases.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Mr. Shapiro.

IV. CONSENT AGENDA**A. Minutes**

1. June 8, 2020, regular meeting minutes
2. June 15, 2020, regular meeting minutes

B. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS
*(There were no introductions for quasi-judicial matters.)***C. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS**

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1. **Resolution PC 20-23**, a Resolution recommending Assembly approval of an ordinance amending MSB 15.24.030(C), The Matanuska-Susitna Borough Lake Management Plan, adopting MSB 17.59.063 Adoption and Amendment of Regulations on Lakes; and MSB 17.59.065 Regulations on Lakes; and repealing MSB 15.24.031 Initiating and Amending Lake Management Plans, MSB 17.58 Motorized Uses on Lakes and Waterways, and MSB 17.59.060 Limitation of Uses in their entirety Public Hearing: July 20, 2020 (*Staff: Eileen Probasco*).
2. **Resolution PC 20-24**, a Resolution recommending Assembly approval of an ordinance amending MSB 43.05.015(B)(3) to adopt the 2020 Subdivision Construction Manual. Public Hearing: July 20, 2020 (*Staff: Fred Wagner, Jamie Taylor, and Eileen Probasco*).
3. **Resolution PC 20-25**, a Resolution recommending Assembly approval of an ordinance adopting MSB 11.12 Driveway Standards in order to ensure driveways within borough right-of-ways minimize negative impact to drainage, maintenance, and safety of the traveling public. Public Hearing: July 20, 2020 (*Staff: Alex Strawn and Jamie Taylor*).

Chair Vague read the consent agenda into the record.

Chair Vague inquired if there were any changes to the consent agenda.

1. Move Introduction for Public Hearing: Legislative Matters C (1) Resolution 20-23.
2. June 15, 2020 Minutes Commissioner Ortiz was present.

GENERAL CONSENT: The consent agenda was approved as amended without objection.

V. COMMITTEE REPORTS

(There were no committee reports.)

VI. AGENCY/STAFF REPORTS

(There were no agency/staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following persons spoke regarding Lake Management Plan:

Patty Fischer, Esther Huddleston, Rick Taylor, Dan Hull, Travis Welton, Robert Yundt, Joel Fuller, Jason Solsvig, James Mulhaney, Michelle LaRose, and Tabith Nardini.

The following person spoke regarding concerns with public process: Mr. Eugene Carl Haberman.

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS *(Public Hearings not to begin before 6:15 pm)*

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Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

- A. **Resolution PC 20-18**, a request under MSB 17.65 Variances, for a variance from the 75-foot shoreline setback requirement under MSB 17.55, located at 5782 S. Big Lake Road (Tax ID# 6142000L006); within 17 North, Range 3 West, Section 29, Seward Meridian (Applicant: Dennelle Seetomona on behalf of Janice Ellsworth, Staff: Joe Metzger).

Chair Vague read the resolution titles into the record.

Chair Vague:

- read the memorandum regarding potential quasi-judicial or ex-parte actions into the record.

Mr. Metzger provided a staff report:

- staff recommended approval of the resolution with conditions.

Commissioners questioned staff regarding:

- Was there a mandatory Land Use Permit applied for?
- What plans were reviewed
- Requirements in 1991 – same setback requirements
- Lot to left owned by applicant; existing exemption for that structure
- When did the applicant become aware they needed a variance; structure was completed at that point
- Does the applicant have experience with construction
- Code requirements when obtained property

Chair Vague invited the applicant or their representative to provide an overview of their application.

Ms. Dennelle Seetomona provided a statement regarding the allowable building area,

Commissioners questioned the applicant regarding:

- Experience with building
- Building on property to west

Chair Vague opened the public hearing.

(none)

There being no one to be heard, Chair Vague closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Elder moved to approve Resolution PC 20-18. The motion was seconded.

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Commissioner Elder:

Small lot, existing cabin, built after they knew they were in violation of setback and decided to go forward with it anyway. Therefore, I think that special condition that requires a variance are not caused by the person seeking the variance is what I am going to hang my hat on and I'm not going for this.

Commissioner Mossanen:

- You need to meet all the conditions.

Commissioner Anderson:

- I agree with Commissioner Elder. They purchased the property in 1991, there was a cabin on it and they used it until it became unusable; regardless, even the builder should have known that there was a 75 foot setback and should have advised them of that; just going ahead a building something and asking forgiveness doesn't guarantee it because one of the things it says is that it is illegal to get a variance if there are conditions that were caused by the person seeking the variance and the whole act of this building the house kindof made the purpose of needing to have the variance. I'm just not comfortable moving forward with this.

Commissioner Glashan:

- I agree with my fellow commissioners. I agree that the lot is small; but those easements were there when they purchased the lot – there are lots that are unbuildable. It would have been helpful to hear from the applicant and that the applicant didn't own the adjacent property that has similar conditions. I totally agree with the other commissioners and their comments.

Commissioner Vague:

- There is a buildable spot on that lot – it wouldn't be a very big one. I have a hard time, these are really hard decisions to make, they had the ability to build a house. I get the neighbors comments – there's a junk cabin, and it is lowering your house value but what the neighbors have built, the sizes of houses, none of that is relevant to the Borough restrictions and the setbacks that are there for a reason. You build what you can build on a lot that you have purchased. I am in agreement as well. I would have a really hard time moving forward with this variance for those reasons.

VOTE: The main motion failed by a vote of 0-7.

- B. **Resolution PC 20-19**, a Conditional Use Permit in accordance with MSB 17.60 – Conditional Uses, for the operation of a marijuana cultivation facility, located at 2439 S. Ridgecrest Road (Tax ID# 17N02W20B005); within Township 17 North, Range 2 East, Section 20, Seward Meridian (*Applicant: Heather Allen, on behalf of Bristol Bay Bud Company, Staff: Joe Metzger*).

Chair Vague read the resolution title into the record.

Chair Vague:

- read the memorandum regarding potential quasi-judicial or ex-parte actions into the record.

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Mr. Metzger provided a staff report:

- staff recommended approval of the resolution.

Commissioners questioned staff regarding:

- Could you refresh my memory for the setbacks on the side lot lines.
- You mentioned this is a residential use property.

Chair Vague invited the applicant or their representative to provide an overview of their application.

Mr. Richard Allen, applicant, stated that he had nothing further to add and would answer questions.

Commissioners questioned the applicant regarding:

- How much commercial traffic do you expect to and from the facility?
- Page 346 of the packet, there is something called an as-built that is not stamped by a surveyor, who actually did this?
- Can you give a further explanation with the driveway; it looks as though you have permission from the neighbor to use their driveway.
- Could you elaborate more on what you meant as far as zero traffic?

Chair Vague opened the public hearing.

The following persons spoke in opposition of Resolution PC 20-19:

- Sam Hanson regarding odor and lack of support from AMCO.
- Travis Welton regarding odor, traffic, notices to be posted on property, and SOA policies.
- William Schulz regarding building of home around the facility, odor, and commercial business in a residential area.
- Sherry Schulz regarding residential area and subdivision, cap on marijuana growth, odor, and traffic.
- Dave Glenn regarding commercial operation in a residential area doesn't fit.
- James White regarding traffic and odor.
- Walter Jackson regarding 600 feet notification limit – everyone should be notified, and property values.

The following person spoke regarding concerns with the public process and marijuana facilities:
Mr. Eugene Carl Haberman.

Chair Vague invited staff to respond to questions and statements from the audience.

Mr. Metzger responded to questions and statements from members of the audience.

Mr. Metzger stated that they had nothing further to add.

Chair Vague invited the applicant to respond to questions and statements from the audience.

Mr. Allen stated that they had nothing further to add.

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There being no one else to be heard, Chair Vague closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Chesbro moved to approve Resolution PC 20-19. The motion was seconded.

Discussion ensued regarding:

Commissioner Chesbro:

- Appears the application is complete and meets all requirements of MSB Code.

Commissioner Mossanen:

- As Planning Commissioners we find ourselves in a difficult situation when there are regulations and laws in place. These are not for us to interpret and as long as the application meets the legal requirements that exist in law. We have to follow MSB Code

Commissioner Ortiz:

- I echo the same thing. I would encourage the public if there is a problem with the process, I would contact your representative and follow that process to do it. I do empathize over all those things, but you have to look at it from an appellate point of view; if something were to happen on the legal side, the Commission has its hands tied on certain things.
- Remember, in the borough; there is no zoning – there is no such thing as residential designated or commercial designated zoned lands. We regulate land use by conditional use permit, and as long as the applicant has met all of those, we are bound to approve it. We do not have zoning – we are stuck with what we have until we come up with something better.

VOTE: The main motion passed without objection.

- C. **Resolution PC 20-20**, a Conditional Use Permit in accordance with MSB 17.60 – Conditional Uses, for the operation of a marijuana cultivation facility, located at 47265 S. Brookestar's Circle; (Tax ID# 22N04W01A004); within Township 22 North, Range 4 West, Section 01, Seward Meridian (*Applicant: Kenneth Champ, of Arctic Hydroponics, LLC, Staff: Mark Whisenhunt*).

Chair Vague read the resolution title into the record.

Chair Vague:

- read the memorandum regarding potential quasi-judicial or ex-parte actions into the record.

Mr. Whisenhunt provided a staff report:

- staff recommended approval of the resolution.

Commissioners questioned staff regarding:

(none)

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Chair Vague invited the applicant or their representative to provide an overview of their application.

Mr. Kenneth Champ, applicant, stated that he had nothing further to add and would answer questions.

Commissioners questioned the applicant regarding:

- generator and air irrigation system in greenhouses

Chair Vague opened the public hearing.

The following person spoke regarding concerns with the public process: Mr. Eugene Carl Haberman.

The following person spoke regarding concerns of the borough reputation, and applications will keep coming: Terry Welton

Chair Vague invited staff to respond to questions and statements from the audience.

Mr. Whisenhunt stated that the wrong date for emailing to Susitna Community Council in the staff report; it should be May 26, 2020.

Chair Vague invited the applicant to respond to questions and statements from the audience.

Mr. Champ stated that they had nothing further to add.

There being no one else to be heard, Chair Vague closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Mossanen moved to approve Resolution PC 20-20. The motion was seconded.

Discussion ensued regarding:

Commissioner Mossanen:

- As a representative for District 7, where this license is being applied for, the people in District 7 voted on three separate occasions on cannabis. The last time this was voted on, it passed by a 64% majority. The people in District 7 spoke pretty clearly on what privileges they want themselves and their neighbors to have.

VOTE: The main motion passed without objection.

Recess – reconvene at 8:40 pm

D. Resolution PC 20-21, a Conditional Use Permit in accordance with MSB 17.30— Conditional Use Permit (CUP) for Earth Materials Extraction Activities, for the extraction of approximately 407,300 cubic yards of earth material from a 19-acre site within two

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parcels totaling 160 acres, located within Township 17 North, Range 1 East, Sections 1&2, Tax Parcels D21 & D5 (Tax ID# 17N01E02D021 & 17N01E01D005); Seward Meridian (Applicant: MSB Land Management Division, Staff: Mark Whisenhunt).

Chair Vague read the resolution titles into the record.

Chair Vague:

- read the memorandum regarding potential quasi-judicial or ex-parte actions into the record.

Mr. Whisenhunt provided a staff report:

- staff recommended approval of the resolution.

Commissioners questioned staff regarding:

(none)

Chair Vague invited the applicant or their representative to provide an overview of their application.

Mr. Butch Shapiro, MSB Central Landfill Manager, applicant, provided an overview of their application and would answer questions.

Commissioners questioned the applicant regarding:

- Commissioner Anderson: The contractor you had dropped out, and you are trying to find a new contractor?
- Commissioner Glashan: I like end dates on these types of permits; would five (5) years be okay, or would ten (10) years be better?
- Mr. Whisenhunt asked the Commission to make a correction on page 572 of the packet; the hours of operation should start at 8:00 am (the 11th condition of Resolution 20-21).

Chair Vague opened the public hearing.

The following person spoke regarding concerns with the public process: Mr. Eugene Carl Haberman.

Chair Vague invited staff to respond to questions and statements from the audience.

Mr. Whisenhunt stated that they had nothing further to add.

There being no one else to be heard, Chair Vague closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Anderson moved to approve Resolution PC 20-21. The motion was seconded.

Discussion ensued regarding:

Commissioner Anderson:

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- This is an ongoing process that we have discussed a couple of different times at the Planning Commission, and people have come in and testified numerous times about the gravel extraction. I am pretty comfortable with them moving forward; it is just part of a bigger plan moving cells or opening and closing other cells, and we can't do that with gravel in the way. I feel this is helping us to continue the process that we have already discussed before.
- Time:

Commissioner Mossanen:

- I echo Commissioner Anderson's statements, and if we can't keep it out of there, then we have to deal with it seems like the way to do it.

MOTION: Commissioner Anderson moved a primary amendment that all extraction activity associated with the permit shall be completed no later than December 31, 2030, and correct hours of operation to begin at 8:00 am. The motion was seconded.

Commissioner Anderson:

- I believe giving an end out, lets the public know this is not going on forever; just makes it clearer.

Commissioner Chesbro:

- I echo Commissioner Anderson's comment.

VOTE: The primary amendment passed without objection.

VOTE: The main motion passed as amended without objection.

X. PUBLIC HEARING LEGISLATIVE MATTERS

(There were no legislative public hearings.)

XI. CORRESPONDENCE AND INFORMATION

(There was no correspondence and information.)

XII. UNFINISHED BUSINESS

- A. **Resolution PC 20-15**, recommending Assembly approval of an ordinance amending the Definition of Encroachment in MSB 11.10.010(A)(1) and amending MSB 17.23.150 Port Development Permit Required (*Staff: Alex Strawn and Emerson Krueger*).

Chair Vague read the resolution titles into the record.

Mr. Krueger provided an update of what happened with the Port Commission:

Commissioners questioned staff regarding:

(none)

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Chair Vague opened the public hearing.

The following person spoke regarding concerns with the public process: Mr. Eugene Carl Haberman.

There being no one else to be heard, Chair Vague closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Chesbro moved to approve Resolution PC 20-15. The motion was seconded.

Discussion ensued:

Commissioner Chesbro:

- I appreciate that we heard from the Port Commission.

Commissioner Mossanen:

- We had a specific request that was addressed.

VOTE: The main motion passed as amended without objection.

XIII. NEW BUSINESS

(There was no new business.)

XIV. COMMISSION BUSINESS**A. Adjudicatory**

- a. **Resolution PC 20-23**, a Resolution recommending Assembly approval of an ordinance amending MSB 15.24.030(C), The Matanuska-Susitna Borough Lake Management Plan, adopting MSB 17.59.063 Adoption and Amendment of Regulations on Lakes; and MSB 17.59.065 Regulations on Lakes; and repealing MSB 15.24.031 Initiating and Amending Lake Management Plans, MSB 17.58 Motorized Uses on Lakes and Waterways, and MSB 17.59.060 Limitation of Uses in their entirety (*Staff: Eileen Probasco*).

Commissioner Chesbro:

- I think that the public has the opportunity to balance the demands with the lake ecosystem. I think that it is important to have a process that works well; I don't think that is the only thing the borough should think about. As I listened to testimony tonight, I don't think the document states not clearly describe what I thought was the intent to the changes to the lake management system. I believe we should not deal with it at the next meeting, but we should maybe reconceptualize the way this is written, so it makes more sense. Even as I was reading it, and I have the background of listening to some of the things we have talked about in the past, I was confused, and so I think that again as I heard the testimony this evening, it needs another look to make clearer about what the intent of this is.

Commissioner Glashan:

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- It is not a prescriptive ordinance; based on the size of the lake, there can still be various requirements based on the people that live around the lake, it just makes the overall process more streamline. I think it is more people not understanding it then opposed to it.

Discussion ensued regarding more clarification of what would happen if denied, the pleasure of the Commission, and public comment. Need time to repackage this and to educate the public about the proposed changes; open houses; there are different scenarios when the shoreline is privately owned.

MOTION: Commissioner Chesbro moved to postpone PC Resolution 20-23 a Resolution recommending Assembly approval of an ordinance amending MSB 15.24.030(C), The Matanuska-Susitna Borough Lake Management Plan, adopting MSB 17.59.063 Adoption and Amendment of Regulations on Lakes; and MSB 17.59.065 Regulations on Lakes; and repealing MSB 15.24.031 Initiating and Amending Lake Management Plans, MSB 17.58 Motorized Uses on Lakes and Waterways, and MSB 17.59.060 Limitation of Uses in their entirety to January 2021. The motion was seconded.

Discussion ensued regarding:

Commissioner Chesbro:

- I believe we need time to get information out and have meetings.

Commissioner Anderson:

- That makes the most sense. Each lake and neighborhood is different.

Commissioner Vague:

- Stay in contact with your planning members.

VOTE: The main motion passed without objection.

- b. Resolution PC 20-29, (Denial of PC 20-18),** adopting findings of fact and conclusions of law supporting the denial of PC Resolution 20-18 concerning a request for a variance from MSB 17.55 to allow an existing single family residence to encroach into the required 75 foot waterbody setback at 5782 S. Big Lake Road (Tax ID# 6142000L006); within township 17 North, Range 3 West, Section 29, Seward Meridian.

Chair Vague read the resolution title into the record.

Mr. Strawn provided the Commission with an overview of the process.

Discussion ensued regarding the pleasure of the Commission – if they wanted to complete tonight or compile and email findings of fact and conclusions of law to Clerk for a clean Resolution.

If the Commission makes a decision contrary to what is presented to them, it is the job of the Commission to come up with the findings to support their action.

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- A definitive moment with the findings of fact that they did not meet all the requirements of an acceptable variance and specifically the situation arose from their own making.
- Section 17.65.030 Cases where the variance is illegal contains three instances in which a variance may NOT be granted which are:
 - (1) special conditions that require the variance are caused by the person seeking the variance;
 - (2) the variance will permit a land use in a district in which that use is prohibited;
 - (3) the variance is sought solely to relieve pecuniary hardship or inconvenience.
- Provide all communications to the Clerk.
- Commission agreed to postpone findings until the July 20, 2020 meeting.

B. Upcoming Planning Commission Agenda Items

Mr. Strawn provided a brief update on projects that will be coming before the Planning Commission.

(Commission Business was presented, and no comments were noted.)

XV. DIRECTOR AND COMMISSIONER COMMENTS

- Ms. Bodolay: Reminder that the public testimony platform is largely developed to allow people to testify. Caution to opening the door regarding dialogue about questions when we have a packed room.
- Ms. Probasco: I have one planning commission meeting left, maybe an assembly meeting or two. I was hoping to get this Lake MP through, but that is okay. I am hoping you folks are receptive to the construction manual that will be coming through your next meeting.
- Ms. Sollien: First meeting at the dais. I will be in Eileen's seat at the next meeting. I will work hard to support you.
- Commissioner Elder: Welcome, Kim. Looking forward to the next couple of months.
- Commissioner Anderson: Thanked the public for coming out and for their testimony and comments. Talked about the conditional use process; change comes at the Assembly level; and encouraged everybody to continue to be active.
- Commissioner Vague: Tonight was interesting. Talked about community members getting involved before it is in their back yard; Commission being held to what the codes are and that the quasi-judicial matters could end up in court; and change is made at the Assembly level. Thank you to staff.

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XVI. ADJOURNMENT

The regular meeting adjourned at 9:55 pm.

COLLEEN VAGUE, Planning Commission
Chair

ATTEST:

KAROL RIESE, Acting Planning Commission
Clerk

Minutes approved: _____

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PLANNING COMMISSION MINUTES****REGULAR MEETING
July 20, 2020**

The regular meeting of the Matanuska-Susitna Borough Planning Commission was held on July 20, 2020, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The meeting was called to order at 6:03 p.m. by Vice-Chair Mary Anderson.

I. CALL TO ORDER, ROLL CALL, AND DETERMINATION OF QUORUM

Planning Commission members present and establishing a quorum:

Ms. Mary Anderson, Assembly District #1, Vice-Chair
Mr. Jason Ortiz, Assembly District #2
Ms. Patricia Chesbro, Assembly District #3
Mr. Chris Elder, Assembly District #5
Mr. Stafford Glashan, Assembly District #6, (Arrived @ 6:05 PM)
Mr. Sassan Mossanen, Assembly District #7

Planning Commission members absent and excused were:

Ms. Colleen Vague, Assembly District #4, Chair

Staff in attendance:

Ms. Eileen Probasco, Planning Department Manager
Mr. Alex Strawn, Development Services Manager
Ms. Kim Sollien, Planning Services Manager
Mr. John Aschenbrenner, Deputy Borough Attorney
Ms. Shannon Bodolay, Assistant Borough Attorney
Mr. Joseph Metzger, Planner II
Mr. Theodore Eischeid, Planner II
Ms. Karol Riese, Planning Commission Clerk

II. APPROVAL OF AGENDA

Vice-Chair Anderson inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

III. PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Mr. Eugene Carl Haberman.

IV. CONSENT AGENDA

A. Minutes
(None)

B. INTRODUCTION FOR PUBLIC HEARING: QUASI-JUDICIAL MATTERS

1. **Resolution PC 20-26**, a Conditional Use Permit in accordance with MSB 17.27 – Talkeetna Special Land Use District, for the operation of a commercial storage unit facility greater than 6,000 square feet in size, located at 26731 S. Talkeetna Spur (Tax ID #7909000L001); within Township 25 North, Range 4 West, Section 7, Seward Meridian. Public Hearing:

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August 3, 2020 (*Applicant: John & Andrea Gilliland, dba Alaska Self Storage; Staff: Mark Whisenhunt*).

C. INTRODUCTION FOR PUBLIC HEARING: LEGISLATIVE MATTERS

1. **Resolution PC 20-12**, a resolution recommending Assembly adoption of MSB 17.68, Outdoor Shooting Facilities, in order to establish standards for commercial, educational, and nonprofit outdoor shooting facilities. Public Hearing: August 3, 2020 (*Staff: Alex Strawn*).

Vice-Chair Anderson read the consent agenda into the record.

Vice-Chair Anderson inquired if there were any changes to the consent agenda.

GENERAL CONSENT: The consent agenda was approved as amended without objection.

V. COMMITTEE REPORTS

(There were no committee reports.)

VI. AGENCY/STAFF REPORTS

(There were no agency/staff reports.)

VII. LAND USE CLASSIFICATIONS

(There were no land use classifications.)

VIII. AUDIENCE PARTICIPATION (Three minutes per person.)

The following persons spoke regarding spruce tree beetles and combining projects to help with homeless & crime: Mr. Lee Huhnkie

The following persons spoke in favor of Reso 20-12 Outdoor Shooting Facility: Dave Musgrave (6:16 pm)

The following persons spoke regarding Reso 20-12 Outdoor Shooting Facility – Nuisance Noise Level Limits: Mr. Norm Stout

The following person spoke regarding concerns with public process and shooting range public hearing: Mr. Eugene Carl Haberman.

IX. PUBLIC HEARING: QUASI-JUDICIAL MATTERS (*Public Hearings not to begin before 6:15 P.M.*)

Commission members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

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(There were no quasi-judicial public hearings.)

X. PUBLIC HEARING LEGISLATIVE MATTERS

- A. **Resolution PC 20-24**, a Resolution recommending Assembly approval of an ordinance amending MSB 43.05.015(B)(3) to adopt the 2020 Subdivision Construction Manual *(Staff: Fred Wagner, Jamie Taylor, and Eileen Probasco)*.

Ms. Eileen Probasco provided a staff report:

- staff recommended approval of the resolution.

Commissioners questioned staff regarding:

- Commissioner Glashan: How does this fit into other planning documents? (Official Streets and Highways Plan)

Vice-Chair Vague opened the public hearing.

The following person spoke regarding concerns with public process: Mr. Eugene Carl Haberman.

Vice-Chair Anderson invited staff to respond to questions and statements from the audience.

There being no one else to be heard, Vice-Chair Anderson closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Elder moved to approve Resolution PC 20-24 The motion was seconded.

Discussion ensued regarding:

Commissioner Elder: Supports the Subdivision Construction Manual; Over the last two and a half years, I have taken several calls from different developers and private and public entities all in favor of this. It was a long procedure that Ms. Probasco and Mr. Wagner oversaw, and they did an excellent job. There is a variety of wide-spread approval of this in our Borough. Very well written.

Commissioner: Chesbro: It appears that there is a lot of work, we have been updated on the progress, it is complicated, and I am glad that there were a lot of experts working on this.

MOTION: Commissioner Chesbro moved a primary amendment that we add the following language to the 2020 Subdivision Construction Manual” section C02.5 (e) to read as follows: For Residential and Residential Subcollector standard roads, compact all embankment to not less than 90 percent of the maximum dry density and the top 24 inches to not less than 95 percent of the maximum dry density. For Residential Collector standard roads, compact all embankment to not less than 98 percent of the maximum dry density and the top 24 inches to not less than 98 percent of the maximum dry density. Determine compaction in accordance with the *Standard Specifications for Highway Construction* (ADOT&PF) and any MSB Standard Modifications.

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Compaction tests on the subbase layer shall be taken at representative locations along the roadways as follows:

The motion was seconded.

Discussion engaged:

Road Service Advisory Board and the Transportation Advisory Board resolutions; clarifying changes and how to make them within the documents; 90 percent/95 percent/98 percent standards – propose 95 percent for the entire thing.

Commissioner Glashan moved to amend the revision to the Subdivision Construction Manual to change everything to 95 percent, see the following language to the 2020 Subdivision Construction Manual” section C02.5 (e) to read as follows:

For Residential and Residential Subcollector standard roads, compact all embankment to not less than 95 percent of the maximum dry density and the top 24 inches to not less than 95 percent of the maximum dry density. For Residential Collector standard roads, compact all embankment to not less than 95 percent of the maximum dry density and the top 24 inches to not less than 95 percent of the maximum dry density. Determine compaction in accordance with the *Standard Specifications for Highway Construction* (ADOT&PF) and any MSB Standard Modifications. Compaction tests on the subbase layer shall be taken at representative locations along the roadways as follows:

The motion was seconded.

VOTE: The primary amendment passed without objection.

VOTE: The main motion passed as amended without objection.

B. **Resolution PC 20-25**, a Resolution recommending Assembly approval of an ordinance adopting MSB 11.12 Driveway Standards in order to ensure driveways within borough right-of-ways minimize negative impact to drainage, maintenance, and safety of the traveling public (*Staff: Alex Strawn and Jamie Taylor*).

Mr. Alex Strawn provided a staff report:

- staff recommended approval of the resolution.

Vice-Chair Anderson opened the public hearing.

The following person spoke regarding concerns with the public process: Mr. Eugene Carl Haberman.

The following person spoke regarding Mr. Haberman’s comment, in the calendar, you see the meeting, possible links to documents, easy to read, and there being experts reviewing and approving: Mr. Lee Huhnie.

Vice-Chair Anderson invited staff to respond to questions and statements from the audience.

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There being no one else to be heard, Vice-Chair Anderson closed the public hearing and discussion moved to the Planning Commission.

MOTION: Commissioner Chesbro moved to approve Resolution PC 20-25. The motion was seconded.

MOTION: Commissioner Chesbro moved an amended motion to adopt the recommendations by staff as related to the Transportation Advisory Board minus the disproportionate cost section. The motion was seconded.

VOTE: The amended motion passed without objection.

XI. CORRESPONDENCE AND INFORMATION

(There was no correspondence and information.)

XII. UNFINISHED BUSINESS

(There was no unfinished business.)

XIII. NEW BUSINESS

(There was no new business.)

XIV. COMMISSION BUSINESS**A. Adjudicatory *(if needed)***

1. **Resolution 20-29**, a Resolution of the Matanuska-Susitna Borough Planning Commission adopting findings of fact and conclusions of law supporting the denial of PC Resolution 20-18 concerning a request for a variance from MSB 17.55 to allow an existing single family residence to encroach into the required 75 foot waterbody setback at 5782 S. Big Lake Road (Tax ID# 6142000L006); within township 17 North, Range 3 West, Section 29 Seward Meridian (*Applicant: Dennelle Seetomona on behalf of Janice Ellsworth, Staff: Joe Metzger*).

MOTION: Commissioner Chesbro moved to approve Resolution PC 20-29. The motion was seconded.

MOTION: Commissioner Ortiz moved a primary amendment to Section 2 to remove everything from (see attachment C). “The commission finds that the special conditions that require the variance were partially the fault of the applicant, due to the fact that they knew the lot had setback challenges but chose to build the house without contacting the borough.” The motion was seconded.

Discussion ensued regarding the wording of the motion.

MOTION: Commissioner Chesbro moved to amend the primary amendment to Section 2 to remove “partially” rather than the entire sentence. The motion was seconded.

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VOTE: The primary amendment passed without objection.

MOTION: Commissioner Ortiz moved an amendment to Section 3 to remove “Had the applicants contacted the borough prior to construction, they may have received better information on the implications of constructing the home they were proposing, and chosen a design that would not have encroached so much into the waterbody setback.” The motion was seconded.

The section would read as follows:

“The applicant alleges that the condition is not applicable since the homeowners are under no financial hardships nor did they build the home as contractors to re-sell. The commission finds that the applicant knew they were taking a risk in building the house they chose prior to contacting the borough, and to resolve the setback violation after the fact could indeed have a pecuniary impact, such as having to remodel the home to lessen the violation or not being able to obtain bank financing.”

VOTE: The amendment passed without objection.

MOTION: Commissioner Ortiz moved to correct a typographical error in the third WHEREAS to reflect 17.55.020. The motion was seconded.

VOTE: The amendment passed without objection.

VOTE: The motion passed as amended without objection.

B. Upcoming Planning Commission Agenda Items

Mr. Strawn provided a brief update on projects that will be coming before the Planning Commission.

(Commission Business was presented, and no comments were noted.)

XV. DIRECTOR AND COMMISSIONER COMMENTS

Ms. Probasco: Thanked the commissioners for their commitment to the job they have; sometimes it is really difficult, sometimes it goes through rather smoothly, but we have really tried hard over the years to give you the information you need, I appreciate your respect for us and you contacting us when you have questions. This is my last meeting, I have nine more days until I am officially on the retired list; not leaving the state just taking it easy for a while. Thank you for approving our driveway standards and construction manual, we will be taking them to the Assembly in August. I will be in attendance at those meetings as a taxpayer. Thanks again.

Mr. Strawn: Last meeting with Eileen Probasco – her leadership has been much appreciated, and she will be missed.

Commissioner Glashan: We must be wearing the staff out this year, another one we are going to miss. I believe the developers will howl a little bit about the 95% everywhere. I think

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accommodating the 90% for the residential roads for below the structural section is a reasonable accommodation. I think you did a great job on it, and it was much overdue.

Commissioner Chesbro: Thank you to Ms. Probasco, this has been a hard job in a borough that wants everything to be planned except for what is next to them. This is kind of a difficult place sometimes, and I appreciate everything that you do.

Commissioner Elder: Thanked Eileen Probasco and her professionalism – she will be missed.

Commissioner Mossanen: Three cheers for you, Eileen, it has been great working with you. I hope you have a great retirement. Thank you, Ms. Bodolay, for your comments in our last meeting.

Commissioner Ortiz: I hope you sail off into retirement. I know you didn't get everything that you wanted to get accomplished, but you sure did knock a lot out. Great work on the Subdivision Construction Manual and Driveway Ordinance – you guys and staff did great. Enjoy your retirement, and maybe I will see you at the lake.

Commissioner Anderson: Thank you to all the Commissioners and staff. Working through different things are not always easy. Thankful for staff who brings things to us in an understandable manner. We will miss Eileen and her leadership. We have seen a lot of changes, but we do welcome the new staff members that are coming aboard, and we feel that they will also continue to carry it forward and move us in a positive direction. Next meeting is August 3rd.

XVI. ADJOURNMENT

The regular meeting adjourned at 7:40 p.m.

MARY ANDERSON, Planning Commission
Vice-Chair

ATTEST:

KAROL RIESE, Planning Commission Clerk

Minutes approved: _____

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**INTRODUCTION FOR PUBLIC HEARING
QUASI-JUDICIAL**

Resolution No. PC 20-277

Stephen Bierop, dba

Three Bears Alaska, Inc.

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INTRODUCTION FOR PUBLIC HEARING



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

Development Services Division

Matanuska-Susitna Borough
Development Services

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822 • Fax (907) 861-8158 **MAY 05 2020**

Email: permitcenter@matsugov.us

APPLICATION FOR A CONDITIONAL USE PERMIT REGULATION OF ALCOHOLIC BEVERAGE USES – MSB 17.70

Received

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:

- \$1,000 for Liquor Beverage Dispensary
- \$1,000 for Liquor Package Store

PAID
CK# 35540

Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made prior to the application presentation before the Borough Planning Commission.

Subject Property Township: 26 N, Range: 5 W, Section: 29, Meridian Seward
 MSB Tax Account # 7561000L001
 SUBDIVISION: Dooley BLOCK(S): ---, LOT(S): 1
 STREET ADDRESS: 23471 S. Parks Highway, Trapper Creek, AK
 (US Survey, Aliquot Part, Lat. /Long. etc) Lat. N62°18'51" Long. W150°13'53"

Ownership A written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application. Is authorization attached? Yes No N/A

Name of Property Owner
Three Bears Alaska, Inc.
 Address: 445 N. Pittman Rd, Ste. B
Wasilla, AK 99623
 Phne: Hm --- Fax 357.4312
 Wk 357.4311 Cell 907.980.0721
 E-mail steve@threebearsalaska.com

Name of Agent/ Contact for application
 Address: _____
 Phne: Hm _____ Fax _____
 Wk _____ Cell _____
 E-mail _____

In order to grant a conditional use permit under MSB 17.70, the Planning Commission must find that each of the following requirements have been met. Explain the following in detail:	Attached
1. Is the conditional use compatible with and will it preserve or not materially detract from the value, character and integrity of the surrounding area?	✓
2. Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?	✓

3. Are sufficient setbacks, lot area, buffers and other safeguards being provided?	✓
4. Is there any potential negative effect upon other properties in the area due to such factors as dust, noise, obtrusive advertising and glare?	✓
5. Is there any potential negative effect on the safe, efficient flow of traffic on any highway, arterial, collector or street from which access to and from the establishment is obtained?	✓
6. What measures are being proposed to reduce any negative effect upon adjacent and nearby properties by property line buffers and arterial buffers, planted berms, landscaping, reduction or elimination of obtrusive or garish signing or other features, lowered building elevation, clustering with other commercial establishments and use of frontage roads to reduce the number of entries and exits onto highways, arterials and collectors and where the surrounding area is predominantly residential in character, site and building design features that contribute to the residential character of the development?	✓
7. Are there adequate parking facilities to accommodate a reasonably expected increased demand for parking created by issuing the permit?	✓
8. Will access to the premises create an unreasonable traffic hazard?	✓
9. Will a reasonably expected increase in traffic overtax the existing road system?	✓
10. Is the use compatible with the character of the surrounding neighborhood?	✓
11. Is there or would the use tend to result in, a high crime rate or a high incidence of alcohol-related accidents in the area?	✓
12. Does the applicant or a person with an interest in the application have an interest in a liquor license which was suspended or revoked in the 12 months preceding the application?	✓
13. Has the applicant or person with an interest in the application demonstrated that the person is untrustworthy or unfit to conduct the operation of a licensed business, or is a potential source of harm to the public?	✓

Supplemental Information – Explain in Detail	Attached
1. Maximum occupancy capacity of facility as determined by Fire Marshall	✓
2. Number of employees proposed to work on largest work shift.	✓
3. Number of regular parking spaced provided.	✓
4. Number of handicapped parking spaces provided.	✓
5. Is the use a sole occupant in a building or a tenant in a building?	✓
6. Total square footage of space in building occupied by this use.	✓
7. Hours of operation.	✓
8. Noise mitigation measures	✓

SITE PLAN – Attach a detailed, to scale, site plan clearly showing the following information:	Attached
1. Proposed and existing structure(s) on the site. Indicate which structure(s) will be used for the liquor use. Draw lot dimensions and indicate setback distance of structure(s) from the lot lines, rights-of-way, and waterbodies.	✓
2. Dimensions of all structures	✓
3. Interior floor plans (specific location of the use or uses to be made of the development)	✓
4. Signage – Existing and Proposed	✓
5. Location and dimensions for all access points to and from the site to public rights-of-way or public access easements.	✓
6. Proposed contouring	✓
7. Vegetation and any landscaping	✓
8. Buffering – Fences, trees, topography, or berms	✓
9. Drainage	✓
10. Vehicular and pedestrian circulation patterns	✓
11. Exterior site lighting	✓
12. Distance(s) to the nearest intersection in all directions from proposed permit site along roads adjacent to the site.	✓
13. Location and dimensions of parking areas to be provided	✓
14. Boundary protection	✓
15. Scale and north arrow.	✓

OWNER'S STATEMENT: I am owner of the following property:

MSB Tax parcel ID #(s) 7561000L001 and, I hereby apply for approval an alcoholic beverage use conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB 17.70 and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public’s health, safety and welfare and ensure the compatibility of the use with other adjacent uses.

I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

By: Three Bears Alaska, Inc.
 Stephen D. Mierop 04.30.2020
Signature: Property Owner Printed Name Date

Signature: Agent Printed Name Date

R

19 2020

THREE BEARS ALASKA, INC.
Application for Conditional Use Permit
Regulation of Alcoholic Beverage Uses – MSB 17.70

Basic Information (Questions 1 – 13)

1. Yes. The package store is being added on to an existing commercial building. The new package store is a commercial use that is compatible with the surrounding area and is part of a number of upgrades being made to the existing building and property. These upgrades will add value to the surrounding area by modernizing the community's primary store, modernizing one of the community's two fuel stations, and adding a brand new and totally modern package store.

2. No. The types of products being offered are already available in at least one other location in the community. Our new package store will simply be another location from which Borough residents and visitors may choose to obtain these products. Additionally, long before "carding hard" was required anywhere in the State, we have always (for over 20 years) required customers to show us a valid ID showing that they are 21 or older. Further—and again for over 20 years—our register system has been and is designed such that a transaction to purchase alcohol cannot be completed without a valid birthdate being entered. All of our cashiers who handle alcohol transactions receive all training and certificates required by all applicable State and local laws and regulations. Among other things, such training includes how to detect invalid IDs, how to properly deal with minors who attempt to enter the premises, and how to deal with and NOT sell alcohol products to intoxicated persons.

3. Yes. Please see the related survey and plan set.

4. No. Paved and gravel areas will prevent and control dust. Noise will be no more than already present from current traffic and commercial activity in the area. Advertising will be the same as at our other stores in the Borough and will be non-obtrusive. Lighting will be the same as at similar locations we currently operate in the Borough.

5. No. We are doing nothing that will change existing traffic patterns or flows or access to and from the property.

6. The package store is a relatively minor addition on the south side of a large existing building. This side of the building faces parking on the property itself, and the adjacent property to the south is an airstrip. Further, the package store addition will only have one story above ground level, which means that it will be shorter than the rest of the building and thus relatively unobtrusive. The addition was designed by a local registered architect and local registered engineers and is designed to blend in with the existing building which itself has been part of the community since the 1980s. We are not adding any signage. Rather, we are just adding our name (usually shortened to just "Three Bears") to some of the existing signage. Other than two

or three wall-mounted downward directional and shielded light fixtures, we are not adding any other lighting in connection with the addition of the package store. Further, all of the lighting that is yet to come with the relocated fuel station is downward directed, shielded, and otherwise designed to minimize light spillage.

7. Yes. There will be adequate on-site parking. Further, we are removing all parking spaces that were previously located within the State right of way and we are adding additional parking spaces elsewhere on the property such that we have sufficient parking. (Please see site plan.

8. No. The project is a small addition to a long-established commercial property in the community and will not present any unusual traffic patterns.

9. No. The project is not the type to increase overall traffic on the existing road system. Further, based on conversations and correspondence with AK DOT in December 2019, we believe that our existing access to the Parks Highway is more than adequate. Also, because DOT was not able to locate the original driveway permits for this location and because of this Application for Conditional Use Permit and our upcoming construction of the relocated fuel station, we are in the process of getting new driveway permits from DOT for this location. It should be noted that some DOT personnel believed they recalled being involved with the original driveway permits, but still, no one could locate them. We believe that we will continue to have direct and adequate access to the Parks Highway.

10. Yes. In some ways, the store that Three Bears has acquired and is modernizing has been—literally for decades—a major part of what people think of as “the neighborhood” in Trapper Creek. And Three Bears has a long and deep history of operating stores in communities throughout Alaska and of tailoring our stores to each individual community.

11. No. The project will contain a package store along with a convenience store and fuel station. We card every single package store customer and every single tobacco/nicotine product customer.

12. No.

13. No.

Supplemental Information (Items 1 – 7)

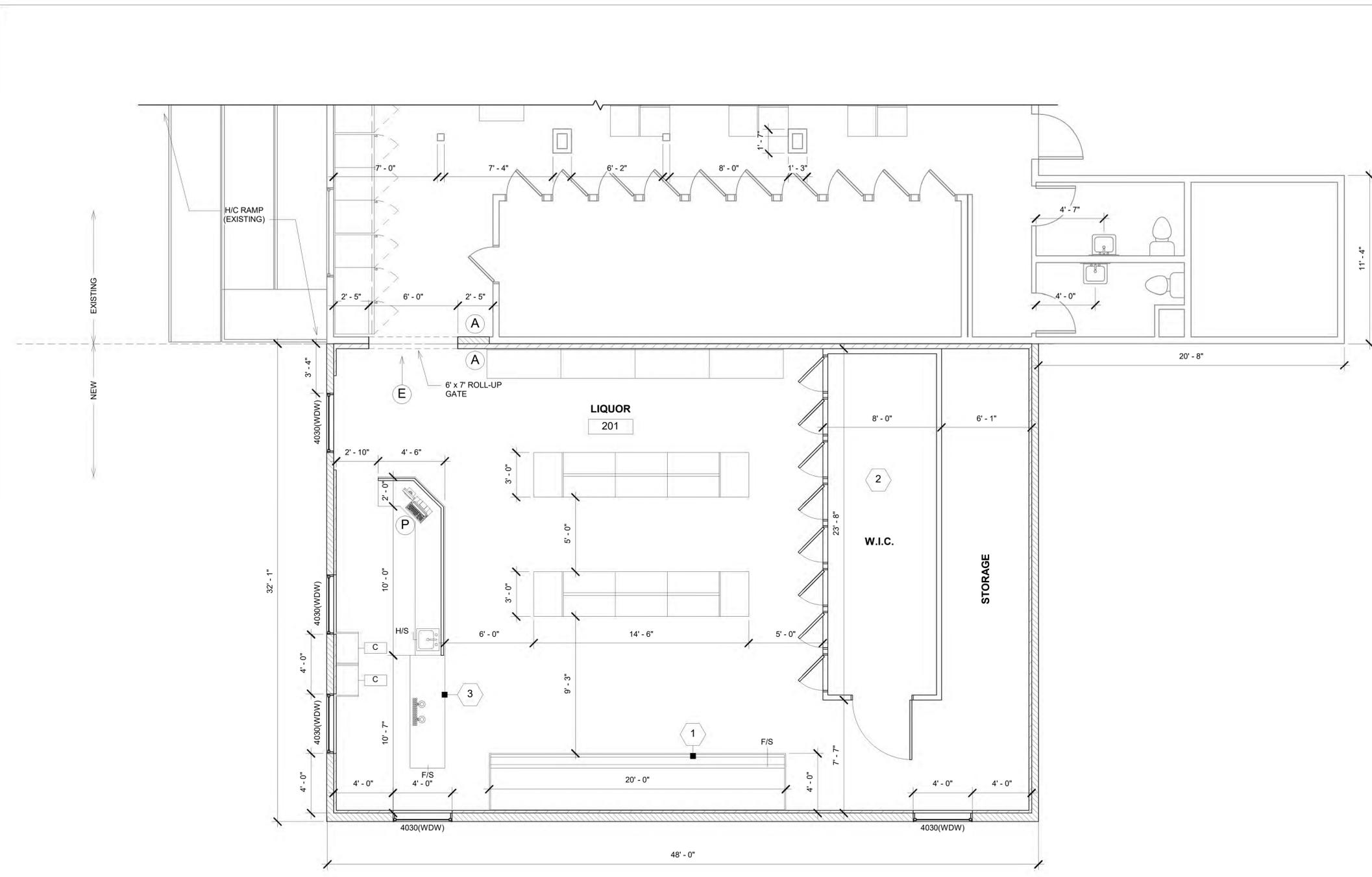
1. 51 for the package store (per Fire Marshal’s required formula/calculation)

2. 5

3. 10

4. 1

5. Three Bears Alaska, Inc. is the sole occupant of the building, but the use is a partial use (the rest of the building contains a convenience store, a laundromat, showers, and rooms for lodging)
6. 1,450
7. The package store will operate from 9:00 a.m. to 10:00 p.m. during summer/high season and potentially shorter hours during the rest of year
8. The very low amount of noise generated by a project like this is generally not sufficient to require mitigation.



SHEET NOTES

- (A) ADD SIGN: "GATE TO REMAIN OPEN DURING BUSINESS HOURS."
- (C) CIGARETTE DISPENSER
- (E) EGRESS
- (P) POINT OF SALE
- F/S FLOOR SINK
- H/S HAND SINK
- (E) EXISTING
- (N) NEW

A2.4 EQUIPMENT LIST:

- 1 OPEN FACE COOLER
- 2 W.I.C. REFER UNIT
- 3 KEGERATOR

1 PLAN - MAIN LEVEL - NEW(LIQUOR)
1/4" = 1'-0"

REV NO: DATE

SAJJ ARCHITECTURE, LLC
ANCHORAGE, AK 99502
SCOTT A. JONES S.JONES@SAJJARCHITECTURE.COM

THREE BEARS
Trapper Creek, AK

DR: CH
CK: SAJ
DT: 03/31/2020
JB: PRISM
DWG: LEVEL 2 (N)

R
19 2020

A2.4



REV NO: DATE

SAJJ ARCHITECTURE, LLC
SCOTT A. JONES S.JONES@SAJJARCHITECTURE.COM ANCHORAGE, AK 99502

THREE BEARS
Trapper Creek, AK

DR: CH
CK: SAJ
DT: 03/31/2020
JB: PRISM
DWG: COMPLETED STORE

A2.5

SHEET NOTES

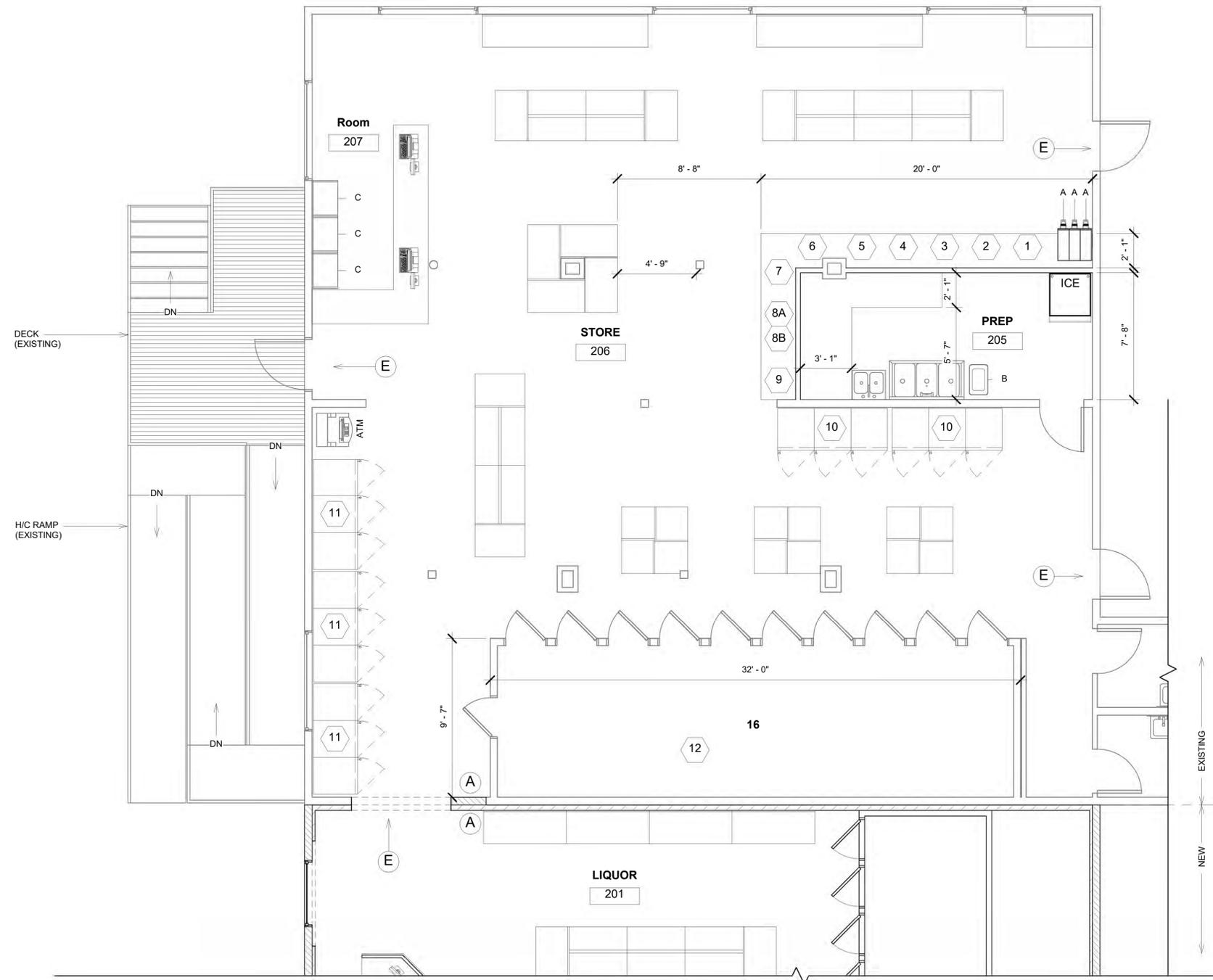
- (A) ADD SIGN: "GATE TO REMAIN OPEN DURING BUSINESS HOURS."
- (E) EGRESS
- (G) GUARDRAIL (+42", 4" MAX OPENING)
- (H) HANDRAIL (+36", 1.5"Ø W/ 1.5" HAND CLEARANCE)
- (E) EXISTING
- (N) NEW

A2.5 EQUIPMENT LIST: M/E

		QTY
1	MICROWAVE X 1	1
2	SLUSH PUPPY MACHINE (120V / 20AMP)	1
3	STOELTING SOFT SERVE ICE CREAM MACHINE	1
4	BUNN IMIX CAPPUCCINO MACHINE	1
5	BUNN COFFEE MACHINE	1
6	COKE SODA MACHINE (120V / 20AMP)	1
7	NACHO MACHINE	1
8A	HOT DOG ROLLER	1
8B	HOT DOG BUN WARMER	1
9	ORION HOT FOOD WARMER & DISPLAY MENU	1
10	3-DOOR REACH-IN FREEZER	2
11	3-DOOR REACH-IN COOLER	3
12	WALK-IN COOLER [EXISTING]	1

EQUIPMENT LIST: OTHER

- A. DISPOSABLE CUP DISPENSER
- B. TRASH
- C. CIGARETTE DISPENSER



1 PLAN - MAIN LEVEL - NEW - STORE
1/4" = 1'-0"



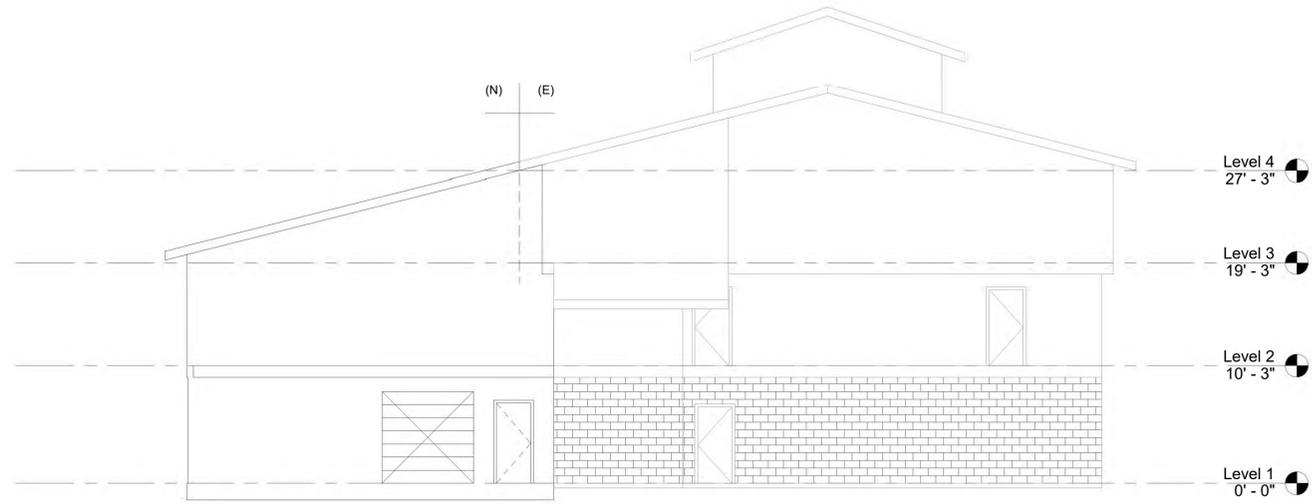
REV NO: DATE

SAJJ ARCHITECTURE, LLC
SCOTT A. JONES S.JONES@SAJJARCHITECTURE.COM ANCHORAGE, AK 99502

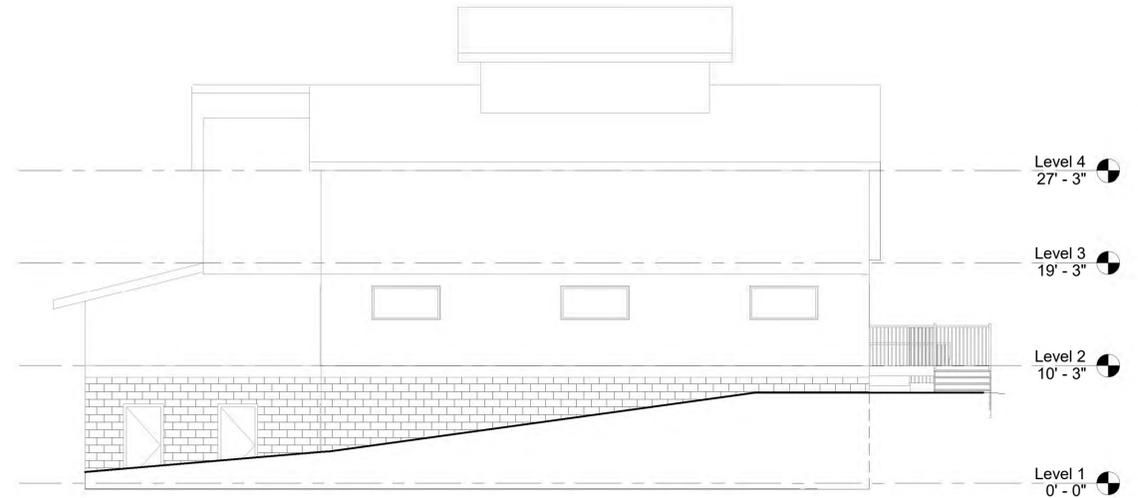
THREE BEARS
Trapper Creek, AK

DR: CH
CK: SAJ
DT: 03/31/2020
JB: PRISM
DWG: ELEVATION

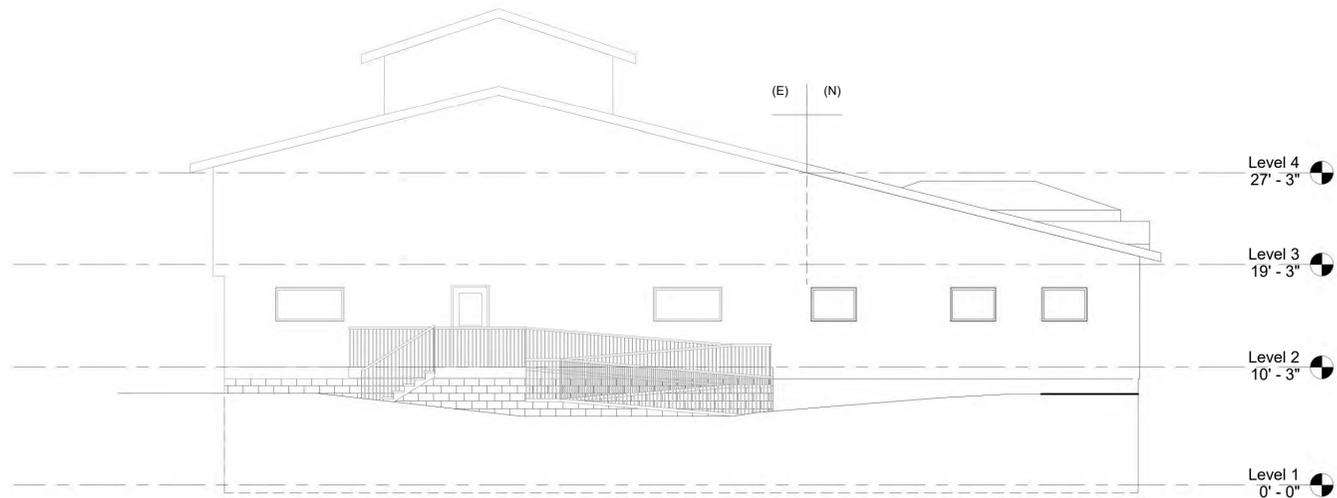
A3.1



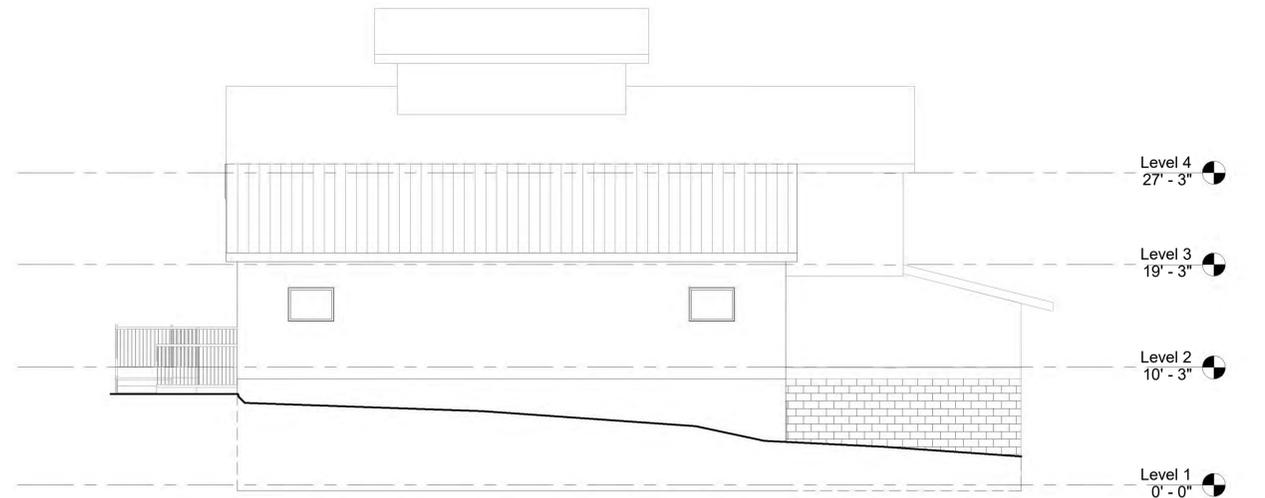
1 EAST
1/8" = 1'-0"



2 NORTH
1/8" = 1'-0"



4 WEST
1/8" = 1'-0"



3 SOUTH
1/8" = 1'-0"



MATANUSKA-SUSITNA BOROUGH

Real Property Detail for Account: 7561000L001

Site Information

Account Number	7561000L001	Subdivision	DOOLEY
Parcel ID	527883	City	None
TRS	S26N05W29	Map	TA05
Abbreviated Description (Not for Conveyance)	DOOLEY LOT 1		Tax Map

Site Address 23471 S PARKS HWY

Ownership

Owners	THREE BEARS ALASKA INC	Buyers	
Primary Owner's Address	STE B 455 N PITTMAN RD WASILLA AK 99623	Primary Buyer's Address	

Appraisal Information

Appraisal Information				Assessment			
Year	Land Appraised	Bldg. Appraised	Total Appraised	Year	Land Assessed	Bldg. Assessed	Total Assessed ¹
2020	\$24,700.00	\$359,700.00	\$384,400.00	2020	\$24,700.00	\$359,700.00	\$384,400.00
2019	\$24,700.00	\$341,000.00	\$365,700.00	2019	\$24,700.00	\$341,000.00	\$365,700.00
2018	\$24,700.00	\$328,500.00	\$353,200.00	2018	\$24,700.00	\$328,500.00	\$353,200.00

Building Information

Structure 2 of 3			
Residential Units	0	Use	Mobile Home Parks
Condition	Standard	Design	Commercial
Basement	None	Construction Type	None
Year Built		1992 Grade	None
Foundation	None	Building Appraisal	\$25100
Well		Septic	
Structure 0 of 3			
Residential Units	2	Use	Transient Lodging
Condition	Standard	Design	Commercial
Basement	None	Construction Type	Mix
Year Built		2010 Grade	None
Foundation	Other	Building Appraisal	\$20700
Well		Septic	
Structure 1 of 3			
Residential Units	0	Use	Retail General Merchandis
Condition	Standard	Design	Commercial
Basement	Full	Construction Type	Frame
Year Built		1983 Grade	None
Foundation	Unknown	Building Appraisal	\$313900
Well	Well 1 - Drilled Well	Septic	Septic - 1 - Septic Tank

Building Item Details

Building Number	Description	Area	Percent Complete
-----------------	-------------	------	------------------

Tax/Billing Information

Year	Certified	Zone	Mill	Tax Billed	Recorded Documents	Recording Info (offsite link to DNR)
					Date	Type
2020	No	0052	::	::	12/13/2019	WARRANTY DEED (ALL TYPES)
2019	Yes	0052	15.369	\$5620.45		Talkeetna 2019-001772-0
2018	Yes	0052	15.289	\$5400.07		

Tax Account Status ²

Status	Tax Balance	Farm	Disabled Veteran	Senior	Total	LID Exists
Current	(\$2,810.22)		\$0.00	\$0.00	\$0.00	\$0.00 No

Land and Miscellaneous

Gross Acreage	Taxable Acreage	Assembly District	Precinct	Fire Service Area	Road Service Area
9.89	9.89	Assembly District 007	10-040		030 Trapper Creek RSA

¹ Total Assessed is net of exemptions and deferrals, rest, penalties, and other charges posted after Last Update Date are not reflected in balances.

² If account is in foreclosure, payment must be in certified funds.



Matanuska-Susitna Borough



Legend

- Road Mileposts
- Roads
 - Highway
 - Major Road
 - Medium Road
 - Minor Road
 - - Primitive Road
 - - Private Road
- Alaska Railroad
- ▭ Mat-Su Borough Boundary
- ▭ Incorporated Cities
- ▭ Parcels
- Government Lot Lines
- ROW and Easements
 - - ROW Road
 - - ROW RR
 - - ROW Easement
 - - Section line easement
- ▭ Subdivisions
- ▭ Lakes and Rivers
- Streams
- ▭ 100 year Flood Zone
- ▭ Section Lines

1: 4,514



0.1 0 0.07 0.14 Miles

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Reported on 05/05/2020 02:34 PM

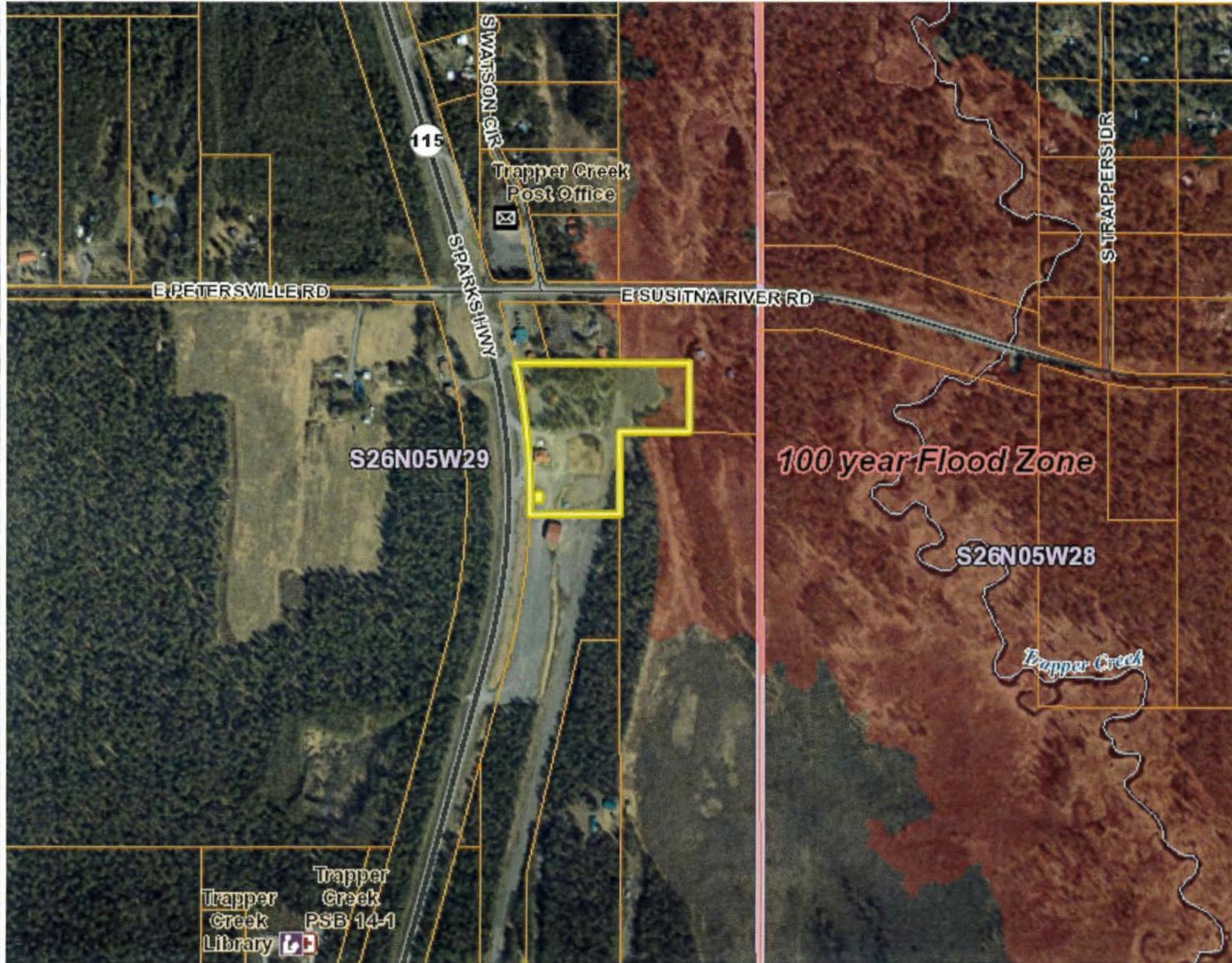
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Notes

This map was automatically generated using Geocortex Essentials.



Matanuska-Susitna Borough



- Legend**
- Road Mileposts
 - Roads**
 - Highway
 - Major Road
 - Medium Road
 - Minor Road
 - - Primitive Road
 - - Private Road
 - Alaska Railroad
 - ▭ Mat-Su Borough Boundary
 - ▭ Incorporated Cities
 - ▭ Parcels
 - Government Lot Lines
 - ▭ Lakes and Rivers
 - Streams
 - ▭ 100 year Flood Zone
 - ▭ Section Lines

1: 18,056



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Notes
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**INTRODUCTION FOR PUBLIC HEARING
QUASI-JUDICIAL**

Resolution No. PC 20-28

Gerold Jacobsen dba

Alaska Car Crushing

(Page 47 - 64)

INTRODUCTION FOR PUBLIC HEARING

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MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department
Development Services Division
 350 East Dahlia Avenue • Palmer, AK 99645
 Phone (907) 861-7822 • Fax (907) 861-7876
 Email: permitcenter@matsugov.us

APPLICATION FOR A JUNKYARD CONDITIONAL USE PERMIT – MSB 17.60

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:

___ \$1,000 for Junkyard Conditional Use Permit

R
5-13-2020

Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made **prior** to the application presentation before the Borough Planning Commission.

Subject Property Township: __17N__, Range: _02 __, Section: _10____,
 Meridian_S __

MSB Account # __6919000L001 L002_____
 SUBDIVISION: _C C F __ BLOCK(S): _____, LOT(S): _____
 STREETADDRESS: __600 S Road_____

Ownership A written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application. Is authorization attached? Yes No N/A

Name of Property Owner

__ _G _____
 Address: _ O 875188 _____
 __ A 99687 _____
 Phne: Hm _____ Fax_373-8375_____
 Wk_357-5865__ Cell _____
 E-mail __ _____

Name of Agent/ Contact for application

Rebecca Powell / Terry Nicodemus _____
 Address: _____
 Phone:Terry_376-8800_ Cell _232-6922
 Rebecca_232-0992 _____
 E-mail _rebecca@akcbs.net_____

In order to grant a conditional use permit under MSB 17.60, the Planning Commission must find that each of the following requirements have been met. Explain the following in detail:	Attached
1. Is the conditional use compatible with and will it preserve or not materially detract from the value, character and integrity of the surrounding area?	Yes
2. Will the granting of the conditional use permit be harmful to the public health, safety, convenience and welfare?	Yes
3. Are sufficient setbacks, lot area, buffers and other safeguards being provided?	Yes
4. Does the conditional use fulfill all other requirements of MSB Chapter 17.60 pertaining to the conditional use in this section?	Yes

Supplemental Information – Explain in Detail	Attached
1. Number of employees proposed to work on largest work shift	Yes
2. Hours of operation	Yes
3. Noise mitigation measures	Yes
4. How will contaminated materials be handled and disposed of at this site?	Yes
5. Total square footage or acreage of this property	Yes
6. Total square footage or acreage for this use on this site	Yes
7. Are there other existing or proposed uses on this site or will this operation be the sole use of the property? <i>If there are other uses on this property, provide a description.</i>	Yes
8. Use(s) of any proposed building(s) associated with this operation	Yes
9. Copy of Hazardous Material Plan for the operation, if applicable	Yes
10. Type of equipment to be used at this site	Yes
11. What type of containment systems will be in place at this site?	Yes
12. What type of non-permeable surface will be in place at this site?	Yes
13. What will be the daily traffic generation for this use?	Yes
14. Attach a written description of the buffering that will be provided at this site to meet the standards in 17.60.110. <i>This may include conventional solid wood or metal fencing; evergreen or other natural planting sufficient to provide year-round screening; and earthen berm or topography.</i>	Yes

SITE PLAN – Attach a detailed, to scale, site plan clearly showing the following information:	Attached
1. Proposed and existing structure(s) on the site. Indicate which structure(s) will be used for this use. Draw lot dimensions and indicate setback distance of structure(s) from the lot lines, rights-of-way, and waterbodies.	Yes
2. Dimensions of all structures	Yes
3. Location of the use or uses to be made of the development	Yes
4. Location of other uses on the site	Yes
5. Signage – Existing and Proposed	Yes
6. Location and dimensions for all access points to and from the site to public rights-of-way or public access easements	Yes
7. Buffering – Fences, trees, topography or berms	Yes
8. Drainage	Yes
9. Vehicular and pedestrian circulation patterns	Yes
10. Exterior site lighting	Yes
11. Location and dimensions of parking areas to be provided	Yes
12. Location of other uses on the site	Yes
13. Scale and north arrow	Yes

OWNER'S STATEMENT: I am owner of the following property:

MSB Tax parcel ID #(s) 509267 and 509268 and, I hereby apply for approval a junkyard conditional use permit on that property as described in this application.

I understand all activity must be conducted in compliance with all applicable standards of MSB 17.60 and with all other applicable borough, state or federal laws.

I understand that other rules such as local, state and federal regulations, covenants, plat notes, and deed restrictions may be applicable and other permits or authorization may be required. I understand that the borough may also impose conditions and safeguards designed to protect the public's health, safety and welfare and ensure the compatibility of the use with other adjacent uses.

I understand that it is my responsibility to identify and comply with all applicable rules and conditions, covenants, plat notes, and deed restrictions, including changes that may occur in such requirements.

I understand that this permit and zoning status may transfer to subsequent owners of this land and that it is my responsibility to disclose the requirements of this status to the buyer when I sell the land.

I understand that changes from the approved conditional use permit may require further authorization by the Borough Planning Commission. I understand that failure to provide applicable documentation of compliance with approved requirements, or violation of such requirements will nullify legal status, and may result in penalties.

I grant permission for borough staff members to enter onto the property as needed to process this application and monitor compliance. Such access will at a minimum, be allowed when the activity is occurring and, with prior notice, at other times necessary to monitor compliance.

The information submitted in this application is accurate and complete to the best of my knowledge.

<i>g Jacobsen</i>	Garold Jacobsen	02/05/2019
Signature/ Property Owner	Printed Name	Date

<i>Rebecca Powell</i>	Rebecca Powell	04/20/2020
Signature: Agent	Printed Name	Date

AK Car Crushing & Recycling LLC

PO Box 875188

Wasilla, AK 99687

Received on
5-13-2020

04/17/2020

RE: Mat-Su Conditional Use Permit

I, Garold Jacobsen, owner and member of AK Car Crushing & Recycling LLC give permission to talk and/or provide information or additional documentation for the conditional use permit # 176020190003 to the following agents:

Rebecca Powell – 907-232-0992 or rebecca@akcbs.net

Terry Nicodemus – 907-376-8800 office 907-232-6922 cell or terry@acuteksurvey.com

Sincerely,



Garold Jacobsen

acutek geomatics LLC

surveyors, planners & land development

5099 E Blue Lupine Drive # 104

Wasilla, Alaska 99654

907-376-8800 Fax 907-376-9629

Email: admin@acuteksurvey.com

Received on
5-13-2020

April 6, 2020

Mr. Mark Whisenhunt
Matanuska-Susitna Borough
Planning and Land Use Department
Development Services Division
350 East Dahlia Avenue
Palmer, Alaska 99645

Re: Conditional Use Permit(CUP) for Alaska Car Crushing and Recycling LLC

Mr. Whisenhunt:

I have been retained as Agent/Contact for the update application of the referenced facility by Gary Jacobsen Owner/Member of Alaska Car Crushing and Recycling LLC. Mr. Jacobsen was issued a Junkyard Conditional Use Permit October 17, 2000. An updated CUP will not detract from the value, character and integrity of the surrounding area since the surrounding area has established mixed residential, commercial, animal husbandry and manufacturing uses. The site will not be harmful to the public health, safety, convenience and welfare in fact the very nature of this business enhances these things.

A major function of this business is the storage of police impounded vehicles. A requirement of this is to be able to see the vehicles from S Vine Road, this is why the impound compounds are visible from the road.

The boundary of the wrecking yard is entirely fenced with a eight feet chain link fence, There are sufficient setbacks, buffers, and other safeguards provided to meet the requirements of MSB 17.60.100. Any storage of junk vehicles are screened from the public roads. There are no impacts to existing schools, churches, and other public gathering places from the activities of the car crushing and recycling center. Mr. Jacobsen facility enhances the public good because there is a way in the Borough to process junk cars and trucks to

useful scrap metal and or recycled auto parts. Alaska Car Crushing and Recycling performs a very useful purpose for our society.

The original site plan that was provided in 2000 CUP submittal showed a oily water catch berm that was not completed because this was replaced by a pole barn with concrete catchment floor. All vehicles that arrive at the processing center for salvaging and or scraping go to this pole barn where all the fluids are removed using a Iron Ax Enviro Rack.

The Enviro Rack is the most superior auto fluid removal and dismantling system on the market today. The Enviro Rack is the first and only self contained fluid removal system on the market. We offer all steel tanks along with a grated catwalk for operator safety. Underneath the catwalk is 249 gallon catch pan and also a 360 gallon tank to catch any spills. No other system on the market comes close to the Enviro Rack. Meet EPA and State level regulations concerning fluid removal. The Enviro Rack is totally air operated. There are no gasoline or electric motors that could create a spark. The Enviro Rack is a safe system. Complete fluid removal takes less than 5 minutes.

We have provided with this submittal a current site plan produced this year by Acutek Geomatics LLC. Depicted on this illustration are drainage arrows and a bio remediation ditch along with a catchment berm. Any contaminants that might leak from the ground will be captured, but it is anticipated that the Enriro Rack will garner all of the potential contaminants. Since less than an acre of ground has ever been disturbed and potential fluid spills have been mitigated a swppp plan is not required.

If you have any questions call me at 907.232.6922



Terry Nicodemus PLS

Agent/Contact for Alaska Car Crushing and Recycling

**Conditional Use Permit
Narrative
Alaska Car Crushing & Recycling LLC**

**R
6-15-2020**

Supplemental Information

1. Number of employees proposed to work on largest work shift

Summer One supervisor and 6 employees

Winter one supervisor and 3 employees

2. Hours of operation

Summer hours one shift from 9 am to 6 pm Monday thru Saturday

Winter hours one shift from 10 am to 5 pm Monday thru Friday

3. Noise mitigation measures

The noisiest equipment on the property is the car crusher, it will not be utilized after 5 pm and not on the weekends. The property is entirely surrounded by industrial, commercial or undeveloped property. There has not been any formal complaints concerning excessive noise from Alaska Car Crushing's operations.

4. How will contaminated materials be handled and disposed of at the site.

All the contaminated materials that are on the property come from the derelict vehicles that are stored on site for recycling and scraping. When a vehicle first comes in it is drained of all fluids in the covered pole barn on the north side of the yard. Batteries are removed and stored in a secure connex for recycling. Fuel is collected and put in fifty gallon barrels for use in the yard. Oil, coolants and lubricants are drained and put into separate barrels for storage until NRC Alaska picks up for disposition. There is an EPA approved spill kit on site for vehicles that are impounded or stored, all yard employees are trained on how to utilize it.

5. Total square footage or acreage of this property

400,212 square feet or 9.19 acres

6. Total square feet or acreage for this use on this site

336,853 square feet or 7.73 acres

7. Are there other existing or proposed uses on this site or will this operation be the sole use of the property?

If there are other uses on this property, provide a description.

Alaska Car Crushing(ACC) operates on Lots 1 & 2, Car Crushing Flats Plat #2009-86, 572 & 600 S Vine Road. There are multiple uses of this property. It is a automobile and truck recycling Operation, a police impound compound, scrap metal storage yard, and a derelict/abandoned automobile and truck storage/salvage yard.

Automobile and Truck Recycling Operation-All vehicles are drained of all fluids in the pole barn with concrete floor with a collection apparatus', the Iron Ax drain racks. The vehicles are then stored in the yard for customer self service parts salvage. Once the vehicle has relinquished mostly all it's recyclable parts it will be crushed and or bailed and stored in the scrap yard.

Police Impound Compound- ACC is set up with a fenced impound lots along with two

Page 1 of 3

wreckers to service the law enforcement community. Two additional Wrecking companies: Metal-In-Motion LLC and All In One LLC. Which all three companies service the law

enforcement and the Mat-Su Borough communities.

Scrap Metal Processing and Storage- ACC processes and excepts from the public scrap metal of all kinds. If the price for scrap metal is advantageous it is then sold. If the price is not advantageous to sell it is stored for the long term. The commercial scales are to weigh incoming scrap metals and scrap processed on site for future disposition.

Derelict / Abandoned Automobile and Truck Storage/Salvage Yard- ACC will pick up from the public any vehicle for a fee and has had in the past will in the future have a contract with the Matanuska-Susitna to pick up abandoned vehicles in the public right of way.

8. *Uses(s) of any proposed building(s) associated with this operation*

There are three buildings on the property a pole barn, a shop and a office with garage.

Pole Barn with concrete containment floor-used to prepare vehicles by all removing fluids, batteries and lubricants

Shop-Maintenance of company equipment is preformed in this building

Office With Garage- Administration is conducted for company and some company vehicles are stabled in the adjoining garage.

9. *Copy of Hazardous Material Plan for the operation, if applicable*

See attached Hazardous Material Plan

10. *Type of equipment to be used at the site*

Two Balers

Two Track Excavators

Crusher

Two Fork Lifts

Drain Rack

Two Wreckers

11. *What type of containment systems will be in place at this site?*

Vehicles that are impounded are inspected for fluid leaks before they are stored. If a leak is discovered spill pads are utilized, if extensive it is brought to the pole barn and put on our drain rack. A spill in the pole barn would be contained by the concrete containment floor. Because most all vehicles do have small leaks there is a bio-wale and containment berm along the east property line to provide that no pollutants migrates off property.

12. *What type of non-permeable surface will be in place at this site?*

The pole barn with it's non-permeable concrete containment floor is in place to backup any possible spills that might get away from the Iron Ax drain system. Hazardous fluids and materials are removed from the vehicles, fluids are placed in 55 gallon drums for removal and processing for NRC Alaska from Anchorage, Alaska to pick up, batteries are stored in a connex for recycling.

13. *What will be the daily traffic generation for this use?*

In the winter, the average visits from the public amount to two. In the summer, the average visits from the public is 10 to 12. There is approximately 7.5 wrecker visits on

Page 2 of 3

average a day.

14. *Attach a written description of the buffering that will be provided at this site to meet the standards in 17.60.110.*

Existing on site, encompassing the entire impounding/recycling/wrecking facility there is a eight feet tall chainlink security fence. The description of said fence is six feet wide chainlink fabric with two foot vertical arms that accommodate three strains of barb wire. The police impound compounds are located along the front of the property and are in full view of S Vine Road a requirement for impound storage. All the scrap metal and junk vehicle storage are behind the police impound areas and Retail/Office, they will be screened by solid wood or metal fencing.

Crowley Petroleum Distribution occupies the property north of the wrecking yard it supplies heating oil, propane, diesel, gasoline and lubricants to residents and commercial businesses in Wasilla and the Matanuska and Susitna Valley. Crowley also offers bulk propane and tank re-fill on site as well as bulk delivery and drummed aviation fuels. They also have a Retail/Convenience store on the property.

West of the recycling facility is an undeveloped 10 acre tract of land.

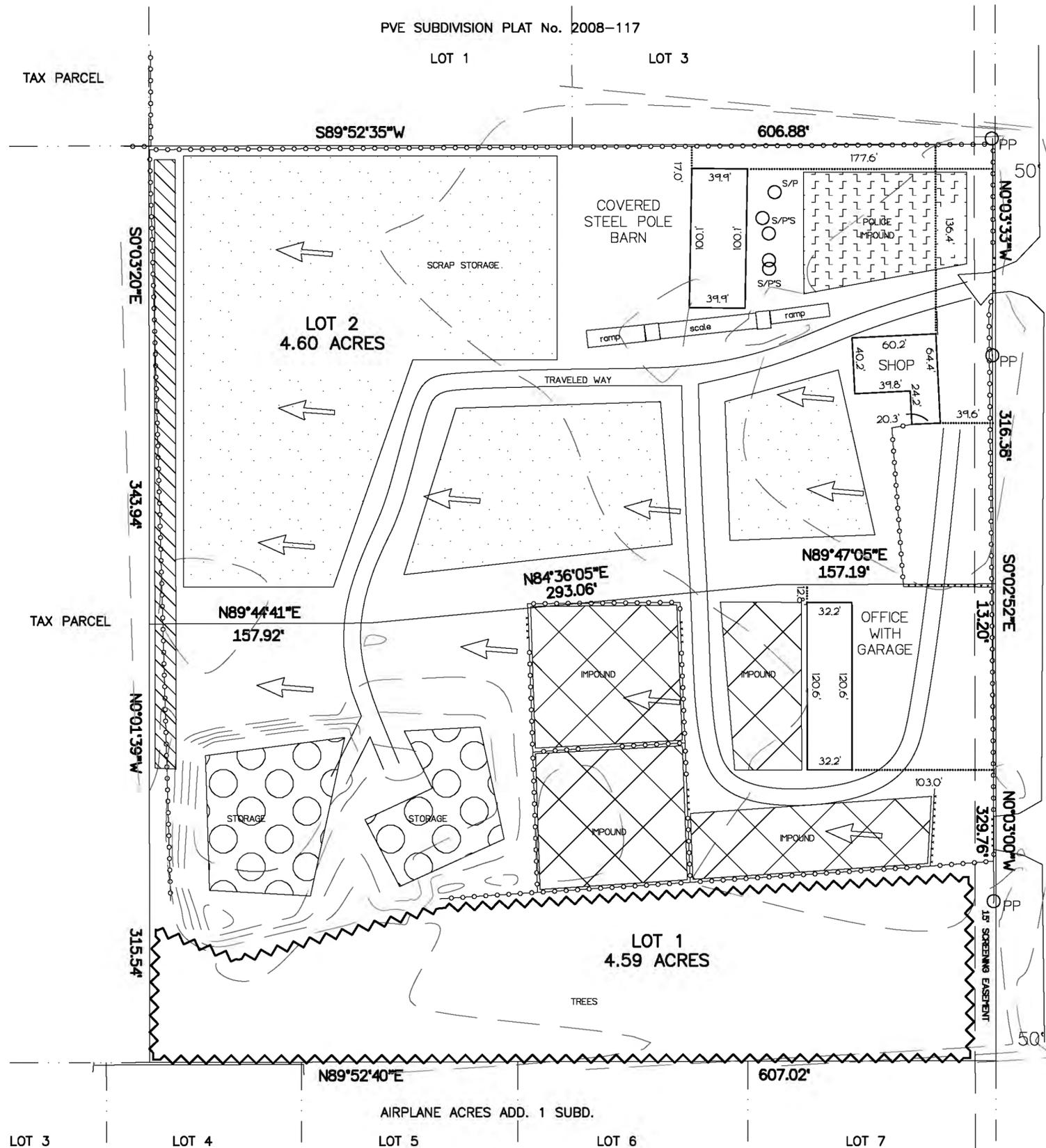
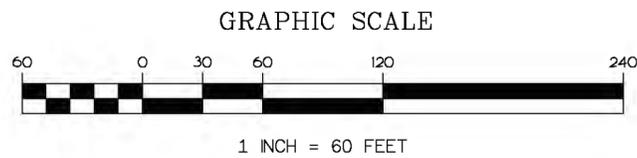
The property to the south there is 4 one acre lots it appears all four lots are being used for commercial/industrial uses. There could be views to the property from W Full Curl Avenue but this is mitigated by a buffer of trees along the southern portion of the recycling lot.

With all cases we will monitor the buffering and if additional screening is required we will not hesitate to correct the situation.

LEGEND

- N 90°00'00" E RECORD DATA
- N 90°00'00" E MEASURED DATA
- SCRAP STORAGE
- POLICE IMPOUND
- VEHICLE STORAGE
- BIO SWALE
- BASIC IMPOUND
- TREE LINE
- 8' CHAIN LINK FENCE

Received on
6-15-2020



NOTES

1. ALL BEARINGS, DISTANCES AND AREAS SHOWN ARE RECORD, UNLESS NOTED OTHERWISE.
2. PURPOSE OF THIS SURVEY IS TO SHOW AREAS OF USE FOR DAILY OPERATIONS OF A CAR CRUSHING FACILITY.
3. STRUCTURES SHOWN WERE VISIBLE AT THE TIME OF THE SURVEY. OTHER IMPROVEMENTS MAY BE COVERED BY SNOW.

EXCLUSION NOTE:

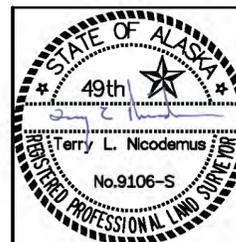
IT IS THE RESPONSIBILITY OF THE OWNERS TO DETERMINE THE EXISTENCE OF ANY EASEMENTS, COVENANTS, OR RESTRICTIONS WHICH DO NOT APPEAR ON THE RECORDED SUBDIVISION PLAT. UNDER NO CIRCUMSTANCES SHOULD ANY DATA HEREON BE USED FOR CONSTRUCTION OR FOR ESTABLISHING BOUNDARY OR FENCE LINES.

SITEPLAN SURVEY CERTIFICATE:

I HEREBY CERTIFY THAT I, OR SOMEONE UNDER MY DIRECT SUPERVISION, HAVE PERFORMED A SITE-PLAN SURVEY ON THE FOLLOWING DESCRIBED PROPERTY:

LOT 1 AND LOT 2 CAR CRUSHING FLATS

5/19/2020



LOT: 1 & 2	REV. 1
SUBDIVISION: CAR CRUSHING FLATS	
SECTION 10 TOWNSHIP 17N RANGE 2W	
PLAT No. 2009-86	SEWARD MERIDIAN
RECORDING DISTRICT PALMER	MAP No. HO 09
PREPARED FOR:	

ACUTEK GEOMATICS LLC		
5099 E. BLUE LUPINE DR. SUITE 104 WASKLA AK 99654		
907.376-8800 FAX 907.376-9629 ACUTEK.SURVEY.COM		
DATE: 5/19/2020	JOB No: 19-09.09	F.B. No: 20-01 1
SCALE: 1" = 60'	DRAWN: TAN	CHECKED: TLN
SITEPLAN		

2020 ©

AK CAR CRUSHING & RECYCLING LLC
PO BOX 875188
WASILLA, ALASKA 99687

Received on
5-13-2020

572 S VINE ROAD (YARD)

Wasilla, Alaska

Hazardous Materials Work Plan

February 06, 2020

Table of Contents:

Section A: Hazardous Material Removal Procedures

- Part 1: Work area set-up and protection
- Part 2: Worker protection and decontamination
- Part 3: Vehicle Battery Removal
- Part 4: Vehicle Fluid Removal
- Part 5: Waste Handling, packaging, labeling, and manifesting procedures
- Part 8: Certification

Section B:

Hazardous Material Removal Procedures

Part 1: (1.8.3(a) Work area set-up and protection.

AK Car Crushing & Recycling LLC will be doing the hazard removal of vehicle oil, fuel antifreeze and batteries, during the operation of such tasks, AK CAR CRUSHING & RECYCLING LLC will notify the yard supervisor prior to work commencing. AK CAR CRUSHING & RECYCLING LLC will establish a demarcated work area, allowing Authorized personnel in the work area duration of the work being completed. Containers will be provided for the storage of materials being removed accumulated; these containers will be stored at a designated site. All work procedures will follow 40 CFR 260 thru 263 and 40 CFR 279

Part 2: Worker protection and decontamination

To provide ultimate safety to the employees performing work with the removal of oil, fuel antifreeze and batteries, AK Car Crushing & Recycling LLC will perform the following procedures. First, we will make sure that all the following employees wear the appropriate clothing, such as leather gloves, boots, eye protection and safety vests, which will be appropriate for the job. Decontamination will be in the following manner. First, remove battery from vehicle and place in approve recycling location. Second, place vehicle on approved drain racks. Third, drain oil, fuel and antifreeze into separate 55-gal drums. Forth, place vehicle in staging area to be crushed.

Part 3 Vehicle battery removal

The Vehicle battery is removed from the vehicle and placed upright in a Conex for recycling. The yard employees make sure the batteries are stacked upright to prevent leakage. The supervisor inspects daily and makes sure all batteries are secure. Shrink wrap is used to prevent any falling of batteries prior to shipping out containers to the lower 48 for recycling.

Part 4: Vehicle fluid removal procedures.

The following material, tools, and equipment may be needed for the process of removal of oil, fuel and antifreeze, an onsite assessment will be completed for all tools, materials equipment needed.

1. 3 - 55-gallon open top barrel with lock ring
2. Gloves, Boots and Vest

3. Safety Glasses
4. Electric wire cutters
5. Battery powered drill
6. label for barrels
7. Spill kits

The following procedures will be followed to remove fluids:

1. A walk around the vehicle to check for any metal or other objects that may affect the process of removing fluids is conducted
2. The supervisor uses the front end loader with forks to pick up the vehicle and place on EPA approved racks
3. The supervisor makes sure it is on the racks properly and safe for fluid draining
4. Yard employee starts the process of draining the fluids into separate 55-gal drum via the drain rack.
5. The drums are label appropriately
6. Once the process is complete, the vehicle is removed by the supervisor and loader and placed in staging area
7. Once in staging area, the vehicle is either crushed and recycled or stored for parts
8. EPA approved Spill kits and disposal drum are located by the EPA approved drain racks
9. Inspections will be done daily and noted on site and any spill records.
10. To prevent accidental exposure of workers draining fluids, the following safety precautions will be taken: Employees will wear protective clothing, including eye protection, gloves and boots; it will be ensured that the area of draining fluids is well ventilated to minimize the potential risk for breathing in fumes. Some of the warning signs of exposure include irritation of the eyes, nose, and throat. Below are some safety practices that will be follow if accidental exposure occurs:
 - a) **Eye Contact** - immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.
 - b) **Skin Contact** - remove contaminated clothing and immediately wash contaminated skin with large amounts of soap and water. Contaminated clothing must be disposed as waste.
 - c) **Breathing Issues** - removal of the person from the area and call 911 for immediate ambulance assistance and transport to the emergency room.
11. Hygiene Practices - Hand washing with soap and water before each break and leaving at end of day. There also will be a separate area for eating and drinking, this area will be designated in the shop or office.

Part 9: Waste handling, packaging labeling and manifesting procedures:

All materials handled by AK CAR CRUSHING & RECYCLING LLC will be properly stored/packaged/labeled and shipped out to facilities where the waste is accepted for proper disposal, or reprocessing. Along with this, AK CAR CRUSHING & RECYCLING LLC will provide the manifests/receipts of all the materials being removed this includes oil and antifreeze, and other equipment possibly collected at the jobsite. AK CAR CRUSHING & RECYCLING LLC will store materials in a containment area that is properly marked onsite until proper pick up of contaminated waste. AK CAR CRUSHING & RECYCLING LLC will coordinate with waste facilities for prompt pickup of waste. NRC Alaska LLC will provide transport and waste disposal as soon as waste is available for pick-up.

Disposal Site and Transporter:

NRC Alaska LLC

619 East Ship Creek Ave. Anchorage, AK 99501

(907) 257-1558

24/7/365 Spill Response (877)375-5040

www.nrcc.com

Part 10: Certification of Work Plan

The careful application of the preceding work plan will accomplish the goals as set forth in the Statement of Purpose in compliance with applicable State, Federal and Local regulations and requirements set forth by EPA and OSHA. The Supervisor may, at their discretion, revise work practice and procedures if all Federal, State and Local requirements are met and meets EPA and OSHA guidelines.

David Berezyuk
Project Designer Signature

04/17/2020
Date

THE ASBESTOS INSTITUTE

Certifies that

David Berezyuk

has attended and received instruction in the EPA approved course

AHERA Project Designer Refresher

on

April 03, 2020

and successfully completed and passed the competency exam.

Certificate:
ON-4653-8104-040320

Date of Examination:
3-Apr-2020

Date of Expiration:
03-Apr-2021



William T. Cavness
Director



Approved Instructor

THE ASBESTOS INSTITUTE

20033 N. 19th Ave, Building 6, Phoenix, AZ 85027

602-864-6564 – www.theasbestosinstitute.com

This training meets all requirements for asbestos certification under Toxic Substance Control Act Title II.

**PUBLIC HEARING
QUASI-JUDICIAL**

**Resolution No. PC 20-26
ALASKA SELF STORAGE**

(Page 65 - 140)

PUBLIC HEARING

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MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822 • Fax (907) 861-7876

www.matsugov.us

DEVELOPMENT SERVICES DIVISION STAFF REPORT

Date: July 8, 2020

File Number: 172520200001

Applicant/ Property Owner: John & Andrea Gilliland, dba Alaska Self Storage

Request: Planning Commission Resolution 20-26
Request for a conditional use permit under MSB 17.25 – Talkeetna Special Land Use Spur Road South District to operate a commercial storage facility greater than 6,000 square feet in size

Location: 26731 S. Talkeetna Spur; MSB Tax ID# 7909000L001; within Township 25 North, Range 4 West, Section 7, Seward Meridian

Size of Property: 2.53 acres

Reviewed By: Eileen Probasco, Planning & Land Use Director *EP*
Alex Strawn, Development Services Manager *(Signature)*

Staff: Mark Whisenhunt, Planner II *(Signature)*

Staff Recommendation: Approval with conditions

EXECUTIVE SUMMARY

The applicant has submitted an application for a conditional use permit to operate a commercial storage facility with five storage buildings that total 30,000 square feet in size in the Spur Road South District. Each building is 6,000 square feet in size, one of which was previously constructed in 2019.

MSB 17.25.070 (D)(1) requires a conditional use permit for commercial uses greater than 6,000 square feet in size within the Talkeetna Special Land Use District (Spur Road South).

LAND USE

Existing Land Use:

In 2019 the applicant subdivided a 10-acre parcel into 3 lots known as the Chunilna Estates at Talkeetna Lakes subdivision. Lot 1 is the subject parcel, which is approximately 2.53 acres in size. Currently, there is one existing building 30 feet wide by 200 feet long, along with a chain link fence surrounding the storage facility. The storage facility is currently operating. Lots 2 and 3 of the subdivision are flag-lots abutting to the south and east with a dedicated public use easement. These two lots are currently undeveloped.

Surrounding Land Uses:

The property abuts the east side of the Talkeetna Spur right-of-way. Parcels in the area range from two to 240 acres in size, with most being around 10 acres. Lots are typically heavily wooded with residential homes. However, there are some commercial and industrial uses, including earth materials extraction that abut Talkeetna Spur.

REVIEW OF APPLICABLE CRITERIA AND FINDINGS

MSB 17.03 – Public Notification

Notices were mailed to all property owners within 600 feet of the subject property and to the Talkeetna Community Council. A total of 15 notices were mailed on June 16, 2020. The public hearing notice was published in the June 17, 2020 Frontiersman newspaper. The application material was posted on the Borough's web site on June 12, 2020. The public notice, application material, and a request for comments were emailed to the Talkeetna Community Council on June 12, 2020. Staff did not receive any comments from the public or the community council.

Section 17.25.070 Spur Road South (SRS) District

(A) *There is established the Spur Road South Land Use District. The boundaries of this land use district are shown on the official map.*

(B) *The purpose of this district is to:*

(1) *Maintain the visual integrity of the Spur Road, so that, like today, people traveling along this route experience the corridor as a largely natural area, separating more developed communities to the north and south.*

(2) *Continue to allow residential and commercial development along the corridor, as long as it is pulled back from the highway, and a buffer of native trees and other vegetation is retained.*

(C) *Permitted uses within this district are:*

(1) *residential:*

(a) *single-family dwellings;*

(b) *two-family dwellings; and*

(c) *multi-family dwellings.*

(2) *retail, office, service, or other commercial uses 6,000 square feet or less;*

(3) *hotels, motels, or other overnight accommodations of 50 units or fewer;*

- (4) recreational vehicle parks, campgrounds, and parking lots with spaces for a total of 50 or fewer tent camping, RV or parking spaces;
 - (5) parks, playgrounds, or buildings 6,000 square feet or less for community civic uses;
 - (6) utility facilities. Structures exceeding the maximum building height or building footprint development standards within this district are subject to a conditional use permit; and
 - (7) Accessory uses and structures.
- (D) Conditional uses within this district are:
- (1) retail, office, service, or other commercial uses of more than 6,000 square feet;
 - (2) hotels, motels, or other overnight accommodations of more than 50 units;
 - (3) recreational vehicle parks, campgrounds, and parking lots with accommodations for more than 50 spaces;
 - (4) any use that generates traffic in excess of 100 vehicles during the morning or afternoon peak hour, or more than 750 vehicles per day;
 - (5) light industrial uses;
 - (6) alcoholic beverage uses, in accordance with the requirements in MSB 17.70, Regulation of Alcoholic Beverage Uses;
 - (7) natural resource extraction;
 - (8) waste disposal sites or transfer stations; and
 - (9) tall structures as regulated under MSB 17.60 and the requirements of this chapter.
 - (a) exemption: radio antenna up to 75 feet; and
 - (b) notwithstanding MSB 17.60.140(B)(7), any arterial street lighting tower over 50 feet in height shall require a conditional use permit.
 - (10) other uses that are compatible with the district, with character compatible to the uses listed here, and that are of similar or lighter intensity of use in terms of their traffic, noise or other off-site impacts as determined by the director.
 - (11) buildings greater than 6,000 square feet for community civic uses.
- (C) Prohibited uses:
- (1) Prohibited uses within this district include, but are not limited to:
 - (a) mobile home parks;
 - (b) junkyards/refuse areas;
 - (c) correctional community residential centers;
 - (d) race tracks intended for motorized uses;
 - (c) adult entertainment or business;
 - (f) commercial vendors in public rights-of-way;
 - (g) heavy industrial uses; and
 - (h) tower farms and tall structures over 100 feet in height, except as permitted under federal regulation.
 - (2) Uses not permitted under subsection (C) or authorized under a conditional use permit issued by the commission under subsection (D) of this section are prohibited.
- (F) Development standards in this land use district are as follows:

- (1) *Maximum building height – 50 feet.*

Finding of Fact:

1. According to the site plan, the height of the buildings for proposed use is nine feet.

Conclusion of Law: Based on the above finding, the proposed building meets the district's maximum building height requirement (MSB 17.25.070(F)(1)).

- (2) *Maximum building footprint – 6,000 square feet, except that the footprint of buildings for community civic uses shall not exceed 10,000 square feet.*

Findings of fact:

1. According to the site plan, each building will be 6,000 square feet in size.

Conclusion of Law: Based on the above finding, the proposed use meets the district's maximum building footprint requirement (MSB 17.25.070(F)(2)).

- (3) *minimum setbacks for buildings 6,000 total square feet or less:*
- (a) *Front – 25 feet;*
 - (b) *Side – 10 feet (unless the side lot line abuts Spur Road, then the setback is 25 feet); and*
 - (c) *Rear – 10 feet (unless the rear lot line abuts Spur Road, then the setback is 25 feet);*

Finding of fact:

1. According to the site plan, at its closest point the proposed use will be set back 90 feet from the Talkeetna Spur right-of-way.
2. According to the site plan, the proposed use will be set back 14 feet from the north side lot line.
3. According to the site plan, the proposed use will be set back 111.5 feet from the east side lot line.
4. According to the site plan, the existing building is set back 26 feet from the public use easement abutting the south side lot line.

Conclusion of Law: Based on the above finding, the proposed use meets the minimum setback requirements for buildings 6,000 total square feet or less (MSB 17.25.070(F)(3)).

- (4) *minimum setbacks for buildings greater than 6,000 total square feet:*
- (a) *front – 50 feet;*
 - (b) *side – 25 feet; and*
 - (c) *rear – 25 feet.*

Finding of Fact:

1. The proposed use will not have buildings greater than 6,000 square feet in size.

Conclusion of Law: MSB 17.25.070(F)(4) is not applicable to the proposed use.

(5) *Vegetative buffer standards are governed by MSB 17.25.065(F)(4), except that a minimum 25-foot buffer is required. As of the effective date of this ordinance, where the unencumbered building space measured along the dimension of the lot perpendicular to the road is less than 150 feet, the vegetative buffer requirement is reduced to 15 feet;*

MSB 17.25.065 (F)(4)(b)(ii) The buffer shall not be encumbered by utility easements. Where utility easements exist, the buffer shall begin at the boundary of the utility easement and maintain a 15-foot width from the boundary of the utility easement;

Finding of fact:

1. An existing 25-foot vegetative buffer beginning at the boundary of the utility easement that parallels Talkeetna Spur Road will be maintained.

Conclusion of Law: Based on the above finding, the proposed development meets the vegetative buffer standard of twenty-five feet (MSB 17.25.070(F)(5)).

(6) *Signs. Sign standards are governed by MSB 17.25.065(F)(5);*

MSB 17.25.065(F)(5)

(a) *Intent. This section is intended to maintain the attractive, high visual quality character of the Spur Road, where views of vegetation and natural features predominate, and businesses have a reasonable opportunity to announce their presence. In general, the size and appearance of signs found in the corridor at the time of the adoption of this ordinance provides a good model for future signs, and for maintaining the road corridor's existing rural character.*

(b) *Requirements:*

(i) *Each lot fronting on the Spur Road is allowed one sign within the vegetative buffer. Signs facing both directions on the highway are permitted. These two directional signs can be a single surface with a message on both sides, or a "v" shaped sign with the message placed in a single structure on two separate surfaces.*

(ii) *All signs shall be located on the lot which they serve.*

(iii) *Dimensions of signs within a buffer or any other location visible from off premises shall meet the following standards:*

(aa) *the portion of the sign bearing the message may not exceed 45 square feet on any face;*

(bb) *signs on poles cannot exceed 12 feet in height; signs on solid bases cannot exceed 5 feet in height; and*

(cc) *reader board style signs and signs which are flashing, rotating, animated or internally illuminated are prohibited.*

Findings of fact:

1. The sign for the proposed use is single plane, mounted on a wood base, and is 32 square feet in size. The sign is movable and temporary in nature.

2. The base of the sign is approximately four inches high.
3. The sign for the proposed use is located on the north side of the driveway, between the gate keypad and the chain link fence.
4. According to the application material, the applicant is pursuing an encroachment permit with the Alaska Department of Transportation (ADOT) to erect an ADOT approved road sign.

Conclusion of Law: Based on the above findings, the proposed use meets the sign standards (MSB 17.25.070(F)(6)).

(7) *Lighting. Lighting standards are governed by MSB [17.25.050\(F\)\(6\)](#); and*

MSB 17.25.050(F)(6)

(a) *Exterior site lighting on individual lots will be located and shielded to direct the light towards the ground, in order to minimize light spillage onto adjacent properties and upward into the night sky.*

(b) *Street illumination and other fixtures mounted higher than 20 feet or 150 watts or more, shall have downward directional shielding.*

(c) *Flashing lights are prohibited, with the exception of seasonal holiday lights used during the period directly associated with the holiday.*

Findings of fact:

1. According to the application material, all proposed lighting is located and shielded to direct the light towards the ground to minimize light spillage onto adjacent properties and upward into the night sky.
2. The proposed lighting height is 8 feet.
3. There are no proposed flashing lights.

Conclusion of Law: Based on the above findings, the proposed use meets the exterior lighting standards (MSB 17.25.070(F)(7)).

(8) *Consistent with the Talkeetna Comprehensive Plan, there exist advisory design guidelines recommended by the Talkeetna Community Council, which all developers are encouraged to observe when developing land or modifying structures within this land use district, and which the commission may consider when acting on a conditional use application.*

Finding of fact:

1. No design guidelines have been adopted by the Talkeetna Community Council for the Spur Road South District.

Conclusion of Law: (MSB 17.25.070(F)(8)) is not applicable to the proposed use.

Section 17.25.130 Conditional Use General Standards

(A) *A conditional use permit may be granted only if it meets the requirements of this section in addition to any other standards required by this chapter.*

(B) *In granting a conditional use permit, the commission must determine that sufficient conditions have been placed on the proposed use that the off site impacts of the development will be eliminated or reduced to an acceptable level, and that as a result, the positive qualities of the neighborhood will be enhanced or substantially retained. Among the impacts the commission shall consider are those below:*

(1) *The conditional use will preserve or not detract from the value, character, or integrity of the Talkeetna community.*

Findings of fact:

1. The property abuts the east side of the Talkeetna Spur right-of-way. Parcels in the area range from two to 240 acres in size, with most being around 10 acres. Lots are typically heavily wooded with residential homes. However, there are some commercial and industrial uses, including earth materials extraction that abut Talkeetna Spur
2. According to the site plan, the height of the buildings for proposed use is nine feet.
3. According to the site plan, at its closest point the proposed use will be set back 90 feet from the Talkeetna Spur right-of-way.
4. According to the site plan, the proposed use will be set back 14 feet from the north side lot line.
5. According to the site plan, the existing building is set back 26 feet from the public use easement abutting the south side lot line.
6. According to the site plan, the proposed use will be set back 111.5 feet from the east side lot line.
7. An existing 25-foot vegetative buffer beginning at the boundary of the utility easement that parallels Talkeetna Spur Road will be maintained.
8. The 25-foot vegetative buffer will keep the frontage a heavily wooded area, as required by MSB 17.25.070(F)(5).
9. The sign for the proposed use is located on the north side of the driveway, between the gate keypad and the chain link fence.
10. According to the application material, all proposed lighting is located and shielded to direct the light towards the ground to minimize light spillage onto adjacent properties and upward into the night sky.
11. There are no proposed flashing lights.
12. The proposed use will consist of five metal sided buildings.

Conclusion of Law: Based on the above findings, the proposed use will preserve and not detract from the value, character and integrity of the Talkeetna community (MSB 17.25.130(B)(1)).

(2) *The conditional use is consistent with the goals of the Talkeetna Comprehensive Plan (1999).*

Relevant goals of the Talkeetna Comprehensive Plan (1999) state:

Land Use and Community Development Goals:

- *Maintain the community's small town atmosphere, sense of community, and high quality of life.*
- *Protect and conserve the wilderness values, and natural resource of the lands surrounding Talkeetna.*
- *Keep Talkeetna a pleasant place to live, work, and visit.*
- *Plan and provide for population growth which can be adequately absorbed by the area, without negative impacts on the sense of community, services, the environment, or the quality of life.*
- *Guide development in a manner which enhances Talkeetna's natural appeal, taking steps to ensure that future growth and change will build a desirable human environment.*
- *Maintain Talkeetna's major recreation and ecologically sound tourism economy and avoid conflicting activities.*

Future Land Use Plan:

"Mixed Residential and Commercial" use is proposed for the land along the Talkeetna Spur road and within the east and west townsites. A possible commercial cluster is identified at the intersection of Comsat Road with the Talkeetna Spur Road.

Findings of fact:

1. The property abuts the east side of the Talkeetna Spur right-of-way. Parcels in the area range from two to 240 acres in size, with most being around 10 acres. Lots are typically heavily wooded with residential homes. However, there are some commercial and industrial uses, including earth materials extraction that abut Talkeetna Spur.
2. The Talkeetna Comprehensive Plan states: *"Mixed Residential and Commercial" use is proposed for the land along the Talkeetna Spur road and within the east and west townsites. A possible commercial cluster is identified at the intersection of Comsat Road with the Talkeetna Spur Road.*
3. The Talkeetna Comprehensive Plan states: *Protect and conserve the wilderness values, and natural resource of the lands surrounding Talkeetna.*
4. The Talkeetna Comprehensive Plan states: *Keep Talkeetna a pleasant place to live, work, and visit.*
5. The Talkeetna Comprehensive Plan states: *Maintain the community's small town atmosphere, sense of community, and high quality of life.*
6. According to the application material, the proposed use will meet all setback requirements of MSB 17.25 – Talkeetna Special Land Use District and MSB 17.55 Setbacks and Screening Easements.

7. An existing 25-foot vegetative buffer beginning at the boundary of the utility easement that parallels Talkeetna Spur Road will be maintained
8. The 25-foot vegetative buffer will keep the frontage a heavily wooded area, as required by MSB 17.25.070(F)(5).
9. The sign for the proposed use is located on the north side of the driveway, between the gate keypad and the chain link fence.
10. According to the application material, all proposed lighting is located and shielded to direct the light towards the ground to minimize light spillage onto adjacent properties and upward into the night sky.
11. There are no proposed flashing lights.
12. The proposed use will consist of five metal sided buildings.

Conclusion of Law: Based on the above findings, the proposed use is consistent with the Talkeetna Comprehensive Plan (1999) (MSB 17.25.130(B)(2)).

(3) The granting of the conditional use permit will not be harmful to the public health, safety, convenience and welfare.

Findings of fact:

1. The proposed use accesses Talkeetna Spur via an ADOT approved driveway.
2. The proposed use has been reviewed and approved by the State Fire Marshal's office for conformity with the State fire safety regulations.
3. The proposed use provides a service to its patrons to safely store personal items indoors, which may otherwise be stored outdoors.
4. The sign for the proposed use is located on the north side of the driveway, between the gate keypad and the chain link fence.
5. According to the application material, all proposed lighting is located and shielded to direct the light towards the ground to minimize light spillage onto adjacent properties and upward into the night sky.
6. There are no proposed flashing lights.

Conclusion of Law: Based on the above findings, the proposed use will not be harmful to the public health, safety, convenience and welfare (MSB 17.25.130(B)(3)).

(4) Sufficient access, setbacks, lot area, parking space, buffers, and other safeguards have been provided.

Findings of fact:

1. According to the site plan, at its closest point the proposed use will be set back 90 feet from the Talkeetna Spur right-of-way.

2. According to the site plan, the proposed use will be set back 14 feet from the north side lot line.
3. According to the site plan, the existing building is set back 26 feet from the public use easement abutting the south side lot line.
4. According to the site plan, the proposed use will be set back 111.5 feet from the east side lot line.
5. An existing 25-foot vegetative buffer beginning at the boundary of the utility easement that parallels Talkeetna Spur Road will be maintained.
6. The 25-foot vegetative buffer will keep the frontage a heavily wooded area, as required by MSB 17.25.070(F)(5).
7. According to the application material, the proposed use will meet all setback requirements of MSB 17.25 – Talkeetna Special Land Use District and MSB 17.55 Setbacks and Screening Easements.
8. The subject parcel is approximately 2.53 acres in size.
9. The proposed use accesses Talkeetna Spur via an ADOT approved driveway.

Conclusion of Law: Based on the above findings, sufficient access, setbacks, lot area, parking space, buffers, and other safeguards have been provided (MSB 17.25.130(B)(4)).

(6) Light industrial uses shall not produce noise, air pollution, water pollution, vibration, smoke, dust, fire hazard noxious or toxic gases or fumes, objectionable odors, glare or light pollution, electrical interference, or industrial waste that creates a nuisance beyond the boundaries of the property.

Finding of fact:

1. The proposed commercial storage facility is not a light industrial use.

Conclusion of Law: MSB 17.25.130(B)(6) is not applicable to the proposed use.

STAFF RECOMMENDATIONS

Staff recommends approval of the Conditional Use Permit to operate a commercial storage facility greater than 6,000 square feet in size at 26731 S. Talkeetna Spur (Tax ID# 7909000L001). The proposed use meets all applicable standards of MSB 17.25. Staff recommends approval of this permit with the following conditions:

1. The operation shall comply with all applicable state and local regulations.
2. All aspects of the operation shall comply with the description detailed in the application material and with the conditions of this permit. An amendment to the Conditional Use Permit shall be required prior to any expansion of the conditional use.
3. The operation shall comply with the sign standards in MSB code 17.25.070(F)(6).

4. The vegetative buffer shall be maintained in accordance with the standards outlined in MSB code 17.25.070(F)(5).
5. Borough staff shall be permitted to enter premises subject to this permit to monitor compliance with permit requirements. Such access will at minimum, be allowed on demand when activity is occurring, and/or with prior verbal or written notice, and/or at other times as necessary to monitor compliance. Denial of access to Borough staff shall be a violation of this Conditional Use Permit.

If the Planning Commission chooses to deny this permit, findings for denial must be prepared by the Commission.





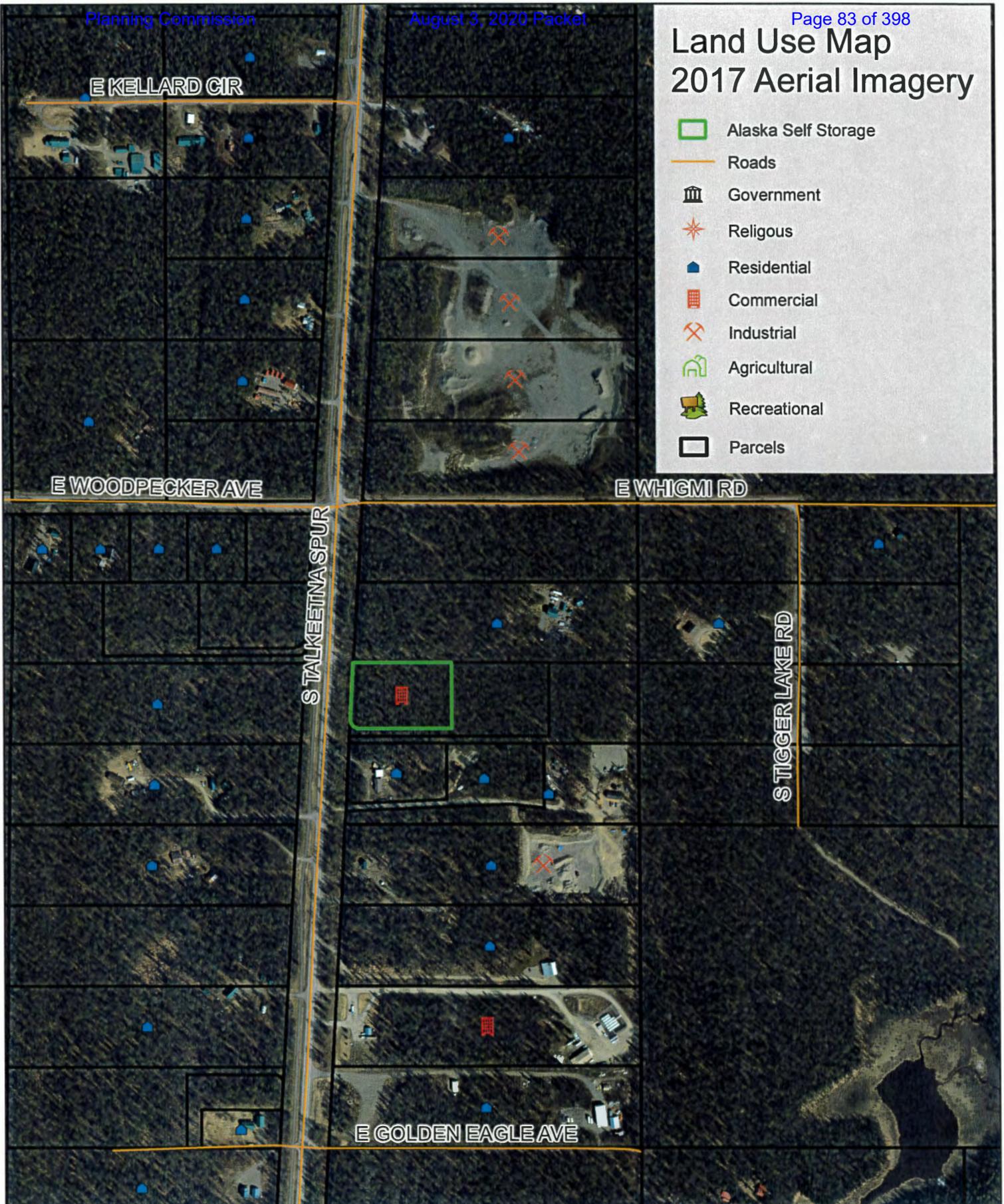






Land Use Map 2017 Aerial Imagery

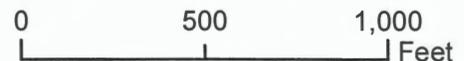
-  Alaska Self Storage
-  Roads
-  Government
-  Religious
-  Residential
-  Commercial
-  Industrial
-  Agricultural
-  Recreational
-  Parcels



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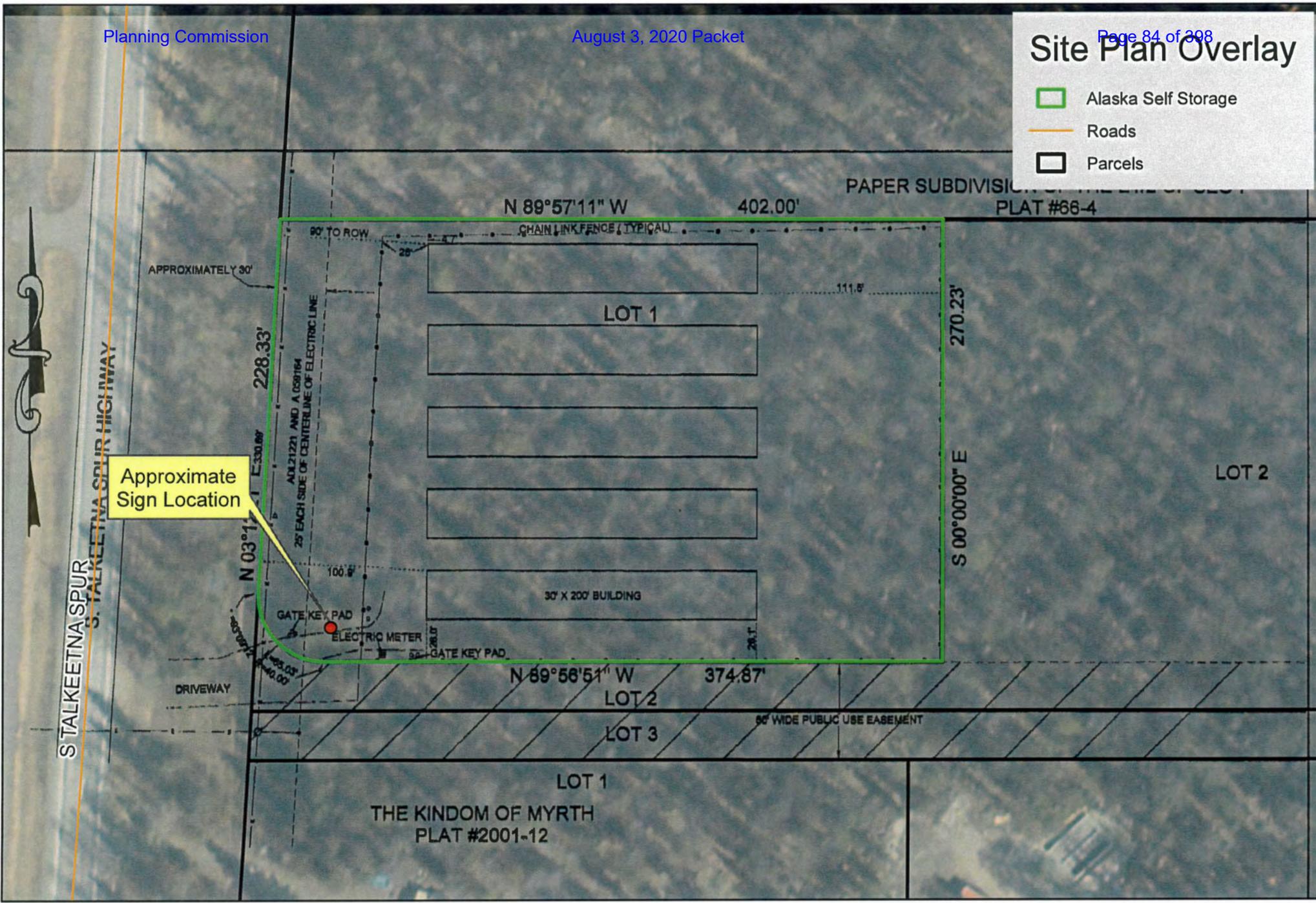
Date: 7/8/2020
 By: MSB Development
 Services Division

1 inch = 500 feet



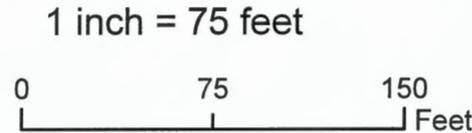
Site Plan Overlay

- Alaska Self Storage
- Roads
- Parcels



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Date: 7/8/2020
 By: MSB Development
 Services Division



Mark Whisenhunt

From: Mark Whisenhunt
Sent: Friday, June 12, 2020 4:02 PM
To: 'allen.kemplen@alaska.gov'; 'tucker.hurn@alaska.gov'; 'melanie.nichols@alaska.gov'; 'mearow@matanuska.com'; 'row@mtasolutions.com'; 'row@enstarnaturalgas.com'; 'ospdesign@gci.com'; Fire Code; Jill Irsik; Eric Phillips; Jude Bilafer; Cindy Corey; Terry Dolan; Jim Jenson; Jamie Taylor; Charlyn Spannagel; Karol Riese; Theresa Taranto; Andy Dean; John Aschenbrenner; Tam Boeve; 'contact@talkeetnacouncil.org'; 'joe@thehighexpedition.com'
Subject: Request for Review: Alaska Self Storage

DATE: June 12, 2020

TO: Various Governmental Agencies

FROM: Mark Whisenhunt, Planner II

SUBJECT: Request for Review and Comments Related to a Request for Conditional Use Permit for the operation of a commercial storage facility greater than 6,000 square feet in size within Spur Road South District of the Talkeetna Special Land Use District.

LOCATION: 26731 S. Talkeetna Spur; Tax ID #7909000L001; within Township 25 North, Range 4 West, Section 07, Seward Meridian

APPLICANT: John and Andrea Gilliland (dba Alaska Self Storage)

An application for a conditional use permit under MSB 17.25 – Talkeetna Special Land Use District, has been submitted for the operation of a commercial storage facility greater than 6,000 square feet in size. The Planning Commission will conduct a public hearing on this request on August 3, 2020.

Application materials may be viewed online at: www.matsugov.us by clicking on 'All Public Notices & Announcements'. Application material may also be reviewed at the Borough Permit Center. A direct link to the application material is here:

<https://www.matsugov.us/publicnotice/alaska-self-storage-conditional-use-permit>

Written comments are due on or before **July 7, 2020** and will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report, but will be provided to the Commission at the meeting.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
mark.whisenhunt@matsugov.us

MATANUSKA-SUSITNA BOROUGH DIRECTORY OF ORGANIZATIONS

Community Council - Talkeetna

Board Expiration

<input type="text" value="Talkeetna Community"/>	<input type="text"/>	<input type="text"/>	Board Position	<input type="text" value="Correspondence - Talkeetna CC"/>
Company Representing	<input type="text"/>		Term	<input type="text"/> to <input type="text"/>
<input type="text" value="PO Box 608"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text" value="Talkeetna"/>	<input type="text" value="AK"/>	<input type="text" value="99676"/>	Member Title	<input type="text"/>
Home	<input type="text"/>	Work	<input type="text"/>	Cell <input type="text"/>
				E-mail <input type="text" value="contact@talkeetnacouncil.org"/>

<input type="text" value="Swanson"/>	<input type="text"/>	<input type="text"/>	Board Position	<input type="text" value="Member 1 - Talkeetna CC"/>
Company Representing	<input type="text"/>		Term	<input type="text"/> to <input type="text"/>
<input type="text"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	Member Title	<input type="text" value="Chair"/>
Home	<input type="text"/>	Work	<input type="text"/>	Cell <input type="text"/>
				E-mail <input type="text" value="contact@talkeetnacouncil.org"/>

<input type="text" value="Russell"/>	<input type="text"/>	<input type="text"/>	Board Position	<input type="text" value="Member 2 - Talkeetna CC"/>
Company Representing	<input type="text"/>		Term	<input type="text"/> to <input type="text"/>
<input type="text"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	Member Title	<input type="text" value="Secretary"/>
Home	<input type="text"/>	Work	<input type="text"/>	Cell <input type="text"/>
				E-mail <input type="text" value="contact@talkeetnacouncil.org"/>

<input type="text" value="Kloepfer"/>	<input type="text"/>	<input type="text"/>	Board Position	<input type="text" value="Member 3 - Talkeetna CC"/>
Company Representing	<input type="text"/>		Term	<input type="text"/> to <input type="text"/>
<input type="text"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	Member Title	<input type="text" value="Treasurer"/>
Home	<input type="text"/>	Work	<input type="text"/>	Cell <input type="text"/>
				E-mail <input type="text" value="contact@talkeetnacouncil.org"/>

<input type="text" value="Button"/>	<input type="text"/>	<input type="text"/>	Board Position	<input type="text" value="Member 4 - Talkeetna CC"/>
Company Representing	<input type="text"/>		Term	<input type="text"/> to <input type="text"/>
<input type="text" value="PO Box 991"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text" value="Talkeetna"/>	<input type="text" value="AK"/>	<input type="text" value="99676"/>	Member Title	<input type="text" value="Co-Chair"/>
Home	<input type="text" value="(907) 733-5264"/>	Work	<input type="text"/>	Cell <input type="text"/>
				E-mail <input type="text"/>

MATANUSKA-SUSITNA BOROUGH DIRECTORY OF ORGANIZATIONS

Community Council - Talkeetna

Board Expiration

<input type="text" value="Lee"/>	<input type="text" value="Ali"/>	<input type="text"/>	Board Position	<input type="text" value="Member 5 - Talkeetna CC"/>
Company Representing			Term	<input type="text"/> to <input type="text"/>
<input type="text" value="PO Box 692"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text" value="Talkeetna"/>	<input type="text" value="AK"/>	<input type="text" value="99676"/>	Member Title	<input type="text" value="Board Member"/>
Home	<input type="text" value="(646) 630-2849"/>	Work	<input type="text"/>	Cell <input type="text"/> E-mail <input type="text"/>

<input type="text" value="McAneny"/>	<input type="text" value="Joseph"/>	<input type="text"/>	Board Position	<input type="text" value="Member 6 - Talkeetna CC"/>
Company Representing			Term	<input type="text"/> to <input type="text"/>
<input type="text" value="PO Box 1127"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text" value="Talkeetna"/>	<input type="text" value="AK"/>	<input type="text" value="99676"/>	Member Title	<input type="text" value="Board Member"/>
Home	<input type="text" value="(907) 360-9593"/>	Work	<input type="text"/>	Cell <input type="text"/> E-mail <input type="text" value="joe@thehighexpedition.com"/>

<input type="text" value="Vos"/>	<input type="text" value="Peg"/>	<input type="text"/>	Board Position	<input type="text" value="Member 7 - Talkeetna CC"/>
Company Representing			Term	<input type="text"/> to <input type="text"/>
<input type="text"/>			Type of Term	<input type="text"/> <input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	Member Title	<input type="text" value="Board Member"/>
Home	<input type="text"/>	Work	<input type="text"/>	Cell <input type="text"/> E-mail <input type="text"/>

Information Contact	<input type="text"/>
Total Board Members	7 Members
Meeting Schedule	Meetings 1st Monday of each month, except September and other months where a major public holiday falls on the first Monday, in which case the monthly meeting is held on the following day. Meeting time is 7 p.m. at the Talkeetna Public Library. (Please check the Calendar of Events)
Meeting Location	Talkeetna Public Library
Board Notes	<div style="border: 1px solid #ccc; height: 150px;"></div>



Certificate of Bulk Mailing – Domestic

Fee for Certificate

Up to 1,000 pieces (1 certificate for total number)

For each additional 1,000 pieces, or fraction thereof

Duplicate Copy

Use
Current
Price List
(Notice 123)

Postage: Mailers must affix meter, PC Postage[®], or (uncanceled) postage stamps here in payment of total fee due.



U.S. POSTAGE >> PITNEY BOWES



ZIP 99645 \$ 008.55⁰
02 4W
0000368428 JUN 16 2020

Acceptance employee must cancel postage affixed (by round-date) at the time of mailing.

If payment of total fee due is being paid by Permit Imprint, include the PostalOne! Transaction Number here: _____

Number of Identical Weight Pieces <i>15</i>	Class of Mail <i>1st</i>	Postage for Each Mailpiece Paid <input type="checkbox"/> Verified	Number of Pieces to the Pound <i>96</i>
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Total Number of Pounds <i>6.202</i>	Total Postage Paid for Mailpieces <i>\$7.50</i>	Fee Paid <i>8.55</i>
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Mailed For <i>Dev. Serv.</i>	Mailed By <i>Sarah</i>
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Postmaster's Certification

It is hereby certified that the number of mailpieces presented and the associated postage and fee were verified. This certificate does not provide evidence that a piece was mailed to a particular address.

[Signature]
(Postmaster or Designee)



56239000L043 1
BAITH RICHARD DENNIS TRE
BAITH RICHARD DENNIS TR
13536 INDIANA ST NE
ALLIANCE, OH 44601-9622

55150000L002 2
CRANE PAMELA L REV TR/TRE
PO BOX 1189
TALKEETNA AK 99676

55262000L004 3
FLETCHER JACOB & DACIA
PO BOX 245
TALKEETNA AK 99676-0245

57909000L003 4
GILLILAND JOHN ROGER
GILLILAND ANDREA KELSEY CASHER
8038 QUEEN VICTORIA DR
ANCHORAGE AK 99518

55150000L003 5
HEBERT JACQUELYNE M
PO BOX 314
TALKEETNA AK 99676

55150000L001 6
HERRING RUTH A
PO BOX 208
TALKEETNA AK 99676-0208

55070000L003 7
MINSHALL DAVID JOHN
#215
10 BENNING ST
WEST LEBANON NH 03784

56239000L068 8
SOMMER STEVEN & MARCELLA L
PO BOX 873
TALKEETNA, AK 99676-0873

55262000L005 9
STERN MARGARET A
PO BOX 272
TALKEETNA AK 99676

56239000L044 10
TERSTEGGE MARTIN & LYNN
PO BOX 693
TALKEETNA, AK 99676-0693

55070000L001 11
TICON REST EQUIP CO PST
PO BOX 1023
TALKEETNA, AK 99676-0681

56239000L045 12
TOTTEN DAVID K JR & B A
PO BOX 529
TALKEETNA, AK 99676-0529

56239000L069 13
WALLONA JUDY
WALLONA PHILLIP EST
PO BOX 62
TALKEETNA AK 99676-0062

56239000L065 14
WEDEKIND WARREN W JR REV TR
901 S HERMON RD
WASILLA AK 99654-7312

15
TALKEETNA COMMUNITY COUNCIL
PO BOX 608
TALKEETNA, AK 99676

tara0609 0
15
6/15/2020 2:37:58 PM

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6/15/2020 2:37:58 PM

The Planning Commission of the Matanuska-Susitna Borough will consider the following:

MSB Code Section: MSB 17.25 – Talkeetna Special Land Use District
Applicant: John and Andrea Gilliland (dba Alaska Self Storage)
Location: 26731 S. Talkeetna Spur; Tax ID #7909000L001;
within Township 25 North, Range 4 West, Section 07, Seward Meridian
Request: An application for a conditional use permit under MSB 17.25 – Talkeetna Special Land Use District, has been submitted for the operation of a commercial storage facility greater than 6,000 square feet in size.

The Planning Commission will conduct a public hearing concerning the following application for a conditional use permit on Monday, **August 3, 2020 at 6:00 p.m.** in the Borough Assembly Chambers, 350 E. Dahlia Avenue, in Palmer. This may be the only presentation of this item before the Planning Commission and you are invited to attend. The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing. Commission members may not receive or engage in ex-parte contact with the applicant, other interested parties in the application, or members of the public concerning the application or issues presented in the application.

***Please Note: Due to the ongoing Coronavirus/COVID-19 Pandemic, the method in which this meeting is being conducted may change. If a change to the meeting is necessary, it will be posted on the Borough website. The public is encouraged to check the Borough website prior to attending the public hearing for any changes to the meeting schedule or method.**

In Person Participation: Should you wish to attend in person, please adhere to a 6-foot distance between yourself and others; Masks are not required but are encouraged. **Telephonic Testimony:** Dial 1-855-225-1887; You will hear “Joining Conference” when you are admitted to the meeting. You will be muted and able to listen to the meeting. When the Chairperson announces audience participation or a public hearing you would like to speak to, press *3; you will hear “Your hand has been raised.” When it is your turn to testify you will hear “Your line has been unmuted.” State your name for the record, spell your last name, and provide your testimony.

Application materials may be viewed online at www.matsugov.us by clicking on “All Public Notices & Announcements.” Application material may also be viewed at the Borough Permit Center. For additional information, you may contact Mark Whisenhunt, Planner II, at 861-8527. Written comments can be mailed to: MSB Development Services Division, 350 E. Dahlia Avenue, Palmer, AK 99645. You may e-mail comments to mark.whisenhunt@matsugov.us. In order to be eligible to file an appeal for a decision of the Planning Commission, a person must be designated an “interested party.” See MSB 15.39.010 for the definition of “interested party.” The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the borough home page: www.matsugov.us, in the Borough Clerk’s office, and at various libraries within the borough. Written comments are due on or before **July 7, 2020** and will be included in the Planning Commission packet for the Commissioner’s review and information. Please be advised that comments received from the public after that date will not be included in the staff report, but will be provided to the Commission at the meeting.

Name: _____ **Mailing Address:** _____

Location/Legal Description of your property: _____

Comments: _____

Note: Vicinity Map Located on Reverse Side



Matanuska-Susitna Borough

www.matsugov.us

MATANUSKA-SUSITNA BOROUGH NOTICE OF PUBLIC MEETINGS

All meetings of recognized boards, committees, and commissions of the Borough are open to the public and are held at Borough offices, 350 E. Dahlia Ave., Palmer, AK, unless specified otherwise. Three or more Assembly Members may be present at advertised public meetings of federal, state, and local governments or other entities. Please note if you attend a public meeting in person it is highly recommended that you wear a mask and please observe social distancing of 6 feet. Meetings are scheduled as follows:

BOARD	DATE	TIME	LOCATION
Abbreviated Plat (For Telephonic Public Participation - Microsoft Teams (907) 290-7880 or (844) 643-2217 Conference ID: 458 862 708#)	06/17/20	8:30 am	Assembly Chambers
Platting Board (For Telephonic Public Participation - Microsoft Teams (907) 290-7880 or (844) 643-2217 Conference ID: 659 334 777#)	06/18/20	1:00 pm	Assembly Chambers
Local Road Service Area Advisory Board (Public Participation via Microsoft Teams Only)	06/18/20	6:30 pm	Microsoft Teams (844) 643-2217 Conference ID: 555 442 242#
Parks, Recreation, & Trails Advisory Board CANCELED	06/22/20	6:00 pm	Assembly Chambers
Abbreviated Plat (For Telephonic Public Participation - Microsoft Teams (907) 290-7880 or (844) 643-2217 Conference ID: 827 181 879#)	06/24/20	8:30 am	Assembly Chambers
Abbreviated Plat (For Telephonic Public Participation - Microsoft Teams (907) 290-7880 or (844) 643-2217 Conference ID: 989 032 055#)	07/01/20	8:30 am	Assembly Chambers
Talkeetna Sewer & Water Board of Supervisors	07/01/20	1:00 pm	Assembly Chambers

If you would like further information on any of these meetings or are interested in serving on any of the advisory boards, please call the Borough Clerk's Office at 861-8683, Monday through Friday, 8 a.m. to 5 p.m. The Borough's website address is: <https://www.matsugov.us/publicmeetings>

Disabled persons needing reasonable accommodation in order to participate at a Borough Board/Commission meeting should contact the Borough ADA Coordinator at 861-8432 at least one week in advance of the meeting.

The Planning Team meetings scheduled are: (Planning teams consist of Planning staff and members of the public who are appointed by the Planning Commission to work on community comprehensive plans and special land use districts, and community planning meetings.)

None

The Community Council meetings scheduled are: (Community Councils are not agencies or subgroups of the Borough)

Knik-Fairview Community Council	06/17/20	6:30 pm	Knik Public Safety Building, Station 6-2
Trapper Creek Community Council	06/18/20	6:30 pm	Trapper Creek Community Center
Sutton Community Council Subcommittee: Jonesville/Slipper Lake Citizens Action Committee	06/23/20	6:30 pm	Sutton Public Library
Tanaina Community Council General Meeting (For Telephonic Public Participation - Zoom ID: 898 6138 3709)	06/23/20	7:00 pm	Amvets Post 9, Wasilla
Willow Area Community Organization	07/01/20	7:00 pm	Willow Community Center

Publish Date: June 17, 2020 06-15-20

THE FOLLOWING BOARDS AND COMMISSIONS CURRENTLY HAVE VACANCIES

Agriculture Advisory Board	Historical Preservation Commission
Animal Care and Regulation Board	Labor Relations Board
Board of Adjustment and Appeals	Library Board
Board of Equalization	Local Emergency Planning Committee
Board of Ethics	Office of Administrative Hearings
Borough Area Schools Site Selection Committee	Parks, Recreation, and Trails Advisory Board
Commission on Salaries and Emoluments	Platting Board (District #3)
Enhanced 911 Advisory Board	

THE FOLLOWING SERVICE AREAS CURRENTLY HAVE VACANCIES

FIRE SERVICE AREAS	Greater Palmer Consolidated, Sutton, West Lakes
ROAD SERVICE AREAS	Alpine, Greater Butte, Knik, Lazy Mountain, Midway, North Colony, Trapper Creek
SPECIAL SERVICE AREAS	Chase Trail, Circle View & Stampede Estates Flood & Water Erosion, Talkeetna Flood Control, Talkeetna Sewer & Water

If you are interested in applying for any of the vacancies and are a registered voter of the Matanuska-Susitna Borough, please call the Borough Clerk's Office at 861-8681, Monday through Friday, 8 a.m. - 5 p.m., or visit our website www.matsugov.us/boards for an application.

Publish Date: June 17, 2020 06-16-20

NOTICE

The Matanuska-Susitna Borough Wide Lake Management Plan 2020 is out for a thirty (30) day review. Comments are due by Friday, June 19, 2020. Please submit any comments or concerns to:

Eileen Probasco @ eileen.probasco@matsugov.us and Pam Graham @ pam.graham@matsugov.us

In February 2019, planning staff sent a draft code ordinance eliminating the code mandated process for developing a lake management plan with enforceable regulations. This resulted in a second attempt to fix the issues with individual lake management plans while also ensuring that the citizens can still request the adoption of enforceable regulations on their lakes.

In order to address this the Matanuska-Susitna Borough Lake Management Plan was written. This plan will take the place of the individual lake management plans and fill the requirement that a plan be created before enforceable regulations can be adopted. The draft plan is attached for your review and comment.

Along with the draft plan is the revised code ordinance. This ordinance adopts the draft plan, and two new codes sections, 17.59.063 Adoption and Amendment of Regulations on Lakes; and 17.59.065 Regulations on Lakes. In addition, this revised ordinance repeals, in their entirety 15.24.031 Initiating and Amending Lake Management Plans, 17.58 Motorized Uses on Lakes and Waterway, and 17.59.060 Limitation of Uses.

As with the original ordinance, this revision will not eliminate any of the 41 existing lake management plans, as adopted into MSB 15.24.030(C), nor would it eliminate any of the existing enforceable regulations currently in MSB 17.59, Lake Management Plan Implementation. It simply creates one plan, and moves the amendment process from Title 15 Planning, to Title 17 Zoning.

For further information, you can go to the MSB Project page at: <https://www.matsugov.us/projects/lake-management-plan>

Publish Date: June 17, 2020 05-38-20

ELECTION OFFICIALS WANTED
 Are you interested in serving as an Election Official?
 Don't delay, submit your application today!
 The Borough Clerk's Office is recruiting workers for the November 3, 2020, Regular Borough Election. If you are interested in applying to serve as an election worker, you must complete and submit an application. Applications are available online at www.matsugov.us/elections or contact the Borough Clerk's Office at 861-8683. In order to serve, you must be a registered voter of the Borough. Training and compensation are provided.

MATANUSKA-SUSITNA BOROUGH ABBREVIATED PLAT JUNE 24, 2020

H & H CONSTRUCTION: The request is to create one lot from Lots 13 & 14, Block 4, FULLER LAKE HEIGHTS, Plat No. 2014-39, to be known as LOT 13A, containing 4.39 acres +/- . The plat is located south of W. Zehnder Road, west of W. Zehnder Circle, and east of Fuller Lake (Tax ID # 5728B04L013/L014); within the NE 1/4 Section 34, Township 18 North, Range 02 West, Seward Meridian, Alaska. Community Council: Meadow Lakes and in Assembly District #7 Tam Boeve

NORTH LIT HOMES LLC: The request is to create four lots from Lot 1, RIDDELS' ORIGINAL SUBDIVISION, Plat No. 86-12, to be known as LOTS 1A, 1B, 1C and 1D, containing 4.4 acres +/- . The plat is located directly south of E. Mulchatna Drive, west of N. Douglas Drive and east of N. Lucille Street (Tax ID # 51050000L001); within the NW 1/4 SW 1/4, Section 34, Township 18 North, Range 01 West, Seward Meridian, Alaska. Community Council: Tanaina (Inactive) and in Assembly District #6 Jesse Sumner.

The Abbreviated Plat Hearing will convene the public hearing at 8:30 a.m. on June 24, 2020, in the Assembly Chambers at the Dorothy Swanda Jones Building, 350 E. Dahlia Avenue, Palmer, Alaska. Please follow all public protocols in relation to the mandates regarding Covid-19.

The public can now participate in person at the Borough Building. To view the agenda or meeting packet please go to the following link: <https://www.matsugov.us/boards/platting>

If you would like to send comments regarding the proposed action, please mail to MSB, Platting division, 350 E. Dahlia, Palmer, Alaska 99645 or e-mail: platting@matsugov.us. Comments received from the public after the platting packet has been written will be given to the Platting Officer in a "Hand-Out" the day of the meeting. All public comments are due one (1) day prior to the meeting date, by 12:00 p.m.

Publish Date: June 17, 2020 06-17-20

PUBLIC HEARING

The Matanuska-Susitna Borough Planning Commission will conduct a public hearing concerning the following application for a conditional use permit on Monday, August 3, 2020, at 6:00 p.m. in the Borough Assembly Chambers located at 350 E. Dahlia Avenue in Palmer. You are invited to attend.

An application for conditional use permit under MSB 17.25 - Talkeetna Special Land Use District, has been submitted by John and Andrea Gilliland (dba Alaska Self Storage) for the operation of a commercial storage facility greater than 6,000 square feet in size at 26731 S. Talkeetna Spur; Tax ID #7909000L001; within Township 25 North, Range 4 West, Section 07, Seward Meridian.

***Please Note: Due to the ongoing Coronavirus/COVID-19 Pandemic, the method in which this meeting is being conducted may change. If a change to the meeting is necessary, it will be posted on the Borough website. The public is encouraged to check the Borough website prior to attending the public hearing for any changes to the meeting schedule or method.**

When you can participate in the Planning Commission meeting:

IN PERSON: Should you wish to attend in person, please adhere to a 6-foot distance between yourself and others; Masks are not required but are encouraged.

TELEPHONIC TESTIMONY:

- Dial 1-855-225-1887; You will hear "Joining Conference" when you are admitted to the meeting.
- You will be muted and able to listen to the meeting.
- When the Chairperson announces audience participation or a public hearing you would like to speak to, press "3"; you will hear "Your hand has been raised."
- When it is your turn to testify you will hear "Your line has been unmuted."

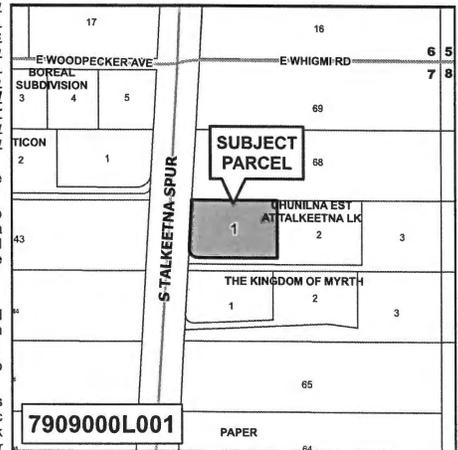
State your name for the record, spell your last name, and provide your testimony.

The Planning Commission members may submit questions to the Planning Commission Clerk concerning the matter or request for more information from the applicant at the time of introduction. All questions and requests submitted by the Commission shall be in writing and copies will be provided to the applicant and made available to all interested parties and the public upon request. Answers to questions and additional material requests will be addressed in the staff report for the public hearing. Planning Commission members may not receive or engage in ex-parte contact with the applicant, other interested parties in the application, or members of the public concerning the application or issues presented in the application.

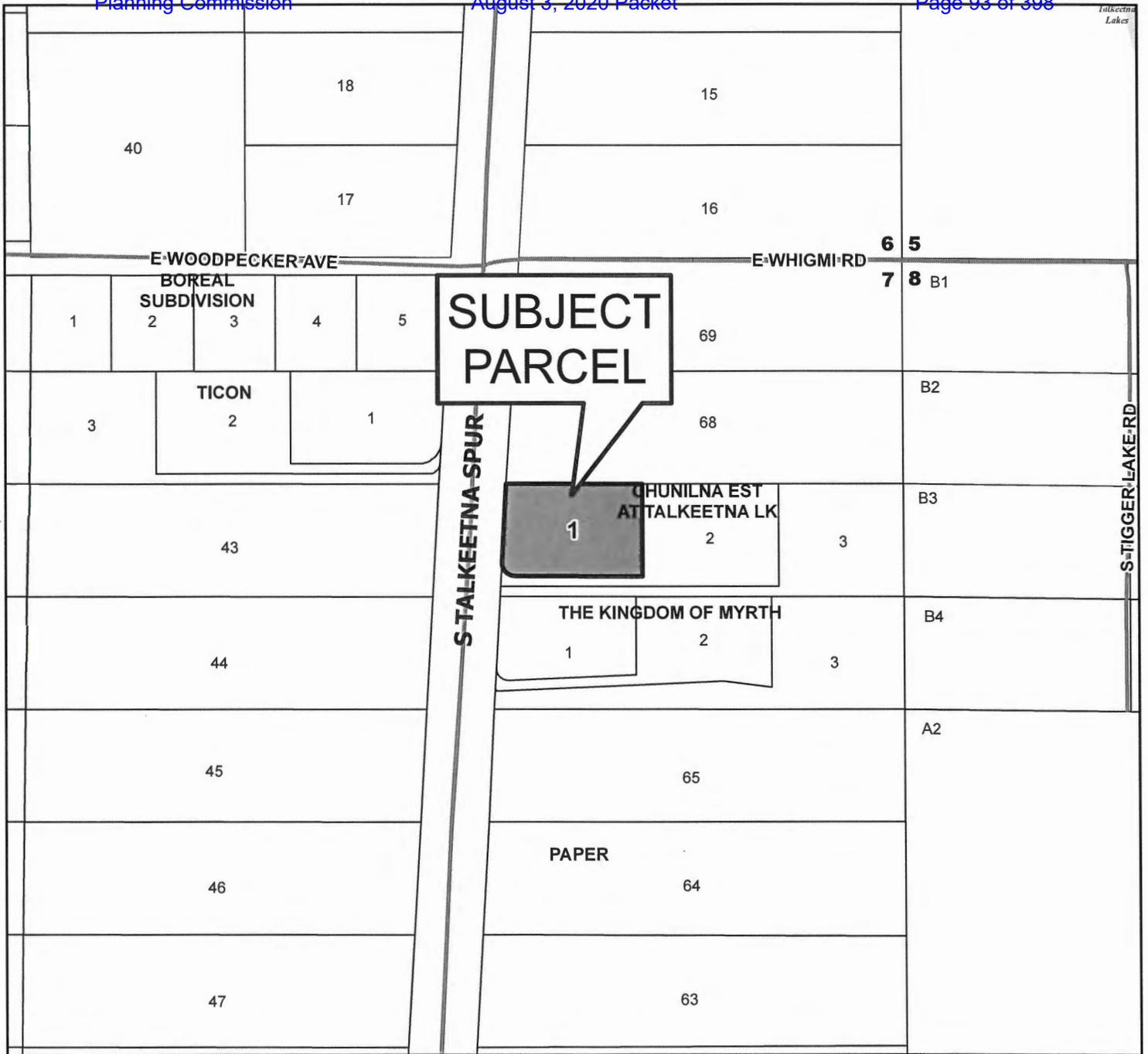
Application materials may be viewed online at www.matsugov.us by clicking on "All Public Notices & Announcements." Application material may also be reviewed at the Borough Permit Center. For additional information, you may contact Mark Whisenhunt, Planner II, at 861-8527. Written comments can be mailed to: MSB Development Services Division, 350 E. Dahlia Avenue, Palmer, AK 99645. You may e-mail comments to mark.whisenhunt@matsugov.us. In order to be eligible to file an appeal from a decision of the Planning Commission, a person must be designated an "interested party." See MSB 15.39.010 for the definition of "interested party." The procedures governing appeals to the Board of Adjustment and Appeals are contained in MSB 15.39.010-250, which is available on the Borough home page: www.matsugov.us, in the Borough Clerk's office, and at various libraries within the borough.

Written comments are due on or before July 7, 2020 and will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report, but will be provided to the Commission at the meeting.

Publish Date: June 17, 2020 06-14-20



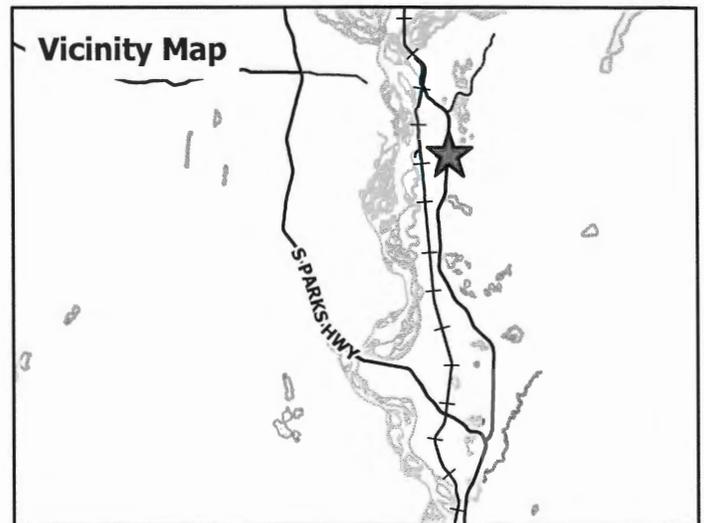
VICINITY MAP



7909000L001



This map is solely for informational purposes only. The Borough makes no express or implied warranties with respect to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-861-7858.



APPLICATION MATERIAL

PAID



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department
Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7822 • Fax (907) 861-7876
Email: permitcenter@matsugov.us

MAR 29 2020

BASIC APPLICATION FOR A CONDITIONAL USE PERMIT

Received

Carefully read instructions and applicable borough code. Fill out forms completely. Attach information as needed. Incomplete applications will not be processed.

Application fee must be attached:
\$1,000 for Conditional Use Permit

Prior to the public hearing, the applicant must also pay the mailing and advertising fees associated with the application. Applicants will be provided with a statement of advertising and mailing charges. Payment must be made prior to the application presentation before the Borough Planning Commission.

Subject Property Township: _____, Range: _____, Section: _____, Meridian _____
MSB Tax Account # 7909000L001
SUBDIVISION: CHUNILA ESTATES AT Talkeetna Lakes BLOCK(S): _____, LOT(S): 1
STREET ADDRESS: 2673 1/2 Talkeetna Spur, Talkeetna, AK 99676
(US Survey, Aliquot Part, Lat. /Long. etc) _____

Ownership A written authorization by the owner must be attached for an agent or contact person, if the owner is using one for the application. Is authorization attached? o Yes o No o N/A

Name of Property Owner John + Andrea Gilliland
Name of Agent/ Contact for application
Address: 8038 Queen Victoria Dr
Address:
Anchorage Ak 99518
Phne: Hm _____ Fax _____
Phne: Hm _____ Fax _____
Wk 606-8029 Cell 223-1707
Wk _____ Cell _____
E-mail Alaska Self Storage@outlook.com
E-mail _____

PROJECT DESCRIPTION & APPLICABLE CODE

- 1. The proposed development requires a conditional use permit under MSB Code Chapter 17.25.070 D1.
2. Attach a written, detailed project description.

Access/Driveway	Yes	No	Attached
1. This project will have access to what street(s)?	X		Talkeetna St Rd
2. Is the street Borough maintained, State (ADOT/PF) maintained, or Private?	X		ADOT
3. Will this project require a new or modified driveway to a street or road?		X	
4. Does this project have an existing driveway permit?	X		
5. Provide copy of driveway permit			

Water Supply	Yes	No
• None	X	
• Existing		X
• Proposed		X
• Private well/cistern		X
• Public/Community		X

Sewage Disposal	Yes	No
• None	X	
• Existing		X
• Proposed		X
• Pit Privy		X
• Holding Tank		X
• Septic Tank		X
• Public/ Community		X
• Other (specify)		X

Nonconforming Uses and Structures	Yes	No	Attached
1. Is this an expansion of a pre-existing legal nonconforming use or structure?		X	
2. If yes, this use has lawfully existed in this location since what date?			N/A
3. If yes, has the nonconforming use been discontinued for more than 12 consecutive months since it began?			N/A
4. If yes, list the date the used was discontinued and the date the use resumed.			N/A
5. Describe the proposed expansion/increase of the pre-existing legal nonconforming use.			N/A
6. To establish Grandfather Rights for a use, complete this form (including attachments), also include a copy of the earliest business license and other evidence of the continued existence of the use at this site since the date since the date the use became nonconforming.			N/A

SITE PLAN – Attach a detailed site plan, drawn to scale, showing the following information: <i>(Some codes require site plans and drawings to be prepared by certified professionals)</i>	Attached
1. Setback distances of structure(s) from the lot lines, rights-of-way, and waterbodies.	✓
2. Adjacent streets, public easements and rights-of-way	✓
3. Existing and proposed buildings and structures (including tanks and chemical processing equipment)	✓
4. Access points	✓
5. Buffering – Visual and Sound	✓
6. Vehicular and pedestrian circulation patterns	✓
7. Location and dimensions of parking areas to be provided, including individual parking spaces	✓
8. Loading areas	
9. Storage and processing areas	✓
10. Lighting	
11. Topography	
12. Drainage management plan	
13. Sources of noise	
14. Fences	✓
15. Berms	
16. Landscaping	
17. Signage	
18. Scale and North Arrow	✓

DIMENSIONAL DRAWING(S) – Attach a dimensional drawing of the horizontal views of the structure(s), drawn to scale, showing the following information: <i>(*If more than one structure is proposed, attach requested information about each.)</i>	Attached
1. Dimensions of all structures	✓
2. Modifications	✓
3. Identify use areas with locations and dimensions	✓
4. Delineate areas of expansion or change in use	✓
5. Other details sufficient to adjudicate the application	
6. Fill – Cubic Yards	None
7. Excavation – Cubic Yards	None
8. Scale and North Arrow	✓

Alaska Self Storage LLC. (AKSS) is a family owned business started in 2019. AKSS is requesting a conditional use permit for its self storage operations at 26731 Talkeetna Spur road (TSR).

We built our first 6,000 sf facility by hand with our friends in August of 2019. At that time improvements were made to the property to allow an additional four buildings to be built with no additional impact to the surrounding neighborhood. AKSS is tucked in behind a robust 100'+ buffer of birch and spruce off the TSR. All existing and planned facilities adhere to the development setback standards.

The 6 conditional use requirements the commission evaluates are individually addressed below:

- 1) The conditional use will preserve or not detract from the value, character, or integrity of the Talkeetna community.

At AKSS our goal is to provide a safe and secure place to store items in a discreet and organized way that will uphold the values, character & integrity of the Talkeetna community.

- 2) The conditional use is consistent with the goals of the Talkeetna Comprehensive Plan.

AKSS not only adheres to the Talkeetna Comprehensive Plan, it offers a solution to community members concerns. On page 4-9 of the Talkeetna Comprehensive Plan it notes residents' concern of "Junky yards" that have accumulated items that residents have nowhere else to store. Our business is to provide a local, accessible & economical option for the community.

- 3) The Granting of the conditional use permit will not be harmful to the public health, safety, convenience and welfare.

Granting the conditional use permit will allow AKSS to provide additional Talkeetna residents the convenience of space to safely store household goods as well as items that may otherwise be stored outside. Our secure and aesthetic storage units make great places to store items such as log splitters, ATV's, snowmachines, trailers, boats & snowblowers reducing clutter around tenets homes.

- 4) Sufficient access, setback, lot area, parking space, buffers, and other safeguards have been provided.

AKSS has a spacious driveway with good visibility up and down the TSR for our low traffic storage site. As noted previously, we have maintained a pristine natural buffer between our building and the TSR. 30,000' at the east side of the lot has been set aside for parking and snow removal even if all 5 phases were to be built.

- 5) If the permit is for public use or structure, the commission must find that the proposed use or structure is located in a manner which will maximize public benefits.

The site is conveniently located approximately 3 miles from Historical Downtown Talkeetna and 11 miles from the Parks highway. AKSS's placement makes it an efficient and practical option opposed to driving to Sunshine or further south for people's storage needs.

- 6) Light industrial uses shall not produce noise, air pollution, water pollution, vibration, smoke, dust, fire hazard, noxious or toxic gases or fumes, objectionable odors, glare or light pollution, electrical interference, or industrial waste that creates a nuisance beyond the boundaries of the property.

Self storage as a whole is a quiet, nonpolluting industry. Minimal activity will be generated in such a facility. Traffic counts will be no more than the bakery up the road and far less than the fuel station just down the road.

Please let my wife or I know if you have any additional questions or concerns.

Thank you,

The Gilliland's

From: [Mark Whisenhunt](#)
To: "Alaska SelfStorage"
Subject: RE: Alaska Self Storage: Request for Information 4-30-2020
Date: Tuesday, May 5, 2020 2:52:00 PM

Thank you for the additional information. I will be able review the information and send you an updated (corrected) letter tomorrow. Thank you for your time on this matter.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
mark.whisenhunt@matsugov.us

From: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>
Sent: Sunday, May 3, 2020 5:00 PM
To: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Subject: Re: Alaska Self Storage: Request for Information 4-30-2020

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Mark,

First off thank you for reviewing our Conditional Use Permit.

I noticed in your RFI subject line that you have it labeled as a Marijuana Cultivation Facility. This is incorrect. We have a self storage facility.

1. Site Plan

- a. I was unaware that the utility easement could not be counted towards the buffer. With the utility easement excluded there is 35' of vegetation buffer. The 100+' was from our fence to the roadway. I can make a correction to the initial submittal if needed.
- b. I am working with MEA now to obtain the Non-object
- c. The first 35' of the entrance is paved and the remainder is gravel
- d. Attached is a topo of the property. If you would like to look over the soils report let me know. The gravel pad allows for precipitation to permeate into the subsoil w/o puddles or surface drainage.

e. The fence is existing

2. Code Standards

- (1) Existing & proposed building heights are under 9'
- (2) Existing & proposed building footprints are 6,000 sq ft
- (3a) Existing & proposed building setback is 100' from property line & 70' from the MEA easement.
- (3b) Existing & proposed building offset is 14' to the Northern property line, 26' to the Southern property line with 20' between buildings
- (3c) Existing & Proposed building backspacing is 110+'
- (5) As noted previously the vegetation buffer is 35'+ the RoW
- (6) We have a temporary signage in place with plans to have DoT signage long-term
- (7) Lighting utilized will be (8) 36w wall packs per building with a 30 degree downward beam which at 8' high would project light ~ 14' outward & side to side
- (8) I believe this was covered in our initial letter

3. Attached is the approved fire marshal plan review for our storage facility.

4. As noted above we are using 36w wall packs with a 30 degree downward beam. This should only allow direct light to be broadcast 14' outward at the height mounted. There will be 4 lights mounted on the long sides of the buildings and a single light on each end of the buildings.

5. Total units per building with the current design is 48 and 240 total proposed. Traffic wise we are seeing ~ 3 vehicles a day with the existing building.

Thank you again for your time.

Cheers,

JR & Andrea Gilliland
907-606-0029

Alaska Self Storage
26735 Talkeetna Spur Road
Talkeetna, AK 99676

From: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>

Sent: Thursday, April 30, 2020 4:11 PM

To: alaskaselfstorage@outlook.com <alaskaselfstorage@outlook.com>

Subject: Alaska Self Storage: Request for Information 4-30-2020

Please see the attached letter requesting information pertaining to your application for Conditional Use Permit. Thank you.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
mark.whisenhunt@matsugov.us

From: [Alaska SelfStorage](#)
To: [Mark Whisenhunt](#)
Subject: Re: Sign details: Alaska Self Storage CUP
Date: Thursday, June 4, 2020 1:29:39 PM

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Mark,

We will ensure that the temporary signage is on our property when we travel to Talkeetna tomorrow.

Cheers,

JR & Andrea Gilliland
907-606-0029

Alaska Self Storage
26735 Talkeetna Spur Road
Talkeetna, AK 99676

From: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>
Sent: Tuesday, June 2, 2020 9:54 PM
To: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Subject: Re: Sign details: Alaska Self Storage CUP

Mark,

It is a 4'x8' single plane, two sided sign. The sign is mounted on 4"x4"x8's.

I have attached a photo.

Please let me know if you have any additional questions.

Cheers,

JR & Andrea Gilliland
907-606-0029

Alaska Self Storage
26735 Talkeetna Spur Road
Talkeetna, AK 99676

From: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>

Sent: Tuesday, June 2, 2020 9:51 AM
To: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>
Subject: Sign details: Alaska Self Storage CUP

Good Morning,

I last bit of information I need is about the temporary signage you mentioned. It must met the criteria below. I still expect to schedule the public hearing for the August 3, meeting. However, it is important for me to get the sign information by this Thursday, so I can begin the public notice process. Please call or email me if you have any questions. Thank you.

(5) Sign Standards:

(a) Intent. This section is intended to maintain the attractive, high visual quality character of the Spur Road, where views of vegetation and natural features predominate, and businesses have a reasonable opportunity to announce their presence. In general, the size and appearance of signs found in the corridor at the time of the adoption of this ordinance provides a good model for future signs, and for maintaining the road corridor's existing rural character.

(b) Requirements:

(i) Each lot fronting on the Spur Road is allowed one sign within the vegetative buffer. Signs facing both directions on the highway are permitted. These two directional signs can be a single surface with a message on both sides, or a "v" shaped sign with the message placed in a single structure on two separate surfaces.

(ii) All signs shall be located on the lot which they serve.

(iii) Dimensions of signs within a buffer or any other location visible from off premises shall meet the following standards:

(aa) the portion of the sign bearing the message may not exceed 45 square feet on any face;

(bb) signs on poles cannot exceed 12 feet in height; signs on solid bases cannot exceed 5 feet in height; and

(cc) reader board style signs and signs which are flashing, rotating, animated or internally illuminated are prohibited.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough



From: [Alaska SelfStorage](#)
To: [Mark Whisenhunt](#)
Subject: Re: Alaska Self Storage: Complete Application
Date: Monday, June 22, 2020 9:55:25 PM

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Mark,

I apologize about the confusion and have addressed the issue.

We have moved the sign to the north side of our entry to ensure it is on lot#1.

Attached is a photo for confirmation.

Please let us know if you have any additional questions or concerns.

Cheers,

-JR



Get [Outlook for iOS](#)

From: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Sent: Friday, June 19, 2020 3:52:55 PM
To: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>
Subject: RE: Alaska Self Storage: Complete Application

Hi JR,

Thanks for the follow up. The only thing of notice is the location of the temporary sign. It appears that it is still located within the public right-of-way dedicated for lots 2 and 3. The sign must be located within the boundary of lot one. I have attached an image of the site with a red line denoting the approximate location of the sign and a green line denoting the boundary of lot 1.

The special land use district sign standards may not be conducive for advertising your business as a significant amount of vegetation remains within the State's right-of-way. As mentioned in your application, state approved signage is probably your best option.

Unfortunately, the signage must be removed from the public right-of-way. Please let me know when it can be done. Thank you for your time and consideration on this matter.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
mark.whisenhunt@matsugov.us

From: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>
Sent: Wednesday, June 17, 2020 7:38 AM
To: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Subject: Re: Alaska Self Storage: Complete Application

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Mark,

I wanted to check in and see if you had any questions or concerns after your site visit yesterday?

Cheers,

-JR

Get [Outlook for iOS](#)

From: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>

Sent: Thursday, June 4, 2020 5:47:16 PM

To: Alaska SelfStorage <AlaskaSelfStorage@outlook.com>

Subject: Alaska Self Storage: Complete Application

Greetings,

You now have a complete application associated with your request for Conditional Use Permit for the operation of commercial storage unit facility greater than 6,000 square feet in size.. I have scheduled a public hearing in front of the Planning Commission for **August 3, 2020**. This meeting will be an **in-person** meeting, with the ability for the public to call in. I will be sending the public notices for this meeting soon.

Please note: At the public hearing you will have a 15 minute period available to you. You may use this time as you wish. Some applicants choose to have a presentation to clarify any topics of concern, but most use it to just be available for questions the Planning Commission may have. In any event, it is available to you.

Public Notice Process: I will keep you posted on any public comments we receive. After I receive the costs for the mailing and advertising, I will send you a letter requesting payment of said costs. You can expect the letter in about 3-4 weeks, via email.

Please let me know if you have any questions. Thank you for your time.

Respectfully,

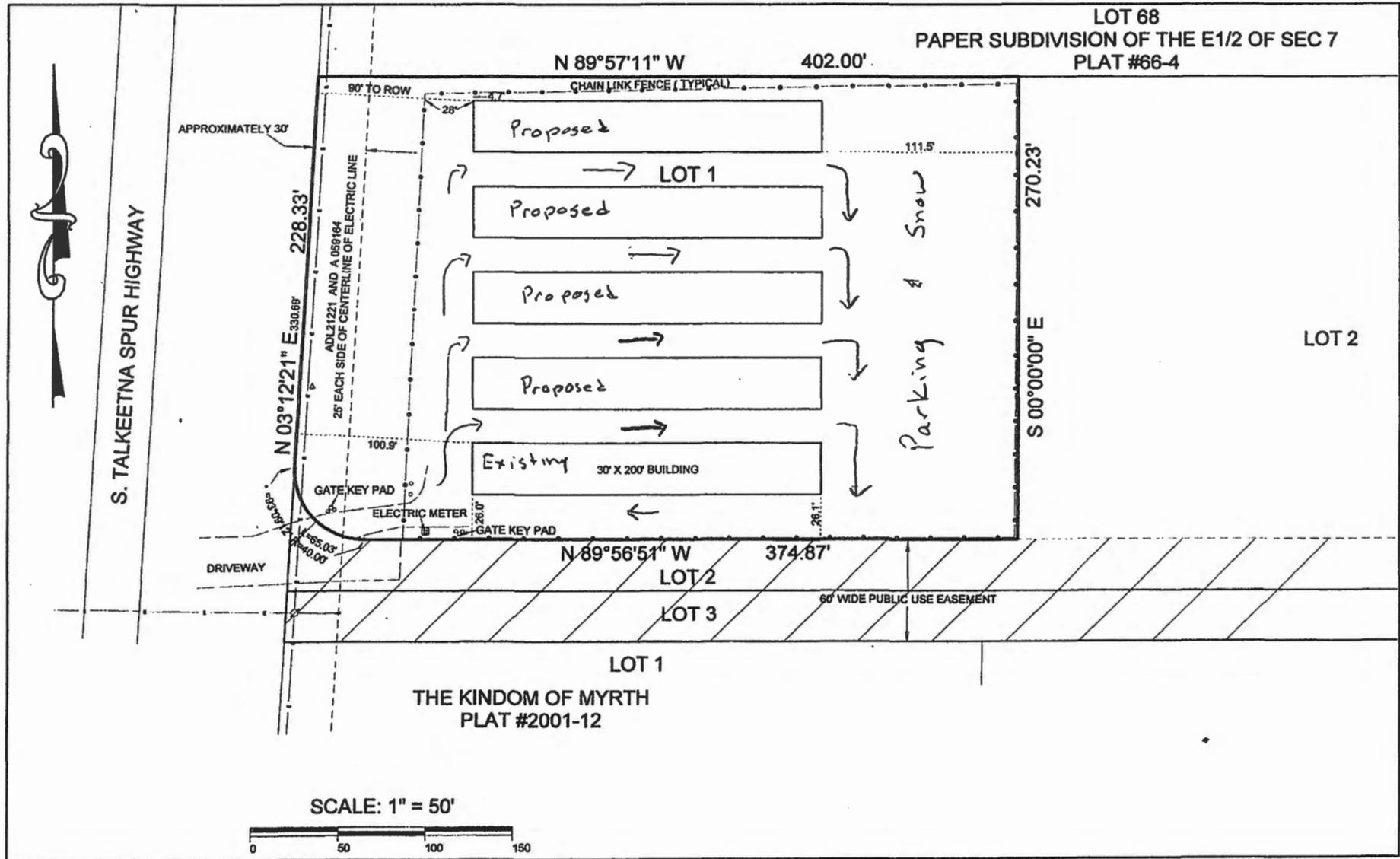
Mark Whisenhunt

Planner II

Matanuska-Susitna Borough

Office: (907) 861-8527

mark.whisenhunt@matsugov.us





THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Public Safety

DIVISION OF FIRE AND LIFE SAFETY
Plan Review Bureau - Anchorage

5700 East Tudor Road
Anchorage, Alaska 99507-1225
Main: 907.269.2004
Fax: 907.269.0098

July 18, 2019

John & Andrea Gilliland
Alaska Self Storage LLC
8038 Queen Victoria Dr.
Anchorage, AK 99518

SUBJECT: Alaska Self Storage (26735 Talkeetna Spur Rd.) -
Full Plan Review
CITY: Talkeetna
PLAN REVIEW: 2019Anch1360
TYPE OF CONSTRUCTION: IIB
OCCUPANCY: S-1
2012 INTERNATIONAL BUILDING AND FIRE CODE

Dear John & Andrea Gilliland:

Plans for the Full Plan Review have been reviewed by this office for conformity with the State Fire Safety Regulations and are hereby approved. Enclosed is a certificate of approval that must be posted on the premises until the project has been completed according to the approved plans and all regulations have been adhered to.

Approval of submitted plans is not approval of omissions or oversights by this office or noncompliance with any applicable regulations of the Municipal Government.

It must be understood that the inclusion of and compliance with State Fire Safety Regulations does not preclude the necessity of compliance with the requirements of local codes and ordinances.

If we can be of further assistance in this matter, please feel free to contact us at the address above.

Sincerely,

A handwritten signature in black ink that reads "Greg Medina".

Greg Medina
Plans Examiner

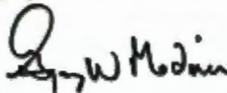
Enclosure: Approval Certificate

State of Alaska
Office of the State Fire Marshal
Plan Review

This is to certify that the plans for this building were reviewed by the *State Fire Marshal* on July 18, 2019 for conformance with AS 18.70.010 -- 100; 13 AAC 50.027.

This certificate shall be posted in a conspicuous place on the premises named Alaska Self Storage (26735 Talkeetna Spur Rd.) and shall remain posted until construction is completed.

NOTICE: Any changes or modifications to the approved plans **must** be resubmitted for review by the *State Fire Marshal*.

Plan Review #: 2019Anch1360 By: 

Authority: AS 18.70.080
Form: 12-741
(6/01)

Full Plan Review

Greg Medina
Plans Examiner

ATC No. 28895



State of Alaska

Department of Transportation and Public Facilities

Driveway Approval to Construct (ATC) #28859

This Approval to Construct (ATC) pertains only to State rights of way.

Contact Name: JOHN GILLILAND

Phone Number: (907) 223-1707

Email: alaskaselfstorage@outlook.com

Owner: JOHN GILLILAND

Mailing Address: 8038 Queen Victoria Dr.
Anchorage, AK 99518

Driveway Location: Talkeetna DW-Talkeetna Spur Hwy MP 10.3-26735 Talkeetna Spur Hwy-Paper Subdivision, Lot 67 - T25N R04W Sec 7 - Tax ID: 6239000L067

Approval to Construct Expires: (10/31/2019)

Driveway Provisions:

A copy of this ATC must be on site during construction of the driveway.

The State reserves the right to require cessation and removal of all activities from the right of way if any conditions of this ATC are violated.

This ATC is not a property right but a temporary authorization revocable by the State upon violation of any provision, special conditions, or other reasons. All reasonable attorney's fees and costs associated with legal or enforcement actions related to the terms and conditions of this ATC will be borne by the Owner.

A driveway or approach road constructed under permit within a highway right of way is the property of the State, but all cost and liability arising from the construction, operation, or maintenance practices to accommodate a driveway constructed under a permit, or to incur any additional expense removing snow berms or other obstructions from a driveway within the right of way resulting from DOT&PF's activities, or activities under a permit issued under 17 AAC 15.

Owner is responsible for adjusting or relocating the driveway without cost or liability to DOT&PF, if the use or safety of the highway requires that the driveway be adjusted or relocated.

ATC No. 28895

If driveway construction interferes with the public's safety and/or use of public facilities within the State right of way, the Owner will be directed to stop work until adjustments satisfactory to DOT&PF are complete. If any conditions are violated, the State reserves the right to require the cessation of all activities from the area.

Placement of fill material in waters of the U.S., including wetlands and streams, requires prior authorization from the U.S. Army Corps of Engineers (USACE). Before any filling activities take place within the right of way, or on the property adjacent to the right of way affected by this permit, it is the responsibility of the owner to contact the USACE before filling activities take place.

www.poa.usace.army.mil/reg

The Owner will obtain all necessary Federal, State, and Municipal permits and licenses required by law. Note: for relocation or adjustment of any utility within State rights of way a DOT&PF Utility Permit (or amendment as appropriate) may be required.

The Owner will construct and maintain a driveway in such a manner that the highway, and all of the highway's appurtenances or facilities, including drainage facilities, pipes, culverts, ditches, traffic control devices, street lights, pathways, and sidewalks are not impaired or endangered in any way by the construction or maintenance. (17 AAC 10.20(b))

If, as a result of this project, any improvements within the State right of way are damaged, the Owner will be responsible for restoring them to their previous condition. DOT&PF inspection and approval of the restored improvements is required. (17 AAC 10.065)

No person will place, leave, or deposit upon any street, avenue, alley, sidewalk, or other public rights of way any snow or ice which has been removed from a private driveway, private parking area, or the adjacent property. The Owner is responsible for their snow removal contractors actions concerning placement of snow from Owner's property.

The owner will indemnify, defend and hold harmless the State, and its officers, employees, and contractors, from any and all claims or actions resulting from injury, death, loss, or damage sustained by any person or personal property resulting directly or indirectly from Owner's use of or activities in the area.

No equipment or materials are permitted to be stock piled on the shoulder during non-working hours.

Any survey monument or monument accessory which will be disturbed or destroyed during construction of the driveway, will be referenced prior to the disturbance and restored or replaced by a Land Surveyor licensed in the State of Alaska. The Land Surveyor must file a Monument Record in accordance with AS 34.65.040. All Monument Records will be reviewed by the Department prior to filing with the District Recorder.

All litter and debris generated as a result of this project must be removed and properly disposed of by the contractor. The Owner will be responsible for any and all costs incurred by the State associated with clean up or restoration of the right of way.

Design Criteria:

A.	Driveway width	30	Feet
B.	Left edge clearance	54	Feet
C.	Right edge clearance	276	Feet
D.	Left return radius	40	Feet
E.	Right return radius	40	Feet
F.	Shoulder width	2	Feet
G.	Approach angle	90	Degrees
H.	Curb type	None	
I.	Curb to sidewalk distance	N/A	
J.	Left driveway foreslope	4:1	Or match existing
K.	Right driveway foreslope	4:1	Or match existing
L.	Culvert length	48	Feet (field fit)
M.	Landing grade	2	Percent
N.	Landing length	30	Feet
O.	Culvert size	18	Inches
P.	Culvert type	HDPE (High Density Polyethylene)	
Q.	Ditch depth	4	Feet
R.	Shoulder type	Gravel	
S.	Road surface type	Paved	
T.	Driveway surface type	Asphalt	

If a culvert is required by this ATC, the following applies:

- Culvert length and ditch depth, as stipulated in the Design Criteria, are generally based on information supplied by the applicant and must be verified on site during construction,
- Culvert and culvert ends must be installed at time of the driveway construction,
- Ensure a minimum ground cover of 12-inches is over the culvert prior to paving,
- HDPE is preferred however CMP may be used;
- Maintain existing drainage patterns.

Landings from all paved roads must be paved from the edge of pavement to the radius return or a distance stipulated by the Design Criteria "Landing length."

Traffic Control for Driveway Construction:

The Owner or their contractor shall obtain a Lane Closure Permit for any work that closes traffic lanes, roadway shoulder, or pathway/sidewalk.

ATC No. 28895

Short term or short duration work within the right of way does not typically require a Lane Closure Permit provided it conforms to the table below:

	WORK ON THE SHOULDER	WORK BEYOND SHOULDER (ROADSIDE)
DURATION	Less than 1 hour	Less than one day
TIME OF DAY	Daylight conditions only	
BASIC TRAFFIC SAFETY REQUIREMENTS	Use high intensity rotating, flashing, oscillating or strobe light on top of all vehicles, visible for 700 feet or more in all directions. Wear orange work vests labeled as meeting ANSI/ISEA 107-2004 Class 2, with Level 2 retroreflective material.	
WORK EXAMPLES	Offloading equipment to the roadside. Matching paved driveway to edge of roadway pavement. Sweeping the roadway shoulder.	

Do not park equipment within 30 feet of the edge of traveled way or within 10 feet of a curb when not working.

A permit for this driveway will be issued only after construction is complete and accepted by the Department of Transportation and Public Facilities. Please contact DOT&PF for an inspection after final construction of driveway.

Special Conditions: Temporary access only, until Section Line Easement is developed.

Incorporated as part of this ATC:

- Site Plan

I, John Gilliland, the Owner, acknowledge and accept that I will comply with all the provisions and conditions of this ATC.



 Owner Signature

5/17/19

 Date



 DOT&PF Signature

5/20/19

 Date



MATANUSKA-SUSITNA BOROUGH

Real Property Detail for Account: 7909000L001

Site Information

Account Number	7909000L001	Subdivision	CHUNILA EST@TALKEETNA LKS
Parcel ID	536448	City	None
TRS	S25N04W07	Map TA10	
Abbreviated Description (Not for Conveyance)	CHUNILNA EST AT TALKEETNA LKS LOT 1		Tax Map

Site Address 26731 S TALKEETNA SPUR

Ownership

Owners	GILLILAND JOHN ROGER GILLILAND ANDREA KELSEY C ASHER	Buyers	
Primary Owner's Address	8038 QUEEN VICTORIA DR ANCHORAGE AK 99518	Primary Buyer's Address	

Appraisal Information

Year	Land Appraised	Bldg. Appraised	Total Appraised	Assessment Year	Land Assessed	Bldg. Assessed	Total Assessed ¹
2020	\$26,000.00	\$237,300.00	\$263,300.00	2020	\$26,000.00	\$237,300.00	\$263,300.00

Building Information

Structure 0 of 1		Use	Warehousing & Storage
Residential Units	0	Design	Commercial
Condition	Standard	Construction Type	Metal
Basement	None	Grade	None
Year Built		Building Appraisal	\$237300
Foundation	Slab on Grade	Septic	
Well			

Building Item Details

Building Number	Description	Recorded Documents	Area	Percent Complete
		Date Type		Recording Info (offsite link to DNR)

Tax/Billing Information

Year Certified	Zone	Mill	Tax Billed	
2020 No	0050	::	::	

Tax Account Status ²

Status	Tax Balance	Farm	Disabled Veteran	Senior	Total	LID Exists
			\$0.00	\$0.00	\$0.00	\$0.00 No

Land and Miscellaneous

Gross Acreage	Taxable Acreage	Assembly District	Precinct	Fire Service Area	Road Service Area
2.53	2.53	Assembly District 007	10-035	024 Talkeetna FSA	029 Greater Talkeetna RSA

¹ Total Assessed is net of exemptions and deferrals, rest, penalties, and other charges posted after Last Update Date are not reflected in balances.

² If account is in foreclosure, payment must be in certified funds.

Last Updated: 3/31/2020 12:00:28 AM



Matanuska-Susitna Borough



Legend

- Road Mileposts
- Roads**
 - Highway
 - Major Road
 - Medium Road
 - Minor Road
 - - Primitive Road
 - - Private Road
- + Alaska Railroad
- ▭ Mat-Su Borough Boundary
- ▭ Incorporated Cities
- - Government Lot Lines
- ▭ Parcels
- Lakes and Rivers
- Streams
- ▭ Section Lines
- Flood Zone

1: 2,257



0.1 0 0.04 0.07 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Matanuska-Susitna Borough

Reported on 03/31/2020 04:48 PM

THIS MAP IS NOT TO BE USED FOR NAVIGATION

This map is solely for informational purposes only. The Borough makes no express or implied warranties with respect to the character, function, or capabilities of the map or the suitability of the map for any particular purpose beyond those originally intended by the Borough. For information regarding the full disclaimer and policies related to acceptable uses of this map, please contact the Matanuska-Susitna Borough GIS Division at 907-861-7858.

Notes

This map was automatically generated using Geocortex Essentials.

SITE PLAN



S. TALKEETNA SPUR HIGHWAY

APPROXIMATELY 30'

N 03°12'21" E 330.69'

228.33'

ADL21221 AND A 059164
25' EACH SIDE OF CENTERLINE OF ELECTRIC LINE

VEGETATION BUFFER

100.9'

GATE KEY PAD

ELECTRIC METER

GATE KEY PAD

DRIVEWAY

65.03'

R=40.00'

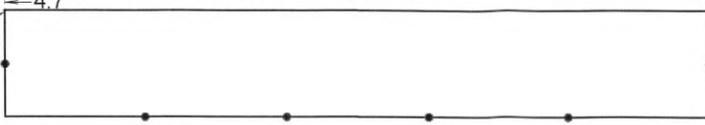
N 89°57'11" W

402.00'

CHAIN LINK FENCE (TYPICAL)

90' TO ROW

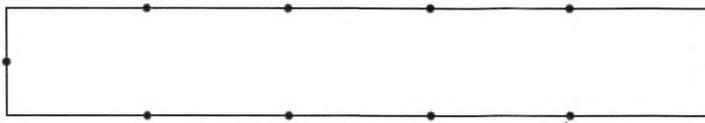
28'



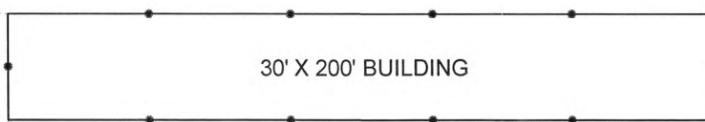
LOT 1



20' BETWEEN BUILDINGS (TYPICAL)



LIGHTS MOUNTED ON BUILDING (TYPICAL)



30' X 200' BUILDING

26.1'

N 89°56'51" W

374.87'

LOT 2

LOT 3

60' WIDE PUBLIC USE EASEMENT

GRAVEL

270.23'

S 00°00'00" E

LOT 2

LOT 68
PAPER SUBDIVISION OF THE E1/2 OF SEC 7
PLAT #66-4

LOT 1
THE KINDOM OF MYRTH
PLAT #2001-12

ALASKA SELF STORAGE

PHYSICAL ADDRESS: 26735 S. TALKEETNA SPUR
TALKEETNA, ALASKA 99676
MAILING ADDRESS: 8038 QUEEN VICTORIA DR.
ANCHORAGE, ALASKA 99518

J.R. & ANDREA GILLILAND - (907) 223-1707

SITE PLAN

ON
PROPOSED LOT 1
OF PROPOSED

CHUNILNA ESTATES AT TALKEETNA LAKES

SCALE: 1" = 50'



COMMENTS

Agency Comments



ENSTAR Natural Gas Company
A DIVISION OF SEMCO ENERGY
Engineering Department
Right of Way Section
401 E. International Airport Road
P. O. Box 190288
Anchorage, Alaska 99519-0288
(907) 277-5551
FAX (907) 334-7798

July 7, 2020

Mark Whisenhunt, Planner II
Matanuska-Susitna Borough
Planning & Land Use Department
350 East Dahlia Avenue
Palmer, Alaska 99645-6488

Subject: Conditional Use Permit for a commercial storage facility located at 26731 S. Talkeetna Spur; within Township 25 North, Range 4 West, Section 7, Seward Meridian.

Dear Mr. Whisenhunt:

ENSTAR Natural Gas Company has reviewed the application for a conditional use permit for the operation of a commercial storage facility greater than 6,000 square feet in size.

We have no comments or concerns related to this activity.

If you have any questions, please feel free to contact me at 334-7944 or by email at cassie.acres@enstarnaturalgas.com.

Sincerely,

A handwritten signature in blue ink that reads "Cassie Acres".

Cassie Acres
Right-of-Way and Compliance Technician
ENSTAR Natural Gas Company

Mark Whisenhunt

From: Theresa Taranto
Sent: Monday, June 15, 2020 3:27 PM
To: Mark Whisenhunt
Subject: RE: Request for Review: Alaska Self Storage

FIRM 2815, D Zone
Talkeetna SPUD

Thank you,

Theresa Taranto

Mat-Su Borough
Development Services
Administrative Specialist

350 E Dahlia Ave.
Palmer, Alaska 99645
907-861-8574
www.matsugov.us

From: Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Sent: Friday, June 12, 2020 4:02 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; melanie.nichols@alaska.gov; mearow@matanuska.com; row@mtasolutions.com; row@enstarnaturalgas.com; ospdesign@gci.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Karol Riese <Karol.Riese@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; Tam Boeve <Tamboevedistrict7@gmail.com>; contact@talkeetnacouncil.org; joe@thehighexpedition.com
Subject: Request for Review: Alaska Self Storage

DATE: June 12, 2020

TO: Various Governmental Agencies

FROM: Mark Whisenhunt, Planner II

SUBJECT: Request for Review and Comments Related to a Request for Conditional Use Permit for the operation of a commercial storage facility greater than 6,000 square feet in size within Spur Road South District of the Talkeetna Special Land Use District.

LOCATION: 26731 S. Talkeetna Spur; Tax ID #7909000L001; within Township 25 North, Range 4 West, Section 07, Seward Meridian

APPLICANT: John and Andrea Gilliland (dba Alaska Self Storage)

An application for a conditional use permit under MSB 17.25 – Talkeetna Special Land Use District, has been submitted for the operation of a commercial storage facility greater than 6,000 square feet in size. The Planning Commission will conduct a public hearing on this request on August 3, 2020.

Application materials may be viewed online at www.matsugov.us by clicking on 'All Public Notices & Announcements'. Application material may also be reviewed at the Borough Permit Center. A direct link to the application material is here:

<https://www.matsugov.us/publicnotice/alaska-self-storage-conditional-use-permit>

Written comments are due on or before ***July 7, 2020*** and will be included in the Planning Commission packet for the Commissioner's review and information. Please be advised that comments received from the public after that date will not be included in the staff report, but will be provided to the Commission at the meeting.

Respectfully,

Mark Whisenhunt
Planner II
Matanuska-Susitna Borough
Office: (907) 861-8527
mark.whisenhunt@matsugov.us

Public Comments

Staff did not receive any comments from the public in reference to this request for Conditional Use Permit.

**PLANNING COMMISSION
RESOLUTION**

By: Mark Whisenhunt
Introduced: July 20, 2020
Public Hearing: August 3, 2020
Action:

**MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. 20-26**

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION APPROVING A CONDITIONAL USE PERMIT FOR THE OPERATION OF A COMMERCIAL STORAGE FACILITY GREATER THAN 6,000 SQUARE FEET IN SIZE AT 26731 S. TALKEETNA SPUR (TAX ID# 7909000L001);); WITHIN TOWNSHIP 25 NORTH, RANGE 4 WEST, SECTION 7, SEWARD MERIDIAN.

WHEREAS, an application has been received from John & Andrea Gilliland, dba Alaska Self Storage, for a conditional use permit for the operation of a commercial storage facility greater than 6,000 square feet in size, at 26731 S. Talkeetna Spur (Tax ID# 7909000L001); within Township 25 North, Range 4 West, Section 7, Seward Meridian; and

WHEREAS, MSB 17.25.070(D)(1) requires a conditional use permit for the operation of a retail, office, service, or other commercial use of more than 6,000 square feet; and

WHEREAS, according to the site plan, the height of the buildings for proposed use is nine feet; and

WHEREAS, according to the site plan, the each building will be 6,000 square feet in size; and

WHEREAS, according to the site plan, at its closest point the proposed use will be set back 90 feet from the Talkeetna Spur right-of-way; and

WHEREAS, according to the site plan, the proposed use will be set back 14 feet from the north side lot line; and

WHEREAS, according to the site plan, the proposed use will be set back 111.5 feet from the east side lot line; and

WHEREAS, according to the site plan, the existing building is set back 26 feet from the public use easement abutting the south side lot line; and

WHEREAS, an existing 25-foot vegetative buffer beginning at the boundary of the utility easement that parallels Talkeetna Spur Road will be maintained; and

WHEREAS, the sign for the proposed use is single plane, mounted on a wood base, and is 32 square feet in size. The sign is moveable and temporary in nature; and

WHEREAS, the base of the sign is approximately four inches high; and

WHEREAS, the sign for the proposed use is located on the north side of the driveway, between the gate keypad and the chain link fence; and

WHEREAS, according to the application material, the applicant is pursuing an encroachment permit with the Alaska Department of Transportation (ADOT) to erect an ADOT approved road sign; and

WHEREAS, according to the application material, all proposed lighting is located and shielded to direct the light towards the

ground to minimize light spillage onto adjacent properties and upward into the night sky; and

WHEREAS, the proposed lighting height is 8 feet; and

WHEREAS, there are no proposed flashing lights; and

WHEREAS, no design guidelines have been adopted by the Talkeetna Community Council for the Spur Road South District; and

WHEREAS, the proposed use will consist of five metal sided buildings; and

WHEREAS, the 25-foot vegetative buffer will keep the frontage a heavily wooded area, as required by MSB 17.25.070(F)(5); and

WHEREAS, the property abuts the east side of the Talkeetna Spur right-of-way. Parcels in the area range from two to 240 acres in size, with most being around 10 acres. Lots are typically heavily wooded with residential homes. However, there are some commercial and industrial uses, including earth materials extraction that abut Talkeetna Spur; and

WHEREAS, the Talkeetna Comprehensive Plan states: *"Mixed Residential and Commercial" use is proposed for the land along the Talkeetna Spur road and within the east and west townsites. A possible commercial cluster is identified at the intersection of Comsat Road with the Talkeetna Spur Road;* and

WHEREAS, the Talkeetna Comprehensive Plan states: *Protect and conserve the wilderness values, and natural resource of the lands surrounding Talkeetna;* and

WHEREAS, the Talkeetna Comprehensive Plan states: *Keep Talkeetna a pleasant place to live, work, and visit;* and

WHEREAS, the Talkeetna Comprehensive Plan states: *Maintain the community's small town atmosphere, sense of community, and high quality of life;* and

WHEREAS, according to the application material, the proposed use will meet all setback requirements of MSB 17.25 - Talkeetna Special Land Use District and MSB 17.55 Setbacks and Screening Easements; and

WHEREAS, the proposed use accesses Talkeetna Spur via an ADOT approved driveway; and

WHEREAS, the proposed use has been reviewed and approved by the State Fire Marshal's office for conformity with the State fire safety regulations; and

WHEREAS, the proposed use provides a service to its patrons to safely store personal items indoors, which may otherwise be stored outdoors; and

WHEREAS, the subject parcel is approximately 2.53 acres in size; and

WHEREAS, the Planning Commission has reviewed this application with respect to standards set forth in MSB 17.25; and

WHEREAS, the Planning Commission conducted a public hearing on August 3, 2020 on this matter.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby adopts the aforementioned findings of fact and makes the following conclusions of law supporting approval of Planning Commission Resolution 20-26:

1. The proposed building meets the district's maximum building height requirement (MSB 17.25.070(F)(1)).
2. The proposed building meets the district's maximum building footprint requirement (MSB 17.25.070(F)(2)).
3. The proposed building meets the front setback requirements for buildings 6,000 total square feet or less (MSB 17.25.070(F)(3)).
4. MSB 17.25.070(F)(4) is not applicable to the proposed use.
5. The proposed development meets the vegetative buffer standard of twenty-five feet (MSB 17.25.070(F)(5)).
6. The proposed development meets the sign standards (MSB 17.25.070(F)(6)).
7. The proposed use meets the exterior lighting standards (MSB 17.25.070(F)(7)).
8. MSB 17.25.070(F)(8) is not applicable to the proposed use.
9. The proposed use will preserve and not detract from the value, character and integrity of the Talkeetna community (MSB 17.25.130(B)(1)).

10. The proposed use is consistent with the Talkeetna Comprehensive Plan (1999) (MSB 17.25.130(B)(2)).
11. The proposed use will not be harmful to the public health, safety, convenience and welfare (MSB 17.25.130(B)(3)).
12. Sufficient access, setbacks, lot area, parking space, buffers, and other safeguards have been provided (MSB 17.25.130(B)(4)).
13. MSB 17.25.130(B)(6) is not applicable to the proposed use.

BE IT FURTHER RESOLVED, that the Planning Commission finds this application does meet the applicable standards of MSB 17.25 and does hereby approve the conditional use permit for the operation of a commercial storage facility, with the following conditions:

1. The operation shall comply with all applicable state and local regulations.
2. All aspects of the operation shall comply with the description detailed in the application material and with the conditions of this permit. An amendment to the Conditional Use Permit shall be required prior to any expansion of the conditional use.
3. The operation shall comply with the sign standards in MSB code 17.25.070(F)(6)..

- 4. The vegetative buffer shall be maintained in accordance with the standards outlined in MSB code 17.25.070(F)(5).
- 5. Borough staff shall be permitted to enter premises subject to this permit to monitor compliance with permit requirements. Such access will at minimum, be allowed on demand when activity is occurring, and/or with prior verbal or written notice, and/or at other times as necessary to monitor compliance. Denial of access to Borough staff shall be a violation of this Conditional Use Permit.

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ADOPTED by the Matanuska-Susitna Borough Planning Commission
 this ___ day of _____, 2020.

COLLEEN VAGUE, Chair

ATTEST

KAROL RIESE, Planning Clerk

(SEAL)

DRAFT

YES:

NO:

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**PUBLIC HEARING
LEGISLATIVE**

Resolution No. PC 20-12

**OUTDOOR SHOOTING
FACILITIES**

(Page 141 - 392)

PUBLIC HEARING



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

Development Services Division

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7822 • Fax (907) 861-8158

Email: PermitCenter@matsugov.us

STAFF MEMORANDUM

DATE: July 20, 2020

TO: Planning Commission

FROM: Alex Strawn, Development Services Manager 

THRU: Eileen Probasco, Planning & Land Use Director 

RE: **PC Resolution 20-12.** A resolution of the Matanuska-Susitna Borough planning commission recommending assembly approval an ordinance adopting MSB 17.68 Outdoor Shooting Facilities in order to establish standards for commercial, educational, and nonprofit outdoor shooting facilities.

In September 2019, the Matanuska-Susitna Borough Assembly adopted resolution 19-083 directing staff to develop a conditional use permit process for commercial, educational, and nonprofit outdoor shooting facilities to be reviewed by the Planning Commission and adopted by the Assembly.

In November 2019 staff released a draft of an ordinance that set basic standards and a conditional use permit process for outdoor shooting facilities. Staff received approximately 250 comments regarding the draft ordinance. While most of the comments consisted of blanket opposition to any ordinance regulating shooting, many of the comments contained valuable information and suggested edits.

A new draft of the ordinance was developed and presented to the Assembly for referral in February 2020. The ordinance was referred to the Planning Commission for review for 90 days, but the timeframe was extended due to the outbreak of COVID-19. The ordinance will go back before the Assembly on October 6, 2020.

Providing Outstanding Borough Services to the Matanuska-Susitna Community.

By: Assemblymember Boeve
Adopted: 09/17/19

**MATANUSKA-SUSITNA BOROUGH
RESOLUTION SERIAL NO. 19-083**

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH ASSEMBLY REQUESTING THAT STAFF DEVELOP A CONDITIONAL USE PERMIT PROCESS FOR COMMERCIAL, EDUCATIONAL, AND NONPROFIT OUTDOOR SHOOTING FACILITIES

WHEREAS, Alaska Statute 29.35.145 provides that the authority to regulate firearms and knives is reserved to the state, except as specifically provided by statute, and a municipality may not enact or enforce an ordinance regulating the possession, ownership, sale, transfer, use, carrying, transportation, licensing, taxation, or registration of firearms or knives; and

WHEREAS, Alaska Statute 29.35.145(b)(2) allows municipalities to enact and enforce ordinances restricting the discharge of firearms in any portion of their respective jurisdictions where there is a reasonable likelihood that people, domestic animals, or property will be jeopardized, not abridging the right of the individual guaranteed by Art. I, sec. 19 of the Alaska Constitution to bear arms in defense of self or others; and

WHEREAS, Alaska Statute 29.40.010(a) requires that a second class borough provide for land use regulation as a mandatory areawide power; and

WHEREAS, Alaska Statute 29.35.145 does not preempt second-class boroughs from regulating land use concerning,

commercial, educational, or nonprofit outdoor shooting facilities (hereafter "shooting facilities"); and

WHEREAS, MSB 15.04.010 establishes the Planning Commission to perform the areawide function of planning, platting, and zoning in the Borough; and

WHEREAS, MSB 15.04.015 provides that the Planning Commission shall recommend to the Assembly a zoning ordinance to implement the comprehensive plan; and

WHEREAS, the Borough has experienced a substantial increase in population density in areas proximate to existing shooting facilities and therefore has a substantial interest in ensuring the compatibility of shooting facilities with surrounding land uses and in minimizing potential safety hazards created by the operation of shooting facilities; and

WHEREAS, public concerns have been raised over the safety and land use compatibility of shooting facilities located in increasingly populated areas; and

WHEREAS, shooting facilities benefit the Borough by providing its residents the opportunity to learn firearm safety, to practice shooting, and to participate in recreational firearm sports in a safe, controlled setting; and

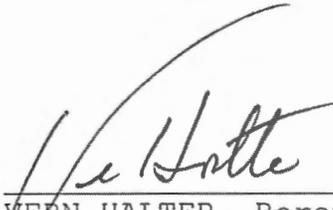
WHEREAS, the Borough finds that it is in the public interest to protect and preserve the continued viability of shooting

facilities in the Borough in the face of increasing population pressure and conflicting land uses; and

WHEREAS, uniform provisions for the establishment and operation of shooting facilities within the Borough, in the form of a conditional use permit process, would provide assurance of the safe conduct of shooting facilities, provided these provisions: (1) promote safety by establishing a permitting procedure and rules for the siting, design, and operation of shooting facilities that safeguard participants, spectators, neighboring properties and the public; (2) do not abridge the right of the individual guaranteed by art. I, sec. 19, Constitution of the state of Alaska, to bear arms in defense of self or others; (3) involve measures designed to make the discharge of firearms safe; (4) protect from lead contamination; (5) ensure compatibility with neighboring land use; and (6) promote the continued availability of shooting facilities.

NOW, THEREFORE, BE IT RESOLVED, that the Assembly requests that staff develop a conditional use permit process for commercial, educational, and nonprofit outdoor shooting facilities to be reviewed by the Planning Commission and adopted by the Assembly.

ADOPTED by the Matanuska-Susitna Borough Assembly this 17 day
of September, 2019.


VERN HALTER, Borough Mayor

ATTEST:


LONNIE R. McKECHNIE, CMC, Borough Clerk

(SEAL)



YES: Sykes, Beck, Mayfield, and Boeve

NO: McKee, Leonard, and Sumner

MATANUSKA-SUSITNA BOROUGH INFORMATION MEMORANDUM IM No. 20-047

SUBJECT: AN ORDINANCE OF THE MATANUSKA-SUSITNA BOROUGH ASSEMBLY ADOPTING MSB 17.68 OUTDOOR SHOOTING FACILITIES IN ORDER TO ESTABLISH STANDARDS FOR COMMERCIAL, EDUCATIONAL, AND NONPROFIT OUTDOOR SHOOTING FACILITIES.

AGENDA OF: February 18, 2020

ASSEMBLY ACTION:

MANAGER RECOMMENDATION: Refer to Planning Commission.

APPROVED *JMC* **JOHN MOOSEY, BOROUGH MANAGER:** *George M. Stapp*

Route To:	Department/Individual	Initials	Remarks
	Originator - A. Strawn	<i>AS</i>	
	Planning and Land Use Director	<i>GP</i>	
	Borough Attorney	<i>JA for N.S.</i>	<i>form only.</i>
	Borough Clerk	<i>JAN 2/10/20</i>	

ATTACHMENT (S): Fiscal Note: YES ___ NO X
 Planning Commission Resolution PC 20- (__pp)
 EPA Best Management Practices for Lead at Outdoor Shooting Ranges (2005) (103 pp)
 U.S. Department of Energy Range Design Criteria (2012) (58 pp)
 Rutgers University Community Noise Enforcement Handbook (2012) (31 pp)
 Excerpt from National Rifle Association Range Source Book (2012) (1 page)
 Occupation Safety and Health Administration Noise Exposure Standard 1910.95 (13 pp)
 Ordinance Serial No. 20-25 (12 pp)

SUMMARY STATEMENT:

In September 2019 the Matanuska-Susitna Borough Assembly adopted Resolution 19-083, directing the Planning Department to "develop a conditional use permit process for commercial, educational, and nonprofit outdoor shooting facilities to be reviewed by the Planning Commission and adopted by the Assembly."

In November 2019 staff released a draft of an ordinance that set basic standards and a conditional use permit process for outdoor shooting facilities. Staff received approximately 250 comments regarding the draft ordinance. While most of the comments consisted of blanket opposition to any ordinance regulating shooting, many of the comments contained valuable information and suggested edits.

In development of this ordinance staff was very cognizant of state restrictions on municipalities' ability to regulate firearms. Accordingly, some modifications were made to ensure that the ordinance does not violate state law. In pertinent part, AS 29.35.145 provides for regulation of firearms and knives as follows:

(a) The authority to regulate firearms and knives is reserved to the state, and, except as specifically provided by statute, a municipality may not enact or enforce an ordinance regulating the possession, ownership, sale, transfer, use, carrying, transportation, licensing, taxation, or registration of firearms or knives.

There are several provisions within Alaska Statute specifically granting municipalities the power to regulate this type of facility. AS 29.35.145(b) is one such provision:

(b) Municipalities may enact and enforce ordinances

(1) that are identical to state law and that have the same penalty as provided for by state law;

(2) restricting the discharge of firearms in any portion of their respective jurisdictions where there is a reasonable likelihood that people, domestic animals, or property will be jeopardized; ordinances enacted or enforced under this paragraph may not abridge the right of the individual guaranteed by art. I, sec. 19, Constitution of the State of Alaska, to bear arms in defense of self or others;

After careful evaluation of this law and how it pertains to the original draft ordinance, staff decided to remove the proposed regulations from MSB 17.60: Conditional Uses because it contains general standards that go beyond restrictions which pose a likelihood of jeopardy to people, domestic animals, or property. Particularly problematic are standards such as MSB 17.60.100(A)(1) which reads:

(1) the conditional use will preserve or not detract

from the value, character, and integrity of the surrounding area;

Another specific power granted to municipalities within state law includes the power to regulate noise associated with shooting ranges under AS 34.75.030 which provides:

AS 34.75.030 State and municipal regulation

(a) Notwithstanding AS 02.15.020 and AS 02.25.020, the state or a municipality may not regulate the outdoor level of noise at a facility if the facility is exempt from a criminal or civil action under AS 34.75.010(a).

(b) Except as otherwise provided in this chapter, a municipality may regulate the noise level produced by a facility.

Finally, AS 29.35.210(b)(4) specifically gives second class authority to provide for water pollution control on an areawide basis. Alaska Statutes also mandate municipalities provide for Land Use Regulations under AS 29.35.180 Land Use Regulation.

With state law in mind, all of the standards within the ordinance address inherent issues associated with outdoor shooting facilities that the borough has specifically been given the authority to regulate. Specifically, the ordinance addresses lead contamination, stray bullets, and harmful levels of noise.

Lead contamination - According to Environmental Protection Agency (EPA) Manual on Best Management Practices for Lead at Outdoor Shooting Ranges (Rev. 2005), lead from improperly managed shooting ranges can be dissolved or carried by stormwater, can migrate through soil, and can be carried long distances in solution by groundwater. Exposure to very low concentrations of lead can have dangerous effects to infants and children. The ordinance addresses lead contamination by requiring new ranges to submit and follow a lead stewardship plan in accordance with EPA Best Management Practices.

Stray Bullets - Stray bullets are an obvious safety concern for outdoor shooting facilities if they are not designed to capture stray bullets. This ordinance ensures that ranges are designed to capture stray bullets and prevent unwanted ricochet.

Harmful levels of noise - According to Rutgers University Noise Technical Assistance Center, excessive noise can cause an assortment of impacts on human health including physiological impacts such as elevated blood pressure, faster heart rates,

increased neuroendocrine hormone levels. Noise can also effect the quantity and quality of sleep. The threshold of 90 dB(a) was chosen because any exposure beyond 90 dB(a) for greater than eight hours in a workplace would exceed Occupational Safety and Health Administration (OSHA) standards for the workplace. Additionally, the NRA Range Source Book (2012) lists exceedance of 90 dB(a) for 1 hour out of 24 as "unacceptable."

A major change from the original draft ordinance is the permit type has been changed from a conditional use permit to an administrative permit. Administrative permits do not require as much judgment in the decision to grant or deny the permit. They are decided by the Planning & Land Use Director instead of the Planning Commission and typically do not require judgement on highly subjective standards such as whether or not a development meets the "character and integrity" of a surrounding area.

Finally, a common criticism of the original draft ordinance was that it was not clear what types of shooting ranges the ordinance applied to. The language has not been modified from the original draft because staff believes that the language is clear and does not need modification. A couple of examples mentioned were: a person teaching a group of boy scouts how to fire weapons on private property; and a gunsmith sighting in or testing, on a private range, firearms that he repaired. Neither of these examples are intended to be regulated under this chapter. MSB 17.68.030(D) provides:

(D) This chapter does not regulate the discharge of firearms on private property where the property is not open to the public on a commercial, education, nonprofit, or membership basis.

In both of these scenarios the range is not open to the public and is therefore not regulated under this chapter.

Comprehensive Plan

This ordinance implements several goals and policies of the Comprehensive Plan.

Goal (LU-1): Protect and enhance the public safety, health, and welfare of Borough residents.

Goal (LU-4): Protect and enhance the Borough's natural resources including watersheds, groundwater supplies and air quality.

Policy LU4-1: Identify, monitor, protect, and enhance the quantity and quality of the Borough's watersheds, groundwater aquifers, and clean air resources.

Goal (CQ-1): Protect natural systems and features from the potentially negative impacts of human activities, including, but not limited to, land development.

Policy CQ1-2: Manage activities affecting air, vegetation, water, and the land to maintain or improve environmental quality, to preserve fish and wildlife habitat, to prevent degradation or loss of natural features and functions, and to minimize risks to life and property.

Goal (CQ-2): Manage the natural and built environments to achieve minimal loss of the functions and values of all drainage basins; and, where possible, enhance and restore functions, values, and features. Retain lakes, ponds, wetlands, streams, and rivers and their corridors substantially in their natural condition.

Policy CQ2-2: Comprehensively manage activities that may adversely impact surface and ground water quality or quantity.

Goal (LU-2): Protect residential neighborhoods and associated property values.

Policy LU2-1: Develop and implement regulations that protect residential development by separating incompatible uses, while encouraging uses that support such residential uses including office, commercial and other mixed-use developments that are shown to have positive cumulative impacts to the neighborhood.

Goal (LU-3): Encourage commercial and industrial development that is compatible with residential development and local community desires

Policy LU3-1: Develop and implement regulations that provide for non-residential development.

RECOMMENDATION OF ADMINISTRATION:

Staff respectfully recommends the Assembly consider adoption of this ordinance.



EPA-902-B-01-001
Revised June 2005
Region 2

Best Management Practices for Lead at Outdoor Shooting Ranges



For additional copies of this manual, please contact:

United States Environmental Protection Agency
Division of Enforcement and Compliance Assistance
RCRA Compliance Branch
290 Broadway, 22nd Fl.
New York, New York 10007-1866

Tel: 212-637-4145
Fax: 212-637-4949

Copies of this manual along with any additions or updates can also be obtained on-line at:
<http://www.epa.gov/region2/waste/leadshot>

Copying and Reprinting

This document is in the public domain and may be freely copied or reprinted.

Fourth Printing, June 2005

Best Management Practices for Lead at Outdoor Shooting Ranges

Notice

This manual is intended to provide useful general information to shooting range owners/operators. The United States Environmental Protection Agency (EPA) does not certify or approve ranges, range design or lead management practices. While every effort has been made to provide up-to-date technical information, this manual is not to be used as a substitute for consultation with scientists, engineers, attorneys, and other appropriate professionals who should be called upon to make specific recommendations for individual range design and lead management.

Any variation between applicable regulations and the summaries contained in this guidance document are unintentional, and, in the case of such variations, the requirements of the regulations govern.

This guidance was developed by EPA Region 2 in cooperation with a few states as well as many EPA offices. In addition, EPA, with the assistance of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) provided all 50 states with an opportunity to review the RCRA regulatory portion of the guidance. At the time of printing, about 40 states had contacted the EPA and given their support and concurrence. EPA is continuing to get the agreement of the remaining states. Therefore, it appears that most, if not all, states will share the same view as to how lead shot is regulated.

Following the steps set forth in this guidance should result in compliance with applicable regulations. EPA does not make any guarantee or assume any liability with respect to the use of any information or recommendations contained in this document.

This guidance does not constitute rulemaking by the EPA and may not be relied on to create a substantive or procedural right or benefit enforceable, at law or in equity, by any person.

BMP for Lead at Outdoor Shooting Ranges

Acknowledgements

The USEPA would like to acknowledge the support of:

- The National Rifle Association of America
- The National Shooting Sports Foundation
- The Wildlife Management Institute
- Mark Begley of the Massachusetts Department of Environmental Protection
- Mr. Dick Peddicord of Dick Peddicord and Company, Inc.

These participants provided valuable information and assistance as peer reviewers in the development of the manual and their efforts are truly appreciated. EPA also wishes to give special thanks to Dr. Charles W. Sever of Okie Environmental Consulting, L.L.C., Inc., Mr. Mike Warminsky of Brice Environmental Services Corp., and Mr. Victor Ordija of Sporting Goods Properties. The EPA also wishes to acknowledge and thank the many others who provided important comments and insight, and especially those individuals who took the time to meet with us in person or on the phone.

Cover photo by: Mr. Jack Hoyt, EPA Region 2

Statement of Goals

The goals of this manual are:

- to inform shooting ranges :
 - that the United States Environmental Protection Agency's (EPA) purpose in developing and distributing this manual is to assist range owners and operators to operate in an environmentally protective manner.

- to promote an understanding of:
 - why lead is an environmental, public and regulatory concern,
 - what laws and regulations apply,
 - the benefits of applying good management practices,
 - what can be done to successfully manage lead,
 - why implementing lead best management practices is an integral part of environmental stewardship,
 - how to minimize litigation risk.

- to promote action by ranges to:
 - adopt and implement best management practices for managing lead,
 - recycle a finite natural resource,
 - become a model for other ranges through proper lead management,
 - advocate environmental stewardship.

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BMP for Lead at Outdoor Shooting Ranges

EPA Statement on National Guidance

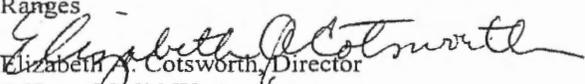
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 10 2001

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: National Guidance on Best Management Practices for Lead at Outdoor Shooting Ranges

FROM: 
Elizabeth J. Cotsworth, Director
Office of Solid Waste

TO: RCRA Senior Policy Advisors

The purpose of this memo is to transmit a Region 2 document entitled "Best Management Practices for Lead at Outdoor Shooting Ranges," EPA-902-B-01-001, January 2001. This report is a technical information manual to assist range owners and operators in managing lead at shooting ranges. The report covers the environmental concerns, applicable laws and regulations, and current best management practices. This document was developed collaboratively with a number of stakeholders and is considered by my office to be the national guidance on this subject.

Background

Lead at some shooting ranges can be a significant environmental concern depending on location (e.g., proximity to wetlands) and hydrogeologic setting, as evidenced by a number of cases where lead pellets and shot have been taken in by fish and fowl at ranges over wetlands, and at some ranges where streams in acid lead-leaching environments have picked up lead contamination. Recognizing these problems, Region 2 in collaboration with EPA HQ, States, shooting range associations, and other shooting range experts, developed the enclosed technical guidance to identify the problems and solutions for preventing and controlling these problems. We commend this guidance to you as an information source for your use in working with range owners and operators to identify and address these concerns at specific ranges. Copies of this manual have been sent to all 50 States, with the help of ASTSWMO, and at least 40 States have responded with concurrence and support for this guidance.

Also enclosed for your information is a list of references "Summary of Shooting Range Lead Management Guidance" prepared by various shooting range-interested associations, and a copy of an NPDES permit for the Naperville, IL Sportsman's Park shooting range.

BMP for Lead at Outdoor Shooting Ranges

If you have any questions regarding lead at shooting ranges, please contact George Meyer (Chief, RCRA Compliance Branch, Region 2) at 212-637-4144, Meyer.George@epa.gov, or Ken Shuster in the Office of Solid Waste at 703-308-8759, shuster.kenneth@epa.gov.

It is my hope that wide distribution of these documents will help encourage greater cooperation and coordination on shooting range issues among RCRA, Superfund, and Water staff in the regions and states. To this end, it would be helpful if you would send the name of a point of contact in your region to Ken Shuster and George Meyer.

For additional copies of the Region 2 guidance, please contact George Meyer. It is also available at www.epa.gov/region2/waste/leadshot.

Enclosures

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Best Management Practices for Lead at Outdoor Shooting Ranges

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BMP for Lead at Outdoor Shooting Ranges

Introduction

This manual provides owners and operators of outdoor rifle, pistol, trap, skeet and sporting clay ranges with information on lead management at their ranges. This manual serves as a reference guide and presents best management practices (BMPs) available to the shooting range community. The practices have been proven to effectively reduce or eliminate lead contamination and may also be economically beneficial to the range owner/operator. Since each range is unique in both the type of shooting activity and its environmental setting, specific solutions are not provided in this manual. Rather, a range owner or operator may use this manual to identify and select the most appropriate BMP(s) for their facility. Other information on environmental aspects of management at outdoor shooting ranges can be found in the National Shooting Sports Foundation's *Environmental Aspects of Construction and Management of Outdoor Shooting Ranges*.

The manual does not address range layout or design to meet range safety or competition requirements. For information on range safety and competition requirements, range owners/operators are directed to other comprehensive reference materials available on that subject, such as the National Rifle Association's *Range Source Book*, and the National Association of Shooting Range's website (www.rangeinfo.org).

Owners/operators of ranges may want to assign the use of this BMP Manual to a specific team or committee. Delegating this responsibility to a specific team or group helps to assure that the BMP's are identified and implemented.

The manual is organized as follows:

- Chapter I provides the background on why lead is of concern to human health and the environment. It includes a discussion of how environmental laws impact shooting ranges

and the importance of an integrated BMP program to manage lead.

- Chapter II discusses physical and operational characteristics to be considered when selecting a successful BMP program.
- Chapter III addresses best management techniques for rifle/pistol ranges, skeet and trap ranges, and sporting clay ranges. In this chapter, the manual explores possible solutions to prevent, reduce and/or remove lead contamination for each type of range.
- The Appendices provide current (as of June 2005) contacts for lead reclamation and recycling companies, vendors that provide prevention and/or remediation techniques and shooting organizations that have additional information on the lead issue. Additionally, the Appendices provide information on alternatives to lead, diagrams of bullet trap designs, summaries of regulatory requirements and interpretations, and a sample Environmental Stewardship Plan.

EPA is very interested in any suggestions you have about practices included in this manual which have proven effective in controlling lead contamination or recycling lead bullets/shot. Please send such information to the address below. Also, for additional information, or to be added to the list of lead reclaimers or remediation contractors, contact the National Rifle Association (NRA), the National Shooting Sports Foundation (NSSF) or:

**Lead Shot Coordinator
RCRA Compliance Branch
U.S. Environmental Protection Agency
Region 2
290 Broadway
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E-Mail: Leadshot.Region2@epa.gov**

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BMP for Lead at Outdoor Shooting Ranges

Chapter I: Environmental and Regulatory Concerns at the Shooting Range

1.0 Background

Outdoor shooting ranges provide recreational facilities for millions of shooting sports enthusiasts in the United States. Recently, there has been a growing public concern about the potential negative environmental and health effects of range operations. In particular, the public is concerned about potential risks associated with the historical and continued use of lead shot and bullets at outdoor ranges.

This concern is not unfounded. An estimated 9,000 non-military outdoor ranges exist in the United States, collectively shooting millions of pounds of lead annually. Some ranges have operated for as long as several generations. Historical operations at ranges involved leaving expended lead bullets and shot uncollected on ranges. Many of these ranges continue to operate in the same manner as in the past.

It is estimated that approximately four percent (4%) (80,000 tons/year) of all the lead produced in the United States in the late 1990's (about 2 million tons/year), is made into bullets and shot. Taking into account rounds used off-range, and rounds used at indoor ranges, it is clear that much of this 160,000,000 pounds of lead shot/bullets finds its way into the environment at ranges.

Since the mid-1980's, citizen groups have brought several lawsuits against range owners and have urged federal and state agencies to take action against owners and operators of outdoor shooting ranges. The citizen groups argued that range owners improperly managed discharged lead bullets and shot. Federal courts have supported parts of these suits, requiring range owners/operators to clean up lead-contaminated areas. Concurrent with the increased citizen suit activity, the federal EPA, the Centers for Disease Control and Prevention

(CDCP), and a large number of states have identified human exposure to all forms of lead as a major health concern in the United States.

Lead management practices at ranges across the United States remain inconsistent. Some range owners/operators have examined the impact of range operations on human health and the environment and have implemented procedures to manage and/or remove accumulated lead from ranges. Other range owners/operators are just beginning to characterize and investigate their ranges in order to design an environmental risk prevention and/or remediation program(s) specific to their sites. A third group of ranges has adopted a "wait and see" policy – taking no action until specifically required to do so by law or clear guidance is in place. Finally, a fourth, small, but important group of range owners/operators remain unaware of lead's potential to harm human health and the environment, and of existing federal and state laws.

To manage lead, many owners and operators have successfully implemented Best Management Practices (BMPs) at their ranges. These range owners and operators have realized many benefits from sound lead management including:

- stewardship of the environment, natural resources and wildlife,
- improved community relations,
- improved aesthetics of the range/good business practices,
- increased profitability through recovery/recycling lead, a valuable and finite resource, and
- reduced public scrutiny.

Shooting sports organizations [e.g., National Rifle Association (NRA) and the National Shooting Sports Foundation (NSSF)] promote lead management throughout the United States. These organizations have researched different methods to effectively address potential and actual lead mobility and exposure without detracting from the enjoyment of the sport. The NRA, NSSF, and a number of other shooting sports organizations strongly encourage range

 BMP for Lead at Outdoor Shooting Ranges

owners/operators to develop a BMP program that contains elements discussed later in this manual. Contact the NRA and NSSF for additional guidance materials available on lead management practices.

By implementing appropriate lead management at outdoor shooting ranges, range owners and operators can reduce the environmental and health risks associated with lead deposition, meet legal requirements and realize quantifiable benefits.

1.1 Lead Contamination's Impact on Human Health and the Environment

Exposure Routes

Historically, the three major sources for human exposure to lead are lead-based paint, lead in dust and soil and lead in drinking water.

Typically, human exposure occurs through ingestion, which is the consumption of lead or lead-contaminated materials, or by inhalation. The main human exposure to lead associated with shooting ranges is through lead-contaminated soil. However, other pathways are discussed below, along with lead's detrimental effects on humans and animals.

Lead can be introduced into the environment at shooting ranges in one or more of the following ways. Each of these pathways is site-specific and may or may not occur at each individual range:

- Lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil.
- Lead bullets, bullet particles, or dissolved lead can be moved by storm water runoff.
- Dissolved lead can migrate through soils to groundwater.

Lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil

When lead is exposed to acidic water and/or

soil, it breaks down by weathering into lead oxides, carbonates, and other soluble compounds. With each rainfall, these compounds may be dissolved, and the lead may move in solution in the storm runoff waters. Decreases in water acidity (i.e., increases in its pH) will cause dissolved lead to precipitate out of solution. Lead concentrations in solution are reduced by this precipitation. At pHs above 7.5, very little lead remains in solution. Increased time of contact between lead and acidic water generally results in an increase in the amount of dissolved lead in the storm runoff water. The five factors which most influence the dissolving of lead in water are summarized below:

Annual Precipitation Rate - The higher the annual precipitation rate, the faster the lead weathers. Also, during prolonged rains, the contact time between water and lead is increased. In general, the higher the precipitation rate, the higher the potential risk of lead migration off-site in solution.

pH of Rain and Surface Water - The acidity of the rainwater decreases as basic (alkaline) minerals in the soil are dissolved. If sufficient minerals such as calcium, magnesium, and iron are present in local soils, then the lead may quickly precipitate out of solution entirely as these other minerals are dissolved. The pH of shallow surface water is an indicator of the presence or absence of basic minerals in the local soil and in gravel within the stream beds through which the water has moved. The water in deeper streams and lakes is more likely to be composed of acidic rainwater that is not neutralized.

Contact Time - The contact time between acidic surface water and lead is a factor in the amount of lead that is dissolved. For example, lead shot deposited directly into a lake has a longer contact time than lead shot deposited in upland areas.

Soil Cover - Organic material will absorb lead and remove it from a water solution. The thicker the organic leaf and peat cover on the soil, the lower the lead content in solution in water leaving the shot area. Organic material has a strong

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ability to extract lead out of solution in water.

pH of Groundwater - During periods of no rainfall, the water flowing within most streams comes from groundwater discharging into the stream channel. Therefore, the acidity of the groundwater affects the acidity of the surface water, and hence, affects the solubility of any lead particles carried into the stream during storm runoff.

Lead bullets, bullet particles or dissolved lead can be moved by storm water runoff

The ability of water to transport lead is influenced by two factors: velocity of the water and weight or size of the lead fragment. Water's capacity to carry small particles is proportional to the square of the water's velocity. Clear water moving at a velocity of 100 feet per minute can carry a lead particle 10,000 times heavier than water moving at a velocity of 10 feet per minute. Muddy water can carry even larger particles. The five factors that most influence velocity of runoff are described below:

Rainfall Intensity - The greater the volume of rainfall during a short period of time, the faster the velocity created to carry the rainfall off-site. The higher the annual rainfall, the greater the number of periods of heavy rainfall.

Topographic Slope - Generally, the steeper the topographic slope, the faster the velocity of stormwater runoff.

Soil Type - More rainfall will soak into sandy soils than into clay soils. Hence, for a given rainfall intensity, the volume of runoff will be greater from areas underlain by clays or other low permeable soils than from permeable sandy soil.

Velocity - Velocity tends to decrease as stream width increases. Merging streams, eddy currents, and curves in streams are other factors that may reduce the velocity. Generally, the shorter the distance from the lead deposit to the property line, the more likely it is that the lead fragments in suspension will be transported off-site.

Vegetative Cover and Man-made Structures - Structures such as dams and dikes reduce the water's velocity and greatly reduce the size and weight of the lead particles the water can carry. Since lead particles are heavy compared to the other suspended particles of similar size, they are more likely to be deposited under the influence of anything that reduces velocity of the storm runoff. Grass and other vegetation reduce runoff velocity and act as a filter to remove suspended solids from the water.

Dissolved lead can migrate through soils to groundwater

Acidic rainwater may dissolve weathered lead compounds. A portion of the lead may be transported in solution in groundwater beneath land surfaces. Groundwater may transport lead in solution from the higher topographic areas to the lower areas such as valleys, where it is discharged and becomes part of the surface water flow. If the water flowing underground passes through rocks containing calcium, magnesium, iron, or other minerals more soluble than lead, or through minerals that raise the pH of the water, then the lead in solution may be replaced (removed) from the solution by these other metals. However, if the soil is a clean silica sand and gravel, fractured granite, or similar type material, then the lead may move long distances in solution. The factors most likely to affect the amount of lead carried by the groundwater in solution are discussed below:

Annual Precipitation - Generally, high precipitation rates result in heavy dew, more frequent rainfall, numerous streams, shallow depth to groundwater, shorter distance of travel, and more rapid rates of groundwater flow. Also, the greater volumes of rainfall over geologic time probably have reduced the amount of calcium and other soluble basic minerals that could raise the water pH and cause lead to precipitate (settle) out of solution from the groundwater.

Soil Types - Clays have a high ionic lead bonding capacity and more surface area to which the lead can bond. Also, groundwater movement in clay is very slow, which increases the contact time for lead to bond to the clay.

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Low permeability reduces the amount of historical leaching and increases the probability of the presence of basic (pH-increasing) minerals that can precipitate out of solution in groundwater or cause the lead to bond to the clay. All of the basic calcium and related minerals generally will have been removed from the clean silica sand and gravel soils, so the lead in solution in groundwater in these type soils can move long distances (miles) through the ground relatively unchanged.

Soil Chemistry - The more basic minerals like calcium and magnesium that are present in soils along the pathways through which the groundwater moves, the greater the lead precipitation (removal) rate. Lead should move in solution only a short distance (a few feet) through a sand composed of calcium shell fragments, but could move in solution long distances (miles) through clean quartz sand.

Depth to Groundwater - In areas of groundwater discharge such as river flood plains and most flat areas, the groundwater surface is often a few feet below the surface. Remember, the shorter the distance traveled, the greater the risk that the lead will migrate into the environment. Shallow depth to groundwater is indicative of higher risk for lead to reach the water.

pH of Groundwater - Although other factors influence solubility of lead in water, a good rule of thumb is that lead will precipitate out of solution when the pH or alkalinity of water is greater than about 7.5. But, lead dissolved in acid groundwater may travel many miles without change.

Health Effects of Lead Exposure on Ranges

Lead poisoning is a serious health risk. At higher concentrations, it is dangerous to people of all ages, leading to convulsions, coma and even death. At even very low concentrations, it is dangerous to infants and young children, damaging the developing brain and resulting in both learning and behavioral problems. Figure 1-1 describes the effects of exposure to lead on children and adults.

Federal, state and local actions, including bans on lead in gasoline, paint, solder and many other lead-containing products, have resulted in significant reductions in average blood-lead levels. Despite these advances, the number of lead-poisoned children remains alarmingly high. Children living in older homes may be exposed to lead in peeling paint or paint dust. Children can also come in contact with lead in soil and with lead dust carried home on the clothing of parents.

On ranges, inhalation is one pathway for lead exposure since shooters are exposed to lead dust during the firing of their guns. Because wind is unlikely to move heavy lead particles very far, airborne dust is generally considered a potential threat only when there are significant structures that block air flow on the firing line. Under such conditions, the hygiene and other practices proposed by the NRA for indoor shooting ranges in their "Source Book" are applicable to outdoor ranges.

Range workers may also be exposed to lead dust while performing routine maintenance operations, such as raking or cleaning out bullet traps. Owners/operators may want to protect these workers by requiring them to wear the proper protective equipment or dampening the soil prior to work.

Another exposure route for lead at outdoor ranges is ingestion by direct contact with lead or lead particles. For example, lead particles generated by the discharge of a firearm can collect on the hands of a shooter. These particles can be ingested if a shooter eats or smokes prior to washing his/her hands after shooting. **The relative risk of lead exposure to people in a well managed facility is low.**

Detrimental effects due to elevated lead levels can also be found in animals. Excessive exposure to lead, primarily from ingestion, can cause increased mortality rates in cattle, sheep and waterfowl. For example, waterfowl and other birds can ingest the shot, mistaking it for food or grit. Waterfowl, in particular, are highly susceptible to lead ingestion. This is a concern at ranges where shooting occurs into or over

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Effects on the Human Body from Excessive Exposure to Lead

If not detected early, **children** with relatively low levels of lead (as low as 10 microgram/deciliter for children) in their bodies can suffer from:

- damage to the brain and nervous system,
- behavior and learning problems (such as hyperactivity and aggressiveness),
- slowed growth,
- hearing problems,
- headaches, and
- impairment of vision and motor skills.

Adults can suffer from:

- difficulties during pregnancy,
- reproductive problems in both men and women (such as low birth weight, birth defects and decreased fertility),
- high blood pressure,
- digestive problems,
- neurological disorders,
- memory and concentration problems,
- muscle and joint pain, and
- kidney dysfunction.

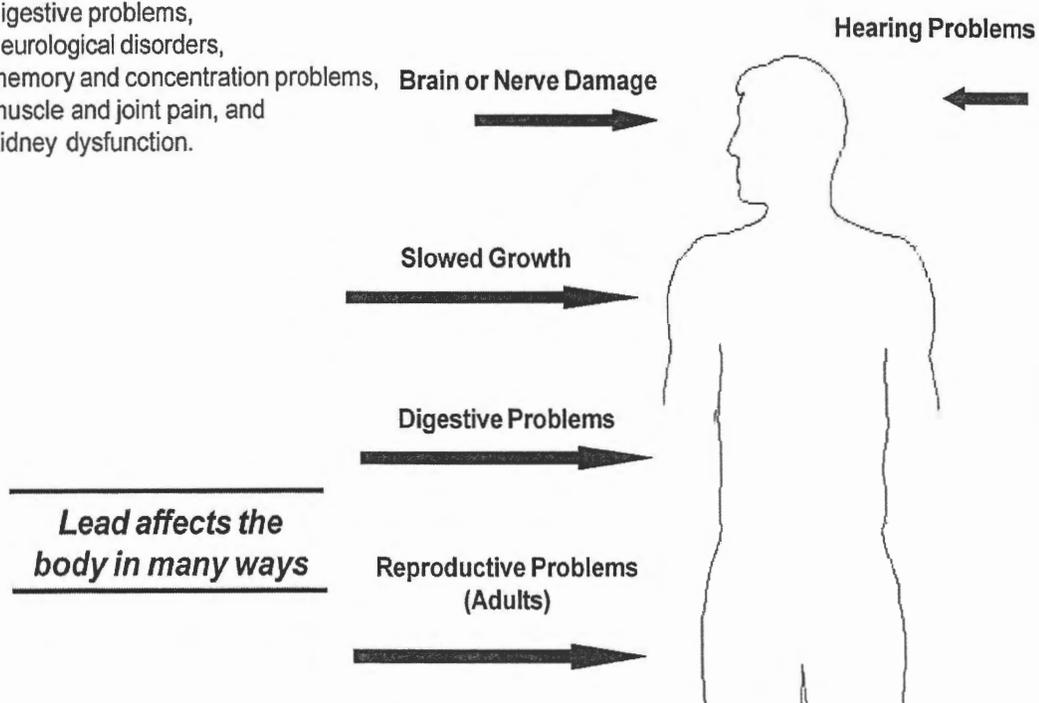


Figure 1-1: Effects on the Human Body from Excessive Exposure to Lead

 BMP for Lead at Outdoor Shooting Ranges

water. Many of the legal and government actions that have been brought against ranges are based on elevated levels of lead and increased mortality in waterfowl. For example, in one case, an upland area of a range became a temporary pond after a thunderstorm. Waterfowl used the pond to feed and shortly thereafter, there was a waterfowl die-off (increase in bird mortality), apparently from lead ingestion.

1.2 Legal Requirements & Court Rulings

To date, most litigation concerns have been at shotgun ranges where the shotfall zone impacts water or wetland areas. The potential environmental and human health risks are greater at these ranges. However, all ranges, including those not located near water bodies, may be subject to legal and government action if proper range management programs are not implemented. Range owners/operators should expect greater scrutiny as ranges become more visible to regulators, environmental groups and the general public.

Citizen groups have been the driving force behind most legal actions taken against outdoor ranges. These groups have sued range owners/operators under federal environmental laws. Two of EPA's most comprehensive environmental laws, the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA), specifically provide citizens with the right to sue in cases in which the environment and human health are threatened. These citizen suits have been highly effective in changing the way ranges operate, even when out-of-court settlements have been reached. The decisions of the United States Court of Appeals for the Second Circuit in *Remington Arms* and *New York Athletic Club* set a legal precedent in the application of RCRA and/or the CWA to outdoor ranges. Lead management programs at outdoor ranges must comply with both laws. Actions have also been taken under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) commonly known as Superfund. State and local statutes and regulations may also apply. To ensure environmental laws are being followed, range owners/operators must

understand the legal issues and requirements.

1.2.1 Resource Conservation and Recovery Act (RCRA)

RCRA provides the framework for the nation's solid and hazardous waste management program. Under RCRA, EPA developed a "cradle-to-grave" system to ensure the protection of human health and the environment when generating, transporting, storing, treating and disposing of hazardous waste. RCRA potentially applies to many phases of range operation because lead bullets/shot, if abandoned, may be a solid and/or a hazardous waste and may present an actual or potential imminent and substantial endangerment.

Connecticut Coastal Fishermen's Association v. Remington Arms Company, et al.

In the late 1980s, the Connecticut Coastal Fishermen's Association filed a lawsuit against Remington Arms Company as the owner of the Lordship Gun Club. The Lordship Gun Club (a.k.a. Remington Gun Club) is a 30-acre site in Stratford, Connecticut, located on the Long Island Sound at the mouth of the Housatonic River. In the mid-1960s, the Lordship Gun Club was reconstructed to its final configuration of 12 combined trap and skeet fields and one additional trap field. Over the years, the Lordship Gun Club became known as one of the premier shooting facilities on the East Coast.

The Connecticut Coastal Fishermen's Association filed a lawsuit, alleging that lead shot and clay targets are hazardous waste under RCRA. The Complaint alleged that because the lead shot and clay targets were hazardous wastes, the gun club was a hazardous waste storage and disposal facility subject to RCRA requirements. The plaintiff also sought civil penalties and attorney's fees.

Remington moved for a summary judgment dismissing the complaint, and the Connecticut Coastal Fisherman's Association cross-moved for a partial summary judgment on the issue of liability. On September 11, 1991, the United

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States District Court for the District of Connecticut ruled on the case.

Regarding the plaintiff's claims under RCRA, the District Court ruled in favor of the Connecticut Coastal Fishermen's Association, holding that the lead shot and clay targets were "discarded materials" and were "solid waste;" therefore, the materials were subject to regulation under RCRA. The court further stated that the discharged lead shot was a "hazardous waste," but declined to rule on whether the clay target fragments were also hazardous waste. Remington petitioned the United States Court of Appeals for the Second Circuit Court to review the lower court's ruling.

On June 11, 1992, both parties presented oral arguments before the court. Subsequent to oral arguments, the appellate court requested that EPA file an amicus brief "addressing whether lead shot and clay target debris deposited on land and in the water in the normal course of trap and skeet shooting is 'discarded material'... so as to constitute 'solid waste' under RCRA."

On March 29, 1993, the United States Court of Appeals for the Second Circuit reached its decision. With respect to RCRA, the court both reversed and affirmed the lower court's opinion in part.

Briefly, the decision affects currently operating and future gun clubs, and the following key points are of primary concern:

1. With respect to RCRA, the court agreed with EPA's amicus brief, which had argued that shooting at gun clubs is not subject to regulatory (as opposed to statutory) requirements. In other words, during routine operations, gun clubs are not viewed as facilities that manage hazardous wastes subject to RCRA regulations and, as such, do not require RCRA permits.

2. Another argument in the EPA's amicus brief with which the court agreed was the view that the RCRA statute allows citizen suits to be brought if a gun club's shooting activities pose an "imminent and substantial endangerment to health or the environment." Although gun clubs

are not subject to RCRA regulations, EPA or any state, municipality, or citizen group can take legal action under the statutory provisions of RCRA against gun clubs for actual or potential environmental damage occurring during, or even after, the operation of the club. Under RCRA, the plaintiff would be eligible to recover its legal fees as well.

3. The court concluded that lead shot and clay targets meet the statutory definition of solid waste because these materials were "discarded (i.e. abandoned)" and "left to accumulate long after they have served their intended purpose." Further, the court concluded that based upon toxicity testing and evidence of lead contamination, the lead shot was a hazardous waste subject to RCRA.

The important point to consider here is that if lead shot and clay target debris are discarded (i.e. abandoned), these materials are considered a solid waste as defined in the statute and the facility may be subject to governmental or citizen suits.

If, on the other hand, the discharged lead shot is recovered or reclaimed on a regular basis, no statutory solid waste (or hazardous waste) would be present and imminent hazard suits would be avoided.

Thus, the Remington Arms case is an important legal precedent. Even though regulations have not been issued regarding gun club operations and environmental protection, gun clubs are still at risk of legal action under RCRA if they fail to routinely recover and reclaim lead, do not take steps to minimize lead release or migration, or if they abandon lead in berms.

Gun clubs where there is shooting into water, wetlands, rivers, creeks, and other sensitive environments have the highest degree of litigation risk. Conversely, gun clubs that have the lowest risk of environmental litigation or government action are those clubs that do not shoot into water or wetlands and which have an active program to recover lead.

The following describes how RCRA may apply to outdoor shooting ranges.

BMP for Lead at Outdoor Shooting Ranges

How is Lead Shot Regulated Under RCRA?

Lead shot is not considered a hazardous waste subject to RCRA at the time it is discharged from a firearm because it is used for its intended purpose. As such, shooting lead shot (or bullets) is not regulated nor is a RCRA permit required to operate a shooting range. However, spent lead shot (or bullets), left in the environment, is subject to the broader definition of solid waste written by Congress and used in sections 7002 and 7003 of the RCRA statute.

With reference to reclaiming and recycling lead shot, the following points should serve as guidance in understanding RCRA and how it applies to your range. (A more detailed discussion of the underlying RCRA rules applicable to lead shot removal at ranges is included in Appendix D)

- **Removal contractors or reclaimers should apply standard best management practices, mentioned in this manual, to separate the lead from soil. The soil, if then placed back on the range, is exempt from RCRA. However, if the soil is to be removed off-site, then it would require testing to determine if it is a RCRA hazardous waste.**
- **Lead, if recycled or reused, is considered a scrap metal and is, therefore, excluded from RCRA.**
- **Collected lead shot and bullets are excluded from RCRA regulation, and need not have a manifest, nor does a range need to obtain a RCRA generator number (i.e., the range is not a hazardous waste “generator”), provided that the lead is recycled or re-used. The reclaimer does not need to be a RCRA transporter. However, it is recommended that ranges retain records of shipments of lead to the receiving facilities in order to demonstrate that the lead was recycled. Records should also be kept whenever the lead is reused (as in reloading.) The range should be aware that it ultimately may be responsible for the lead sent for**

reclamation. Therefore, only reputable reclaimers should be utilized.

- **Lead from ranges destined for recycling may be temporarily stored on range property after separation from soil if the lead is stored in closed, sealed containers, the containers are stored in a secure location and routinely inspected by range staff, and records of inspections are maintained.**
- **Sections 7002 and 7003 of the RCRA statute allow EPA, states or citizens to use civil lawsuits, to compel cleanup of or other action for “solid waste” (e.g., spent lead shot) posing actual or potential imminent and substantial endangerment. Such actions can be sought whether the range is in operation or closed, and is based solely on a determination that harm is being posed or may be posed by the range to public health and/or the environment. Since the risk of lead migrating increases with time, making ranges that have not removed lead more likely candidates for government action or citizen lawsuits under RCRA Section 7002 and 7003, ranges are advised to maintain a schedule of regular lead removal.**
- **With time, lead in soil can become less desirable to reclaimers and smelters, thereby potentially reducing or eliminating financial returns from lead removal. Moreover, such soil may be subject to more expensive treatment to separate the lead for recycling.**
- **Lead removal will allow the range to: avoid contamination of the site and potential impacts to human health and the environment; reduce liability with regard to potential government agency or citizen suit action; and, possibly, benefit economically from the recycling of lead. Additional guidance on reclaiming lead is provided in other parts of this manual.**
- **Soil from berms and shotfall zones may be moved to another area of the range for such reasons as addressing potential environmental impacts (e.g., runoff), altering the layout to address safety concerns or allowing different types of shooting activities, or adding or removing shooting positions. However, removal of lead prior to such**

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movement of soil is normal practice and highly advised because it extends the usable life of the materials and reduces the possibility of release of lead into the environment. If lead is not first removed, it will be further dispersed and will be more difficult to remove in future reclamation. Written records of all such activity should be maintained indefinitely, as they will be necessary in subsequent construction or range closure.

- This RCRA summary applies to operating and non-operating ranges, and the use of BMPs at operating ranges is highly recommended. However, because of increased risk if lead is not actively managed, such application may not preclude the need for remediation, as appropriate and/or as required by states' regulations, when a range is permanently closed, on-site lead is abandoned, or the land use changes. Introductory guidance for remediation can be found at www.epa.gov/epaoswer/osw or www.epa.gov/superfund. Look under the sections "Cleanup" or "Resources," or use the Search function.

1.2.2 - Clean Water Act

The goal of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The most common allegation against ranges by the EPA and citizen groups, is that they violate the CWA if they do not have permits that allow spent ammunition to be discharged into water. The CWA prohibits "the discharge of any pollutant by any person" into the waters of the United States without a National Pollution Discharge and Elimination System (NPDES) permit. There have been two court cases that have applied the provisions of the CWA to civilian shooting ranges. To understand how the CWA can apply to shooting ranges, a summary of the cases follows. Also see Table 1-1.

To understand the application of the CWA to outdoor ranges, one must know the definitions of key terms and how they have been applied to shooting activities. See Table 1-1.

In the *Remington Arms* and the *New York Athletic Club* lawsuits, citizen groups argued that the defendants violated the CWA by discharging pollutants from point sources into the Long Island Sound without a NPDES permit. Application of the CWA requires the violations to be ongoing. Consequently, the court in *Remington Arms* dismissed the CWA charge against the range because it had ceased operating before the lawsuit was filed.

However, in the *New York Athletic Club* case, the club was still in operation during the time of litigation, but had switched to steel shot. EPA's opinion on this case also addressed the CWA violation. EPA argued that certain trap/skeet ranges can convey pollutants, via point sources, to water in violation of the CWA if a NPDES permit is not obtained. Although some shooting organizations have disagreed with the EPA position, the United States District Court for the Southern District of New York specifically found that:

- The mechanized target throwers, the concrete shooting platforms, and the shooting range itself are considered point sources as defined by the CWA;
- Expended shot and target debris, including non-toxic shot, such as steel shot, left in water, are pollutants as defined by the CWA.

Although the New York district court's decision in the *New York Athletic Club* case is not controlling in any other district, range owners and operators of outdoor ranges that shoot over or into wetlands or other navigable waters of the United States should be aware of it. Based on the court's decision in the *New York Athletic Club* case, any range whose shot, bullets or target debris enter the "waters of the United States" could be subject to permitting requirements as well as governmental or citizen suits. "Waters of the United States" or "navigable waters of the United States" are waters of the United States, including territorial seas that include any body of water that has any connection to, or impact on, interstate waters or commerce. The waters may include lakes,

BMP for Lead at Outdoor Shooting Ranges

Table 1-1: Application of Key Terms to Outdoor Ranges

Key Term	Statutory Definition	Application to <i>New York Athletic Club</i>
Discharge of a Pollutant	"any <i>addition</i> of any pollutant to navigable waters from any point source" (emphasis added) 33 U.S.C. § 1362 (12)	Shooting into water (including wetlands) constitutes a discharge. In the <i>New York Athletic Club</i> , the range did not dispute that its shooting operations resulted in the deposition of spent shot and other debris into the waters of the United States.
Point Source	"any discernible, confined, and discrete conveyance... from which pollutants are or may be discharged" into the Nation's waters. 33 U.S.C. § 1362 (14)	In <i>New York Athletic Club</i> , the court found that shooting ranges act to systematically channel pollutants into regulated waters and that mechanized target throwers convey pollutants directly into water. Specifically, it stated, "A trap shooting range... is an identifiable source from which spent shot and target fragments are conveyed into navigable waters of the United States." The court also determined that the concrete shooting platforms can be seen as separate "point sources" under the CWA or as one facet of the shooting range that systematically delivers pollutants (e.g. shot and wadding) into the water.
Pollutant	"dredged spoil, solid waste,... munitions... discharged into water" 33 U.S.C. § 1362 (6)	In <i>New York Athletic Club</i> , shot and target residue constitute a form of "solid waste" subject to regulation under the CWA as a "pollutant." Based on these determinations, the court supported EPA's contention that the ranges were discharging pollutants from a point source without a permit, in violation of the CWA.

 BMP for Lead at Outdoor Shooting Ranges

ponds, rivers, streams, wetlands, or even guts that are frequently dry, which may not be obvious to range owners/operators. These ranges may be required to remediate contaminated sediments and soils, which could be both difficult and expensive, and to cease operations over waters and wetlands. **It is essential that these ranges change the direction of shooting, to avoid shooting over or into wetlands or other navigable waters of the United States, and initiate lead removal and recycling activities, where feasible.**

In addition, these ranges can cause a substantial impact on wildlife and wetlands, which range owners/operators may be required to restore under other federal laws (e.g., CERCLA, discussed below). Lead shot entering a water body substantially increases the potential risk of contaminating surface and groundwater which, in turn, threatens human health and the environment. Finally, as *New York Athletic Club, Remington Arms* and similar cases show, neighbors have the most leverage when range activity affects wetlands and waterways.

For ranges located away from coastal areas or whose operating areas are situated wholly over land, compliance with the CWA can be achieved by obtaining a NPDES permit for piped or channeled runoff from the range into water¹.

Shooting ranges impacting wetland areas may be subject to other regulations found in Section 404 of the CWA. This section is the principal federal regulatory program protecting the Nation's remaining wetland resources. Any plan by range owners/operators to dredge and/or fill wetlands may require a permit and will come under close scrutiny by federal, state and local governments and citizen groups. Owners and operators must comply with the CWA for range design, redesign, construction, reclamation or remediation occurring in wetland areas.

¹ The term "land" in this instance refers specifically to terrain recognized as "non-wetland" areas.

1.2.3 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), imposes liability on past and present owners or operators of properties where a release of a hazardous substance into the environment exists. CERCLA is used to ensure that an owner/operator cleans a contaminated site or to seek reimbursement from past owners/operators or disposers (potentially responsible parties or PRPs) when a party, either the government or private party, has cleaned up the contamination. Under CERCLA, lead is considered a hazardous substance.

EPA has the authority to order a PRP to clean up a site or conduct the cleanup and recover its costs from the PRP under CERCLA. Responsible parties may be held liable for all cleanup costs, which can be substantial. Under CERCLA, shooting ranges may be liable for government costs incurred during the cleanup of ranges, natural resources damages, and health assessments and/or health effects studies. The following two examples illustrate how shooting ranges (including one operated by the federal government) can be affected by CERCLA.

Southern Lakes Trap and Skeet Club Site, Lake Geneva, Wisconsin, et al.

In 1992, the US Fish and Wildlife Service (USFWS) began an investigation to determine the cause of death of over 200 Canada geese. The geese died as a result of acute lead poisoning after ingesting lead shot, which research indicated came from the Southern Lakes Trap and Skeet Club. The USFWS, in its role as Natural Resource Trustee, took action to recover the cost of damage to the natural resources (i.e., migratory geese) under CERCLA. In addition, EPA pursued a separate action under the Agency's CERCLA response authority. The club had leased the property from the property owners to operate a shooting range. Shortly after EPA sent out the notice of potential liability to the current and former owners and

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operators of the club site, the club closed permanently.

In 1994, EPA issued an Administrative Order on Consent (AOC) against one current and one former owner of the property where the now closed Southern Lakes Trap and Skeet Club was located. The AOC required the owners to perform a site assessment, which included an evaluation of the costs to restore the wetlands. In 1998, EPA completed activities to clean up the site and restore some of the natural resources and wetlands. In a negotiated settlement, EPA recovered \$1 million of the cost of the cleanup.

Walter L. Kamb v. United States Coast Guard, et al.

In another CERCLA action, Mr. Kamb (court appointed property guardian) sued the U.S. Coast Guard, California Highway Patrol, City of Fort Bragg, and the County of Mendocino (the defendants) for recovery of cleanup costs under CERCLA. Mr. Kamb had been appointed by the Mendocino County Superior Court to sell the property on behalf of the property owners. The property was formerly used by defendants as a rifle, pistol and trap range. Soil analysis indicated the presence of lead in the form of leadshot, bullets, pellets, and dust. The court found the defendants were “responsible parties” (liable for cleanup costs) under CERCLA. No apportionment of liability was made and the final determination of each parties’ pro rata share of the response cost was deferred.

This case shows that range activity need not affect a water body to trigger CERCLA liability. CERCLA is a powerful statutory authority that can greatly impact current and former range owners/operators. The statute allows for recovery of damages to natural resources, the cost of any health assessment studies and all cleanup costs. Liability may extend to past owners and operators long after a range ceases operation.

1.2.4 Additional Laws and Regulations

Shooting ranges may also be subject to state and local laws and regulations. Many states

have adopted their own environmental laws, which are based on federal laws. Specifically, these states have laws and regulations that mirror the CWA and RCRA program laws. EPA-approved state program laws must be as stringent as the federal laws and may be more stringent. Activities at shooting ranges may also be subject to local laws, ordinances and regulations addressing issues such as noise, zoning, traffic, wetlands and nuisance. Often, citizens or neighbors of outdoor shooting ranges can initiate noise nuisance claims against range owners/operators. Because many states have passed legislation protecting ranges from noise nuisance lawsuits, these may turn into claims of environmental violations under the laws discussed above due to the presence of lead and other products at ranges.

1.3 Benefits of Minimizing Lead’s Environmental Impact

All ranges will benefit from proactively implementing successful BMPs. Even if range activities currently do not cause adverse public health and environmental impacts, by developing and promoting active lead management programs, ranges will benefit in the following ways:

- **Through a sound lead management program, shooting sports enthusiasts can reduce the potential of lead exposure and contamination to humans, animals and the environment.**
- **A lead management program will result in improved public relations for the range and the shooting sports.** Ranges can promote and publicize their successful BMP programs to improve their public image. Since many of the legal and governmental actions begin with or are due to citizen groups, an active lead management program may improve the public image of the range with these citizen groups.
- **The removal of spent lead from the range presents a clean, well maintained facility, which will increase customer satisfaction.**

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- **Lead is a recyclable and finite resource and can be recovered from the active portion of ranges and sold to lead reclaimers.** Frequently, reclaimers do not charge range owners/operators to recover lead from ranges, and owners and operators may receive a percentage of the profit from the sale of reclaimed lead. This factor drives recycling efforts at many ranges.
- **By reducing or eliminating a potential source of lead migration in soil, surface water and groundwater, range owners/operators may avoid costly and lengthy future remediation activities.**
- **Finally, implementing a BMP program for lead may eliminate or greatly reduce the risk of citizen lawsuits and the legal costs associated with these lawsuits.** Through management and removal practices, lead may no longer represent a threat upon which citizen lawsuits are based.

Range owners/operators may question whether the benefits of a regular and timely BMP program outweigh the efforts of implementing and maintaining a program. The questions may arise especially for ranges at which shooting activities involve waterways, since national attention has focused on ranges located adjacent to water (e.g., *Remington Arms* and the *New York Athletic Club*). However, all outdoor ranges may be subject to legal actions under RCRA and CERCLA authority. All of the benefits for adopting best management practices are available and worthwhile for every range owner and operator.

The following sections provide information that will assist the range owner or operator in implementing a BMP program for recovery and recycling of lead shots and bullets.

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Chapter II: Range Characteristics & Activities to Consider When Implementing Best Management Practices (BMP)

2.0 Background

Since each firing range site is unique, BMPs for lead must be selected to meet site-specific conditions in order to achieve maximum success. A range's physical characteristics and the operational aspects (e.g., volume of shooting, shooting patterns and operating schedules) will effect which BMPs may apply and how they will be implemented. Accordingly, whether designing a new outdoor range or operating an existing range, it is important that BMPs incorporate techniques appropriate for the range's individual characteristics.

Section 2.1 of this chapter identifies the physical characteristics that must be considered when evaluating your range. A summary of common physical characteristics at ranges is also presented in Table 2-1. These factors include:

- Range Size (primarily for shotgun ranges)
- Soil Characteristics
- Topography/Runoff Direction
- Annual Precipitation
- Ground and Surface Water
- Vegetation
- Accessibility

Section 2.2 discusses the operational aspects that must be considered. These factors include:

- Lead Volume
- Size of Shot/Bullets
- Operating Schedule
- Shooting Direction and Pattern
- Range Life Expectancy

In addition, Section 2.3 discusses issues that are specific to implementing BMPs when planning a new range.

2.1 Physical Characteristics

Physical characteristics of ranges, relative to lead management issues, are discussed below.

Range Size

Shotgun range design and type affects the ease of lead shot collection. Larger ranges typically tend to have lead shot that is dispersed over a wider area, while smaller ranges tend to concentrate lead shot in a smaller area. Reducing the area of the shotfall zone will concentrate the shot within a smaller area, allowing for easier cleanup and reclamation. BMP techniques for reducing the shotfall zone at trap and skeet ranges, as well as sporting clay ranges, are discussed in Chapter III.

Soil Characteristics

Spent lead bullets and shot are most often deposited directly on and into soil during shooting. When lead is exposed to air and water, it may oxidize and form one of several compounds. The specific compounds created, and their rate of migration, are greatly influenced by soil characteristics, such as pH and soil types. **Knowing the soil characteristics of an existing range site is a key component to developing an effective lead management plan.**

Soil pH

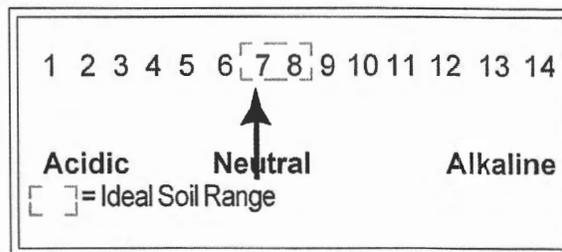


Figure 2-1 – pH scale

Soil acidity is measured as pH on a scale (illustrated as Figure 2-1) between 1 (most acidic) and 14 (most alkaline, or basic), where 7 is termed neutral. Ideal soil pH for shooting ranges is 6.5 to 8.5.¹

¹ National Shooting Sports Foundation, "Environmental Aspects of Construction and Management of Outdoor Shooting Ranges," June 1997.

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Lead reacts more readily and may become more mobile under acidic (pH < 6) or higher alkaline (pH>8) conditions. This means that spent lead shot left in or on such soils may eventually break down and contaminate underlying soil. In moderately alkaline soils (pH 7 - 8.5), the lead precipitates out of solution and binds to the soil. This “binding” effect prevents the lead from migrating to the subsurface. In general, soils in the eastern part of the United States tend to be acidic, whereas western soils tend to be more alkaline.

Soil Physical Characteristics

The migration rate of specific lead compounds is affected by the physical characteristics of soil. For example, dense soils, consisting of heavy clays, will prevent the lead compound from moving quickly through the subsurface. Any “free” lead ions become attached to clay particles, with this bond helping to prevent migration. However, with denser soils, the amount of surface runoff increases.

Although clay soils inhibit migration, lead reclamation by contemporary removal machinery tends to be more difficult in clayey conditions. Clayey soils tend to clog the screens and “bind” with shot and bullets. This situation may require additional traditional screening, or perhaps screening using water to enhance separation.

In contrast, sandy soils or gravel may not impede migration because the open pores of these soils allow lead compounds to percolate quickly. Fortunately, lead reclamation activities are more easily conducted in sandy soils. With this in mind, ranges located in sandy soils should remove lead more frequently.

Annual Precipitation

One of the most important factors that influences lead degradation (i.e., chemical reactions) and migration is precipitation. Water, most often in the form of rain, provides the means by which lead is transported. In general, ranges located in areas with high annual/seasonal rainfall² have a higher risk of lead migration than those located in

arid regions. This is especially true of outdoor ranges using “Steel Bullet Traps.”

Steel bullet traps build up a layer of lead residue; these particles are extremely small and more easily transported by rain/water. Also, the smaller the particle, the quicker it will degrade. A bullet trap needs to have a means to collect contact water, or be covered to prevent water from reaching it, and to minimize releases and degradation.

Topography/Runoff Directions

The topography of your range impacts both the ease of lead reclamation and the mobility of the lead. For example, lead reclamation is more successful at ranges where the shotfall zone is relatively flat, since many lead reclamation companies use heavy machinery that cannot operate on slopes or steep hills.

Another important characteristic is the direction in which your range topography slopes. During and after periods of rain, stormwater runoff may wash lead particles or lead compounds off the range. If there are surface water bodies such as lakes, rivers, or wetlands downgradient, the potential for lead to adversely affect the surrounding environment is even greater. Therefore, it is important to identify and control the direction of surface water runoff at your range. BMPs for modifying and controlling runoff are described in detail in Chapter III.

Groundwater

Groundwater depth should be considered when developing a lead management plan since the closer the groundwater is to the surface, the greater the potential for dissolved lead to reach it.

Vegetation

Vegetative ground covers can impact the mobility of lead and lead compounds. Vegetation absorbs rainwater, thereby reducing

2 Heavy annual rainfall is anything in excess of the average annual rainfall, which for the northeast United States (e.g. New York, New Jersey) is between 40 and 45 inches.

BMP for Lead at Outdoor Shooting Ranges

Table 2-1 – Common Physical Characteristics at Ranges – Potential Risks and Benefits Associated with Range Operations

Physical Characteristics	Potential Risk to Environment	Potential Benefits in Preventing/Managing Contamination
Clay, acidic soils	Acidic soils contribute to lead dissolution – increasing the potential for lead contamination – may increase run-off Difficult to reclaim lead via sifting/raking	May impede percolation of water through contaminated soil Binds "free" lead ions May benefit growth of vegetative covers
Sandy, alkaline soils	Contaminated rainwater can easily percolate through soil and groundwater Extremely alkaline soil will not support vegetation	Alkaline soils may inhibit lead dissolution Easier to reclaim lead via sifting/raking
Sandy, acidic soils	Acidic soils contribute to lead dissolution – increasing the potential for lead contamination Contaminated rainwater percolates quickly through sandy soils	Easier to reclaim lead via sifting/raking
Steep Rolling Terrain	May promote off-site drainage or drainage to on-site surface water bodies Can impede reclamation of expended shot via raking	None
Flat Terrain	Rainwater may "pond" in areas, promoting lead dissolution and contamination	Expended shot easily recovered Off-site drainage minimized
Wooded areas	May impede lead reclamation activities making equipment difficult to maneuver May provide habitat for wildlife - increasing exposure to lead	None
On-site or contiguous surface water bodies	VERY high potential for contamination when shot fall zone is located over or adjacent to water; increased wildlife exposure; increased lead dissolution. This is NOT an option for successful range location and may be more likely subject to litigation and/or governmental action if lead is deposited into water bodies	None
Vegetation	Lead may be absorbed into grasses, other wildlife food sources	Ground covers slow down surface water run-on and run-off Some vegetation can extract lead ions from the soils

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the time that the lead is in contact with water. Vegetation also slows down surface water runoff, preventing the lead from migrating off-site. However, excessively wooded areas (such as those often used for sporting clay ranges) inhibit lead reclamation by making the soils inaccessible to some large, lead-removal machinery. Understanding the type, concentration and variety of vegetation on your range is necessary for developing your lead management program and implementing BMPs at your range.

Accessibility

Accessibility to shotfall zones and backstops is extremely important for lead reclamation activities. A range that is not accessible to reclamation equipment will have difficulty implementing lead reclamation practices.

2.2 Operational Aspects

Operating practices can have a great affect on the volume and dispersion of lead at your range.

Lead Volume

Keeping records of the number of rounds fired over time at your range is important. The number of rounds fired provides a realistic estimate of the quantity of lead available for reclamation. This information helps to determine when reclamation is necessary in order to prevent accumulation of excess amounts of lead, thereby decreasing the potential for the lead to migrate off-site.

Size of Shot/Bullets

Knowledge of the size shot/bullets used on your range may be helpful. Lead reclamation companies generally use physical screening techniques to separate lead shot and bullets from soil. These screens come in a variety of sizes. Knowing what size shot/bullets have been used at your range will allow the reclaimer to maximize the yield of lead shot/bullets at your range.

Shooting Direction and Patterns

Shooting directions and patterns are important to consider when determining the effectiveness of bullet containment devices. For example, many bullet traps are effective in containing bullets fired from specific directions. It is vital that you utilize bullet containment devices that match your range's specific shooting patterns and manufacturers specifications. Understanding the shooting direction and patterns will also help to correctly identify the shotfall zone at trap and skeet ranges.

Shooting into Water Bodies

Shooting into water bodies or wetlands should not occur. Besides the environmental impacts discussed previously, the introduction of lead to surface water bodies will likely cause a range to be susceptible to litigation and/or governmental action. Shooting into water bodies or wetlands is NOT an option for ranges that want to survive in the future.

Range Life Expectancy and Closure

The life span of your range may be impacted by many factors, including financial and environmental issues, noise, and encroachment on residential areas. If your range is slated for closure, contact your local state or EPA representatives for guidance.

2.3 Planning a New Range

As discussed in the previous sections, site characteristics and operational aspects affect lead migration, degradation and reclamation activities at ranges. **If you are planning on opening a new range, you should select and/or design a site in consideration of the factors discussed in this manual.** This will allow you to minimize the potential of lead impacting your site or adjacent properties. A new range owner has the advantage of being able to design a successful lead management program in full consideration of the site characteristics and recommended BMPs. This advanced understanding of operational aspects

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and requirements will allow you to minimize the potential for lead migration prior to opening.

The most important site selection criteria to consider when selecting a new range location include: topography; surface water flow patterns; and depth to groundwater. If possible, ranges should be developed on flat terrain, as it facilitates reclamation and reduces the chance of off-site migration due to surface water runoff as compared with highly sloped terrain. When considering a prospective location for a range, ask yourself: What is the direction of surface water runoff? Does the site drain to surface water (e.g., streams, rivers) on-site? Off-site? Can the range design be modified to minimize potential runoff? Is reclamation equipment accessible to the area to clean the range?

By selecting an appropriate location and designing a lead management program in consideration of site characteristics, new shooting ranges can be developed to minimize the potential for lead contamination. Other important site characteristics can be modified. For example, a new shotgun range can be designed to concentrate the shotfall area, vegetation can be added or altered, and the most advantageous shooting direction can be selected. These modifications are BMPs, and are discussed in further detail in Chapter III.

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BMP for Lead at Outdoor Shooting Ranges

Chapter III: Best Management Practices (BMPs) For Outdoor Ranges

3.0 Background

To operate an outdoor range that is environmentally protective requires implementing an integrated lead management program, which incorporates a variety of appropriate BMPs. These BMPs create a four step approach to lead management:

- ▶ Step 1 - Control and contain lead bullets and bullet fragments
- ▶ Step 2 - Prevent migration of lead to the subsurface and surrounding surface water bodies
- ▶ Step 3 - Remove the lead from the range and recycle
- ▶ Step 4 - Documenting activities and keeping records

An effective lead management program requires implementing and evaluating BMPs from each of the four steps identified above and illustrated as Figure 3-1. The BMPs discussed in Sections 3.1 and 3.2 should not be considered alternatives to lead reclamation, but rather

practices that should be followed between lead reclamation events.

It is important to note that the cost and complexity of these BMPs vary significantly. It is **your range's individual characteristics that will determine which BMPs should be implemented.** The specific BMPs are described more fully below.

3.1 Bullet and Shot Containment Techniques (Step 1)

3.1.1 Bullet Containment

Knowing where spent lead is allows the appropriate BMP to be used. The single most effective BMP for managing lead in these areas is by bullet containment. Owners/operators should employ a containment system that allows for the maximum containment of lead on-site. The containment systems mentioned in this section are for reference only. Each containment design for a range is site specific. Each owner/operator must look at the various factors in determining which containment system is best for his or her range. Some factors include: overhead, cost of installation, maintenance (e.g., creation of lead dust from steel containment systems). Range owner/operators should consult with various contractors to determine which containment system is best for their range.

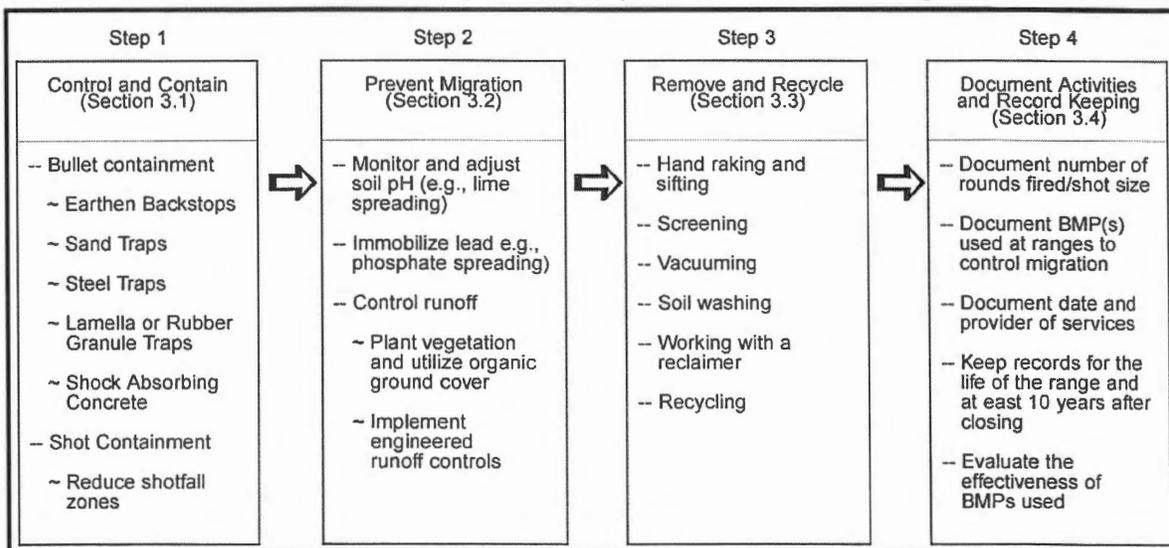


Figure 3-1 – 4 Steps to Build a Successful Lead Management Program Utilizing a Variety of BMPs

 BMP for Lead at Outdoor Shooting Ranges

This section discusses BMPs for controlling spent lead bullets and fragments in a “controlled” and well-defined area behind the target area. Containing bullets and bullet fragments is critical to successfully managing lead.

There are a variety of containment device options available that serve as BMPs to control lead. The principle behind all of them is trapping and containing the actual bullet. They include:

- ▶ Earthen Berms and Backstops
- ▶ Sand Traps
- ▶ Steel Traps
- ▶ Lamella or Rubber Granule Traps
- ▶ Shock Absorbing Concrete

For each type of trap, design variations have been developed to fit the specific needs of an individual range. Below are discussions of each general category of trap. Some bullet containment devices are so comprehensive that they virtually eliminate lead’s contact with the environment.

However, it is important to discuss all types of bullet containment devices because they are part of comprehensive BMPs for managing lead at rifle and pistol ranges.

EPA does not endorse any bullet containment design as being “better” than another. Different containment designs attempt to eliminate lead’s contact with the environment, however, additional BMPs may be required for lead management.

EPA recommends that you discuss your range’s bullet containment needs with a variety of vendors before deciding what type of containment device to use. This manual does identify the possible advantages and disadvantages associated with each containment device in Table 3-1, at the back of this chapter.

Earthen Berms and Backstops

Perhaps the most common bullet containment system at rifle and pistol ranges is the earthen

backstop (earthen material, i.e., sand, soil, etc., which is located directly behind the targets). The earthen backstop is generally between 15 and 20 feet high with a recommended slope as steep as possible¹. In many instances, backstops may be naturally occurring hillsides. When using an earthen berm or backstop, ensure that the uppermost layer (to a depth of one to two feet) exposed to the shooting activity is free of large rocks and other debris. These materials tend to increase ricochet and bullet fragmentation, which will, in turn, make lead reclamation activities more difficult, not to mention possible safety issues.

Removal of lead from earthen backstops may require lengthy reclamation (see Section 3.3) of the soil to remove the lead. Continued use of the backstop without removing the lead may result in increased ricochet of bullets and fragments. In addition, the backstop may lose its slope integrity because of “impact pockets” that develop. Once the lead has been removed from the earthen backstop, the soil can be placed back on the range and used again. Adding lime and phosphate during the rebuilding process is recommended as appropriate (see Section 3.2). However, other bullet containment techniques, including those listed below, should be considered prior to reestablishing an earthen backstop.

Sand Traps

A variation of the earthen backstop is the sand trap. Sand traps range from those that are simply mounds of sand or soil located directly behind the bullet targets, which serve as backstops to a sand trap that employs a system designed to contain, collect and control lead and contact water. This sand trap uses a grade of sand that is ballistically acceptable. Regular maintenance must be performed to remove larger particles (bullets) from the impact area. These traps are placed so that bullets fired across the range pass through the targets and become embedded in the sand. These traps are typically 15 to 20 feet high with a slope as

1. National Rifle Association, “The NRA Range Source Book: A Guide to Planning and Construction,” June 1998

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steep as possible. The most important design criterion for these traps is that the uppermost layer (to a depth of 1 to 2 feet) be free of large rocks and other debris to reduce ricochet and bullet fragmentation, and to facilitate reclamation efforts. There may also be an impermeable layer (e.g., clay or liner) under the sand to prevent lead from contacting the soil underlying the trap.

Sand traps come in various designs and levels of complexity. The sand trap may be ballistic grade sand contained in a high backstop, or a more complex "Pit and Plate" system. The Pit and Plate system uses an angled, steel deflection plate cover that helps to direct bullets and bullet fragments to the top layer of sand only. Some of the more sophisticated sand traps incorporate lead recovery devices. However, the Pit and Plate may increase the surface-to-mass ratio of the bullet splatter and, therefore, may increase environmental risk of lead migration.

Regardless of the type of sand trap that is used, the traps become saturated with bullets/bullet fragments. Once this happens, the sand must be sifted (see Section 3.3) to remove the bullets. The recovered bullets can then be sold to a lead recycler (this is discussed in more detail later in the chapter). After sifting, the sand can be returned to the trap. Continued use of the trap, without removing the lead, may result in an increased risk of ricocheting off the backstop and thus creating an increased safety hazard. Furthermore, the sand trap will become unstable over time. Sand traps may be located over an impermeable liner, to prevent lead from contacting soil underlying the trap. This will provide additional protection to soil and groundwater.

Steel Traps

Steel traps are located directly behind the targets so that expended bullets, along with bullet particles, are directed into some form of deceleration chamber. Once inside the chamber, the bullets decelerate until the bullets/bullet particles fall into collection trays at the bottom of the deceleration chamber. When the

trap is full, or on a more frequent basis, the spent lead can easily be reclaimed for recycling.

With some steel traps, expended lead bullets may not come in direct contact with soils, thereby possibly minimizing lead's contact with the environment. Consequently, the need for other BMPs (e.g., lime spreading, and/or engineering controls), such as those required at ranges with unlined earthen backstops or unlined sand traps, may be avoided if this trap design is selected for the range's bullet containment device. In addition, bullet removal is somewhat easier than from a sand trap, and may only require emptying the bucket or tray containing the bullets and/or bullet fragments. However, an increase of lead dust and fragmented lead may be an additional environmental concern. Therefore, understanding the amount of lead dust and fragments is important to a successful lead management program. Also, some steel trap designs are not intended for shooting at different angles, therefore limiting the shooter to shooting straight on (no action shooting).

As with sand traps, steel traps vary in design and complexity. For example, the Escalator Trap has an upward sloping deflection plate that directs bullets into a spiral containment area at the top. The Vertical Swirl Trap is a modular, free standing trap with four steel plates that funnel the bullets into a vertical aperture in which they spin, decelerate, and become trapped in a bullet collection container. The Wet Passive Bullet Trap is equipped with steel deflection plates that slope both upward and downward. The upwardly sloped deflection plate is covered with an oil/water mixture to help reduce the occurrence of ricochet and bullet fragmentation. The bullet follows its own path in the round deceleration chamber for bullet recycling.

Lamella and Rubber Granule Traps

The Lamella Trap uses tightly-hanging, vertical strips of rubber with a steel backing to stop bullets. This trap is located directly behind the targets and, in many cases, the targets may actually be mounted to the trap. Lead removal

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requires mining the bullets from the rubber. The Rubber Granule Trap uses shredded rubber granules, housed between a solid rubber front and a steel backing, to stop bullets once they pass through the target. For both traps, the bullets remain intact, thus eliminating lead dust and preventing lead and jacket back splatter. Depending on the design of the rubber trap, the bullet either remains embedded in the rubber strip or falls to the bottom of the trap, from which the bullets are removed for recycling.

These traps, when properly installed, are intended to increase safety by decreasing the occurrence of back splatter and eliminating the introduction of the lead dust into the air and ground. However, there are several concerns over their use, since they may:

- ▶ require additional maintenance;
- ▶ in some cases, present a fire threat under extremely high volume use (due to heat from friction created upon bullet impact);
- ▶ not withstand weather elements over the long term; and
- ▶ cause the rubber particles to melt to the lead bullets, making reclamation more difficult.

With the availability of fire-resistant rubber and gels (see Appendix A), these issues are becoming less of a concern than in earlier models.

Shock Absorbing Concrete

In addition to the bullet containment devices discussed above, there are new designs and innovations continually being developed. One of these innovative bullet containment devices is Shock Absorbing Concrete (SACON). SACON, which has been used as a bullet containment device since the 1980s and was extensively field tested by the military, has become commercially available in the past several years as a backstop material for small arms ranges. For conventional rifle and pistol ranges, SACON may provide a means to easily reclaim lead. Additionally, crushed, lead-free SACON can be recycled (recasted) after bullet fragments have been removed by adding it to other concrete mixtures for use as sidewalks, curbs, etc.

3.1.2 Shot Containment

Reducing the Shotfall Zone

Unlike rifle and pistol ranges, the area impacted by lead shot fired at trap, skeet and sporting clays ranges is spread out and remains primarily on the surface. **Knowing where spent lead is allows the appropriate BMP to be used. The single most effective BMP for managing lead in these areas is reducing shotfall zones.**

Concentrating the lead shot in a smaller area by modifying the shooting direction facilitates lead management by providing a smaller and more dense area of lead to both manage in-place and reclaim, thereby making the management and reclamation process simpler and more effective.

Sporting Clays Courses

Technologies have been developed to assist in reducing the range size of trap and skeet, and sporting clays facilities. The National Sporting Clays Association (NSCA) supports and promotes the Five-Stand Sporting Clays compact course design for shooting sporting clay targets, invented by Raymond Forman of Clay-Sport International, Cochrane, Alberta, Canada. The targets are directed over a smaller area than in English Style Sporting Clays (conventional sporting clays). It was originally designed to be overlaid on a conventional trap or skeet field and to be an alternative to earlier designs, which cover a much larger area. Another design, known as the National Rifle Association (NRA) Clays, is a portable target throwing unit which concentrates 15 rail-mounted machines on a two-story flatbed trailer. The NRA has also developed "compact sporting," which is specifically for sporting clay facilities. This practice alters the angle that the target is thrown to concentrate the shotfall zone.

Skeet Fields

The typical single skeet field has a shotfall zone that is fan-shaped. For skeet fields with multiple stands side-by-side, the shotfall zones would overlap creating a shotfall zone that has a concentration of shot near the center of the fan.

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Trap Fields

One way to reduce the shotfall zone at trap fields is to build the fields at an angle to one another. This will make the shape of the shooting dispersal pattern smaller and more concentrated. However, if you do decide to choose this option, be aware of safety issues when designing the overlapping shotfall zones.

For a range with only one trap field, one way to minimize the shotfall zone is to keep trap machines set in as few holes as possible (e.g., the number two or three hole setting). This reduces the area of lead concentration by limiting the angles for pigeon throwing, and therefore the area for lead shot fall. However, when two or more trap fields are positioned side by side, the shotfall zone will be continuous regardless of the "hole" setting.

Shot Curtains

Another method to consider for concentrating lead shot is the use of a shot curtain. This device is emerging as a potentially effective tool to keep lead shot out of selected areas of the range and, thereby, reduce the size of the shotfall zone and corresponding cost of reclamation. Different designs and material have been utilized in shot curtains and a number are in operation. The effectiveness of shot curtains is site specific and their long term viability and expense have yet to be fully determined.

3.2 BMPs to Prevent Lead Migration (Step 2)

This section discusses BMPs for preventing lead migration. These BMPs include:

- ▶ **Monitoring and adjusting soil pH**
- ▶ **Immobilizing lead**
- ▶ **Controlling runoff**

These BMPs are important for all outdoor ranges.

3.2.1 Monitoring and Adjusting Soil pH and Binding Lead

Lime Addition

The BMP for monitoring and adjusting soil pH is an important range program that can effect lead migration. Of particular concern are soils with low pH values (i.e., acidic conditions), because lead mobility increases in acidic conditions since the acid of the soils contributes to the lead break down. **The ideal soil pH value for shooting ranges is between 6.5 and 8.5.** This BMP is important because many soils in the eastern United States have pH values lower than 6.²

To determine the pH of your soil, purchase a pH meter at a lawn and garden center. The pH meters are relatively inexpensive but valuable tools in the management of lead at your range. If the soil pH is determined to be below 6, the pH should be raised by spreading lime. **It is recommended that the pH be checked annually.**

One way to control lead migration is by spreading lime around the earthen backstops, sand traps, trap and skeet shotfall zones, sporting clays courses and any other areas where the bullets/shots or lead fragments/dust accumulate. For example, lead mobilized in rainwater from the lead that spatters in front of backstops after bullet impacts can be effectively controlled by extending a limestone sand layer out about 15 feet in front of the backstop. Likewise, spreading lime over the shotfall zone will help to raise the pH of the very top soil layer to a pH closer to ideal levels and reduce the migration potential of lead. This is an easy, low cost method. Spreading lime neutralizes the acidic soils, thus minimizing the potential for the lead to degrade. Lime can be easily spread by using a lawn fertilizer drop spreader available at any lawn and garden center.

Smaller forms of limestone (powdered, pelletized, and granular) are better suited

² National Shooting Sports Foundation, "Environmental Aspects of Construction and Management of Outdoor Shooting Ranges," June 1997

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because they dissolve and enter the soil more quickly than larger forms. However, the smaller forms of lime must be replenished more often. Conversely, limestone rock dissolves more slowly but does not need to be replenished as often. The larger rock form is better suited for drainage ditches, where it can decrease lead mobility by raising the pH of the storm water runoff.

Another way to control lead migration in earthen backstops is to break the capillarity within the base of the backstop. Most porosity in the soil material used in backstop is of capillary size, and, as a result, water is pulled upward into a capillary fringe within the base of the backstop. The height to which the water will rise in an earthen backstop depends on the soil material in the backstop. Water will rise more than 6 feet in clay, 3.3 feet in silt, 1.3 feet in fine sand, 5 inches in coarse sand, and only 2 inches in gravel.

Because of capillarity, the spent bullets may be in contact with acidic rainwater for a longer period of time, hence more lead is dissolved. Breaking the capillarity by adding a layer of limestone or gravel to the base of the backstop should reduce the rate of deterioration of spent bullets, the erosion of the backstop, and the amount of lead going into solution in the water in the backstop. Also, any lead dissolved should precipitate out of solution as the acids are neutralized and the pH raised from the water passing through and reacting with the limestone.

Lime spreading is an especially important method for implementing this BMP at sporting clay ranges where heavily wooded areas are

less accessible to conventional lead removal equipment. These types of ranges also tend to have more detritus (e.g., leaves, twigs, etc.) on the ground, which can increase soil acidity as they decompose. **In these areas, semiannual monitoring of the soil pH levels is suggested.**

Spreading bags of 50 pounds (at ranges with sandy soils) or 100 pounds (at ranges with clayey soils) per 1,000 square feet of range will raise the pH approximately one pH unit for a period of between one and four years, respectively. The market price of lime in either the granular or pelletized form commonly ranges from approximately \$2.00 to \$4.00 per fifty pound bag.

Table 3-2 provides information for raising pH levels of clay soils in temperate climates (i.e., Mid-Atlantic/Northeast). Additional information on the amount of lime to apply may also be found on the bags of the purchased lime and/or from the local lawn and garden center. It should be noted that if the soil pH is below 4.5, the addition of lime may only raise the soil pH to approximately 5. In this situation, other BMPs should be used as well. If the soil pH is above the ideal range upper value (8.5), do not add lime. Adding lime to a soil of this pH could result in mobilization of the lead. Lime spreading may be done at anytime during the year, except when the ground is frozen.

Additionally, it is important to remember to monitor the soil pH annually, as the effectiveness of the lime decreases over time. Additional routine applications will be necessary throughout the life span of most ranges.

Table 3-2 – Calculating Weight of Lime to Increase Soil pH Values*

		Current pH							
		4.0	4.3	4.5	4.8	5.0	5.5	6.0	6.5
Desired pH	5.0-6.0	14	11	8	5	3	-	-	-
	6.5-8.5	-	-	-	20	17	11	7	-

* Lime requirements stated as pounds of lime/100 square foot of problem area for clay soils in temperate climates (i.e., Mid-Atlantic/Northeast US).

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Phosphate Addition

In addition to lime spreading, another way to control lead migration is phosphate spreading. This method is recommended where lead is widely dispersed in range soils, a range is closing, or there is a high potential for vertical lead transport to groundwater (e.g., low soil pH, shallow water table). Under these circumstances, range soils may benefit from phosphate treatment. Unlike lime spreading, the main purpose of phosphate spreading is not to adjust soil pH but to bind the lead particles. This process also decreases the potential amount of lead that can migrate off-site or into the subsurface. Phosphate spreading can be done either separately or in conjunction with lime spreading. Generally, 15 to 20 pounds of phosphate per 1,000 square feet will effectively control the lead.

Phosphate spreading is especially recommended for sporting clays ranges and those parts of ranges not easily accessible by reclamation equipment. Phosphate spreading should be repeated frequently during the range's lifetime. See pilot testing under "Other Ways to Bind Lead" below for proper frequency for replacing phosphate.

You can purchase phosphate either in its pure form, as phosphate rock, or as lawn fertilizer. The average lawn fertilizer costs approximately \$7.00 per 40 pound bag. If you purchase lawn fertilizer, remember to check the bag for the actual percentage of phosphate. Most fertilizers contain 25% phosphate, so that if you purchase a 40 pound bag of fertilizer that contains 25% phosphate (i.e., 10 pounds of phosphate) you will need to spread 80 pounds of fertilizer per 1,000 square feet of the backstop. A typical fertilizer drop spreader can be used for distributing the phosphate. Like lime, phosphate should not be spread when the ground is frozen. In addition, it is not advised to use phosphate near water bodies since it contributes to algal blooms. Rock phosphate is a better choice if water is nearby.

Other Ways to Bind Lead

Although it may be possible to minimize lead's mobility by spreading fertilizers that contain phosphate at impacted areas of the range, a more comprehensive procedure for immobilizing leachable lead in soils, by using pure phosphate in rock form or a ground phosphate rock [Triple Super Phosphate (TSP)], was developed and patented by the U.S. EPA/Ohio State University Research Foundation and RHEOX, Inc. This procedure used a three step approach to minimize lead's mobility. The first step was to identify the boundaries of the area of the range to be treated. This included not only determining the length and width of the range area, but also the depth of lead within the area.

Depth was determined by taking sample cores of the area, which also identified "hot spots" where lead accumulation was greatest. Once the area was identified, the second step was to treat the area with TSP. Pure phosphate rock was used rather than fertilizers, as this phosphate is insoluble in water and will not cause an increase in phosphate runoff.

In this step, pilot testing was conducted. Here, various amounts (in increasing percentages by weight) of TSP were added to the affected soil areas, then the area was tested according to an EPA test method that identified the amount of leachable lead in a given soil sample. This test is called the Toxicity Characteristic Leaching Procedure, or TCLP. Separate TCLP testing of the range's hot spots was conducted.

Upon completion of the pilot testing, which determined the amount of TSP needed at the range, the third step was to begin actual treatment of the range. Where the depth of the lead accumulation was shallow (less than two feet), then standard yard equipment, such as tillers, seed/fertilizer spreaders, and plows were used to mix TSP with the affected soil. Where the affected area's lead accumulation was deeper than two feet, an auger was required to mix the TSP with the affected soil. Random testing of the range ensured the effectiveness of the treatment level.

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3.2.2 Controlling Runoff

The BMPs for controlling soil erosion and surface water runoff are important to preventing lead from migrating off-site. There are two factors that influence the amount of lead transported off-site by surface water runoff: the amount of lead fragments left on the range and the velocity of the runoff.

The velocity of the water can successfully be controlled at outdoor ranges by: (1) using vegetative, organic, removable and/or permanent ground covers; and (2) implementing engineered controls which slow down surface water runoff and prevent or minimize the chances of lead migrating off-site. Bear in mind that safety considerations and potential ricochets need to be considered when implementing any engineered controls.

Vegetative Ground Cover

Planting vegetative ground cover (such as grass) is an important and easy erosion control method. Vegetation provides several benefits by minimizing the amount of lead that will run off the land surface during heavy rainfall. It is important to use a mixture of grass seeds to ensure that the cover will last into the future (i.e., annual rye grass lasts one year and dies and perennial rye grass lasts three to four years, then dies off). Fescue grasses form useful mats that are effective in controlling erosion.

Ground cover absorbs rainwater, which reduces the amount of water the lead is in contact with, as well as the time that the lead is in contact with the water. Furthermore, the ground cover will divert and slow down surface water runoff, thus helping to prevent lead from migrating off-site.

Grasses yield the greatest benefit at rifle and pistol ranges where the bullet impact areas are sloped, and water runoff and soil erosion may be more likely. Specific recommendations are to:

- ▶ Utilize quick growing turf grass (such as fescue and rye grass) for the grass covering

of backstops, which can be removed prior to reclamation and replanted thereafter;

- ▶ Avoid vegetation that attracts birds and other wildlife to prevent potential ingestion of lead by wildlife; and
- ▶ Use grass to direct surface water drainage away from the target area (e.g., planting them at the top of the backstop or sand trap). This will minimize the water's contact with lead bullet fragments, minimizing the potential for lead migration.

Grass is not impermeable; however, it does slow down the rate of flow and reduce the amount of lead entering the soil via rainwater. Remember, grass requires periodic maintenance (i.e., mowing) to maintain its effectiveness as well as for aesthetic reasons.

Mulches and Compost

Mulches and composts can reduce the amount of water that comes in contact with the lead fragments. In addition, mulches and compost contain humic acid, which is a natural lead chelating agent that actually sorbs lead out of solution and reduces its mobility. At a minimum, the material should be two inches thick. These materials can be spread over any impacted area and/or low lying areas where runoff and lead may accumulate. Like vegetative covers, organic surface covers are not impermeable. In addition, the organic material needs periodic replacement to maintain effectiveness and aesthetic integrity. Furthermore, these materials should be removed prior to any lead removal event, as they may impede sifting or screening. **Note that these materials tend to be acidic (especially during decomposition), so, if low pH is a concern at your range, this option may not be appropriate. Again, however, lime may be used to control pH (see Section 3.1.1)**

Surface Covers

Removable Surface Covers

Removable surface covers may be effective at outdoor trap and skeet ranges. In this case, impermeable materials (e.g., plastic liners) are

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placed over the shotfall zone during non-use periods. This provides the range with two benefits during periods of rainfall: (1) the shotfall zone is protected from erosion; and (2) the spent lead shot is contained in the shotfall zone and does not come in contact with rainwater.

Permanent Surface Covers

For outdoor rifle and pistol ranges, impact backstops and target areas can also be covered with roofed covers or other permanent covers to prevent rainwater from contacting berms. However, this method may be less desirable because of the cost to install the roof, which must be carefully designed to avoid safety issues with ricochets, etc.

For shotgun and other ranges, synthetic liners (e.g., asphalt, AstroTurf™, rubber, other synthetic liners) can also be used beneath the shotfall zone to effectively prevent rainwater or runoff from filtering through lead and lead contaminated soil. Synthetic liners will generate increased runoff, which must be managed, however. No single type of liner is suitable for all situations based on site characteristics. Therefore, liners must be chosen on a site-specific basis, bearing in mind the site's unique characteristics, such as soil type, pH level, rainfall intensity, organic content of soil, and surface water drainage patterns.

Engineered Runoff Controls

Runoff control may be of greatest concern when a range is located in an area of heavy annual rainfall because of an increased risk of lead migration due to heavy rainfall events. A "hard" engineered runoff control may be needed in this situation. A heavy rainfall event is defined as rainfall that occurs at such a rate that it cannot be absorbed into the ground and causes an increase in the volume and velocity of surface runoff. The impacts of rainfall are greater in rolling or sloped terrain (increases velocity of runoff) or where surface water bodies are located on, or immediately adjacent to, the range.

Examples of "hard" controls include:

- ▶ Filter beds
- ▶ Containment Traps and Detention Ponds
- ▶ Dams and Dikes
- ▶ Ground Contouring.

Designing and implementing these "hard" engineering controls may require the assistance of a licensed professional civil engineer. They are included in this manual to offer the reader a general understanding of these BMP options. However, this manual does not offer specific instructions for construction and operation of these controls. For information about designing and implementing any of these controls, or assistance with other range design questions, contact a licensed professional civil engineer having applicable experience or the NRA Range Department, at (800) 672-3888, ext. 1417. The National Sports Shooting Foundation (NSSF) may be contacted at (203) 426-1320 for specific references regarding the use and design of these controls.

Filter Beds

Filter beds are engineering controls built into an outdoor range to collect and filter surface water runoff from the target range. The collected runoff water is routed to a filtering system, which screens out larger lead particles, raises the pH of the water (thus reducing the potential for further lead dissolution), and drains the water from the range area. This technique may not completely prevent lead from entering the subsurface, since lead bullets, fragments and large particles may still remain on the range.

Filter beds should be established at the base of the backstop (see Figure 3-2). In addition to mitigating off-site migration, the filter beds work to raise the pH of the rainwater, which has fallen on the target range, to reduce lead dissolution, and to strain small lead particles out of the rainwater. The filters typically consist of two layers: a fine-grained sand bed underlain by limestone gravel or other neutralization material. By design, the backstops and berms direct the runoff so that it drains from the range to the filters. The collected water then soaks through the top sand layer into the neutralization material,

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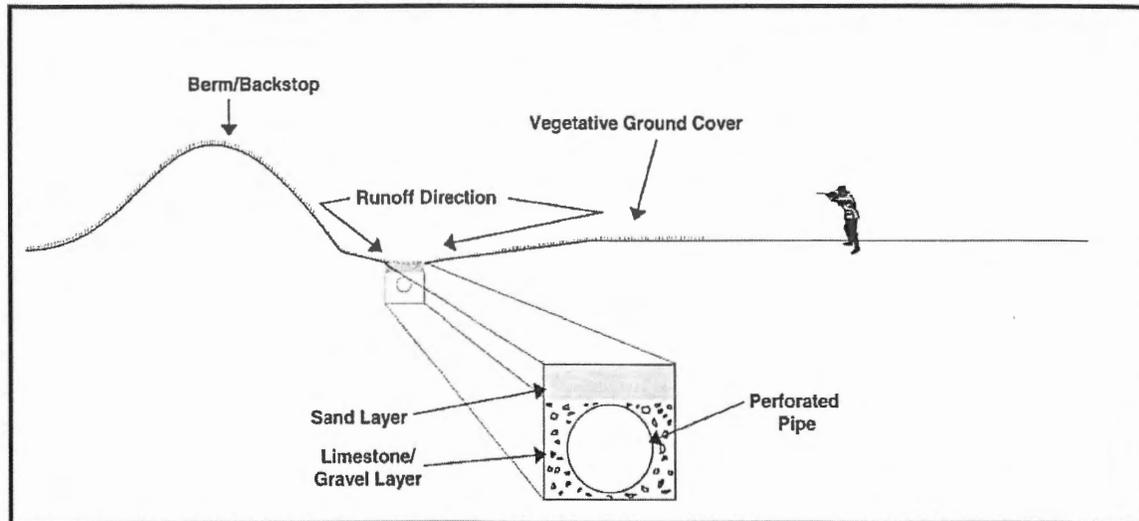


Figure 3-2 – Sample Filter Bed System (Adapted from Proceedings for National Shooting, Range Symposium, October 17-19, 1993, North American Hunting Club and Wildlife Forever)

which raises the pH of the filtrate. The lead particles in the rainwater are collected on the sand, while the pH-adjusted water drains through the filter to a perforated drainage pipe located within the limestone gravel.

Filter beds are designed to capture fine particles of lead transported in surface water runoff. They are not designed to capture bullets. The operation and maintenance requirements of filter beds are minimal. Maintenance activity is limited to periodic removal of debris (such as litter, leaves, etc.) and occasional replenishment of the limestone.

The use of filter beds is most effective on sites with open, rolling terrain where surface water runoff is directed to them. At existing rifle and pistol ranges, a limited system of trenches and filters can be installed at the base of natural soil backstops or at natural drainage depressions.

Containment Traps and Detention Ponds

Containment traps and detention ponds are designed to settle out lead particles during heavy rainfall. Typically, they are depressions or holes in the range's drainage paths. Here, the lead-containing runoff passes through the trap or pond, allowing the lead bullet fragments to settle out. Vegetative cover can be placed in the drainage path to increase the effectiveness

of containment traps and ponds by further reducing the velocity of runoff and allowing for more lead fragments to settle from the runoff. It is important to regularly collect the lead and send this lead to a recycler.

Dams and Dikes

At shotgun ranges, dams and dikes can also be used to reduce the velocity of surface water runoff. Dams and dikes must be positioned perpendicular to the direction of runoff to slow the flow of surface water runoff. To accomplish this, determine the direction of the range's surface water runoff. This will be particularly obvious at ranges with sloped terrain. The dams or dikes should be constructed using mounds of dirt that are approximately a foot high. These mounds should transect the entire range perpendicular to the stormwater runoff direction.

These runoff controls are most important at ranges at which off-site runoff is a potential problem, such as ranges where the lead accumulation areas are located upgradient of a surface water body or an adjacent property. Since lead particles are heavier than most other suspended particles, slowing the velocity of surface water runoff can reduce the amount of lead transported in runoff.

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Ground Contouring

Another mechanism to slow runoff and prevent lead from being transported off site is ground contouring. By altering drainage patterns, the velocity of the runoff can be reduced. Furthermore, in areas where pH is high (resulting in a lower potential for lead dissolution), the soil can be graded or aerated to increase the infiltration rate of precipitation, so that rainwater is more easily absorbed into the soil. This slows down or prevents surface water runoff and off-site migration. It should be pointed out that this design, in effect, collects lead in the surface soils. Therefore, range operation and maintenance plans should include lead reclamation as well as adjusting the pH, and adding phosphate.

reclamation program will allow you to avoid expensive remediation and potential litigation costs. Ranges in regions with high precipitation and/or with acidic soil conditions may require more frequent lead recovery since the potential for lead migration is greater. In regions with little precipitation and/or where the soil is somewhat alkaline, spent bullets may be allowed to accumulate on the soil for a longer time between reclamation events. It should be noted that to ensure that lead is not considered “discarded” or “abandoned” on your range within the meaning of the RCRA statute (i.e., a hazardous waste), periodic lead removal activities should be planned for and conducted. This typically requires one or more of the following:

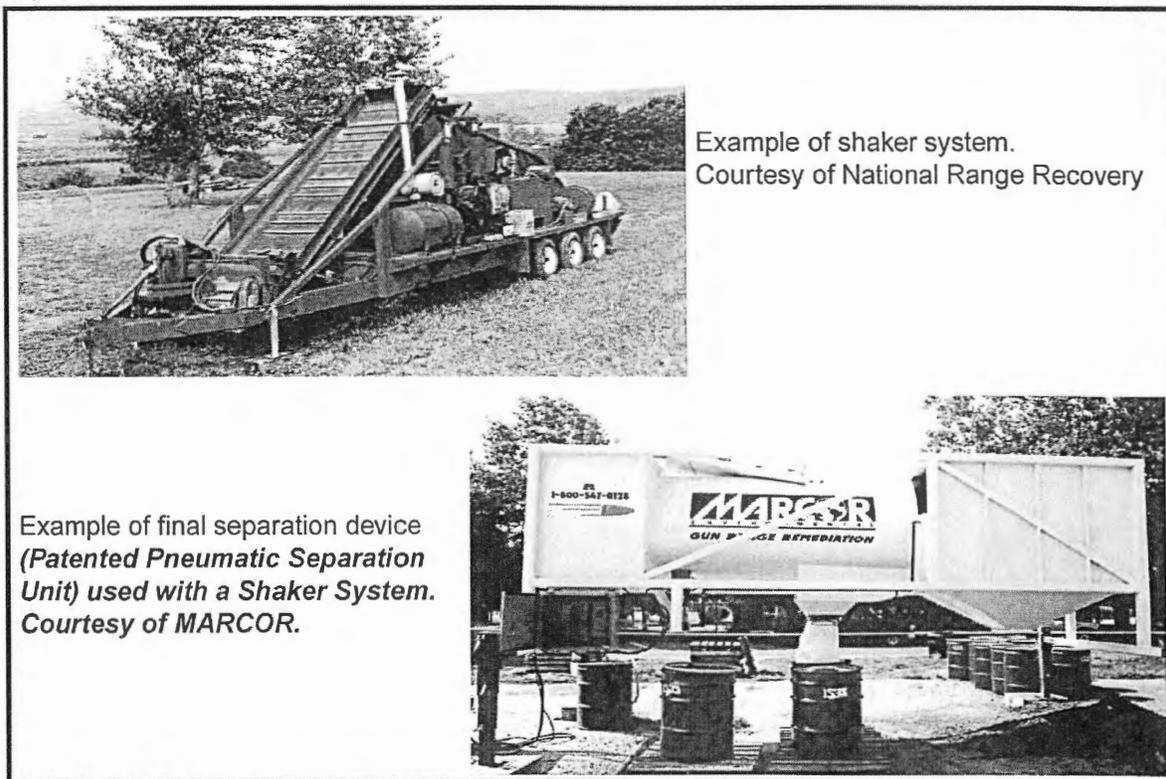
- ▶ Hand Raking and Sifting
- ▶ Screening
- ▶ Vacuuming
- ▶ Soil Washing (Wet Screening, Gravity Separation, Pneumatic Separation)

3.3 Lead Removal and Recycling (Step 3)

To successfully minimize lead migration, the most important BMP for lead management is lead reclamation. Implementing a regular

These methods are discussed in detail below. Figure 3-3 provides examples of common lead reclamation equipment.

Figure 3-3 – Examples of Common Lead Reclamation Equipment



Example of shaker system. Courtesy of National Range Recovery

Example of final separation device (Patented Pneumatic Separation Unit) used with a Shaker System. Courtesy of MARCOR.

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Also, it is important to be aware that state regulations may require that the material being sent for recycling have a minimum lead content in order to qualify as a scrap metal that can be shipped under a bill of lading (i.e., exempt from RCRA).

3.3.1 Hand Raking and Sifting

A simple BMP that can be done by club members, particularly at small ranges, is raking and/or sifting bullet fragments from the soil. Sifting and raking activities should be concentrated at the surface layer. This is a low-technology and low-cost management alternative for lead reclamation. Once collected, the lead must be taken to a recycler or reused. Arrangement with a recycler should be made prior to collecting any spent lead to avoid having to store the lead and avoid potential health, safety and regulatory concerns associated with storing lead.

At trap and skeet ranges, conducting sifting and raking activities in the shot fall zone (approximately 125 - 150 yards from the shooting stations) will yield the most lead. For sporting clay ranges, these activities should be conducted around tree bases, where lead shot tends to collect. Basically, the process consists of raking with a yard rake the topsoil in the shot fall areas into piles, as if you were raking leaves, removing any large debris (e.g., rocks, twigs, leaves, etc.), and then sifting the soil using screens.

Once the soil has been raked and collected, pass it through a standard 3/16 inch screen to remove the large particles. This process will allow the lead shot sized particles to pass through the screen. The sifted material (those not captured by the 3/16 inch screen) should be passed through a 5/100 inch screen to capture the lead and lead fragments. This process will also allow sand and other small sediment to pass through the screen. Screens can be purchased at many local hardware stores. The screens should be mounted on a frame for support. The frame size will vary based on the technique used by each range. For example, if

one person is holding the framed screen, it may be better to use a smaller frame (2 feet by 2 feet) whereas, if several people are holding the framed screen, it can be larger.

Raking and sifting can be performed by club members on a volunteer basis. Some clubs provide incentives, such as reduced fees, to members who assist with the lead removal process. Other clubs have hired college students during the summer. A number of small clubs have found that reloaders will volunteer to rake in exchange for collected shot. Hand sifting and raking are cost effective lead removal techniques for small ranges, or low shooting volume ranges. However, these techniques may not be appropriate for situations in which there is a large volume of lead on the range. In this instance, reclamation machinery may be more appropriate.

Note: Those conducting the hand raking and sifting reclamation at ranges should protect themselves from exposure to lead. Proper protective gear and breathing apparatus should be worn. The Occupational Safety and Health Administration (OSHA) or an appropriate health professional should be contacted to learn about proper protection.

3.3.2 Purchasing/Renting Mechanical Separation Machinery

Reclamation equipment may be rented from local equipment rental services. One type of machine that it may be possible to rent for lead shot reclamation is known as a screening machine (also referred to as a mobile shaker, gravel sizer, or potato sizer). This device uses a series of stacked vibrating screens (usually two screens) of different mesh sizes and allows the user to sift the lead shot-containing soil [gathered by hand raking, sweeping, or vacuuming (discussed above)]. The uppermost screen (approximately 3/16 inch mesh) collects larger than lead shot particles, and allows the smaller particles to pass through to the second screen. The second screen (approximately 5/100 inch mesh) captures lead shot, while allowing smaller particles to pass through to the ground. The lead shot is then conveyed to a

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container such as a five gallon bucket. In the Northeastern United States, the typical rental cost for this equipment is between \$500 and \$4,500 a week, depending on the size shaker desired. It may be possible to get more information on rentals for this type of equipment from heavy equipment rental companies.

Another possible option is to rent a vacuum system that will collect the lead shot-containing soil from the range. Here, vacuuming takes the place of hand raking or sweeping. A vacuum machine is used to collect the lead shot-containing soil. Once collected, the lead shot-containing soil must be sifted through a screening system (either a rental screening machine, or a series of home made framed screen sets). You may be able to obtain more information about renting vacuums or vacuuming services (e.g., it may include a person to operate the machinery) from heavy equipment rental companies.

Some clubs have found that performing their own lead reclamation to be very time consuming. Part of the reason these reclamations took so long is that the soils were wet. Reclamation is much easier under dry soil conditions. For example, one club reclaimed lead from their range using equipment they modified themselves. Twenty-five tons of lead were collected but the reclamation took over two years. Another club took a year to reclaim 10 tons of lead. A more preferable option may be to hire a reclamation company.

3.3.3 Hiring a Professional Reclamation Company

Another option for lead removal is to hire a professional reclaimer. Lead reclamation companies claim to recover 75%-95% of the lead in the soils. Generally, with reclamation companies there is no minimum range size requirement for lead reclamation. Concentration of lead is more important than quantity spread over a field, especially if it is a difficult range for reclamation (e.g., hilly, rocky, a lot of clay in the soil).

Please note that reclamation companies tend to be in high demand — it may take over a year for the company to start at your club. Therefore, it is wise to plan ahead and make the call to the reclamation company as early as possible.

Some reclamation companies require a site visit to view the topography, the soil composition, and amount of lead observed on the ground. During the visit, some companies may even do a site analysis to determine whether or not it is feasible to reclaim. This analysis identifies the location of lead, the expected recovery amount, and the depth lead reaches into the soils.

3.3.4 Reclamation Activities

Using machinery to reclaim lead usually requires that the area be clear of scrub vegetation. Grass, mulch, or compost is generally removed or destroyed during the reclamation process. Some reclamation companies have no problem beginning reclamation on a grassy field. Other reclamation companies will remove grass before or during reclamation (by burning it, if allowed locally, leaving behind the lead shot), and still others require that all vegetation be removed before they arrive at the range. Some companies will re-seed the area once the reclamation is completed.

Since sporting clay ranges generally have many trees, removal of vegetation as discussed above may not directly apply to existing sporting clay ranges. At these ranges, the focus is on removing vegetative debris (i.e., fallen limbs, tree bark, etc.) prior to reclamation. This may include removing some trees to gain better access with the reclamation machinery. Of course, when designing a new sporting clay range, steps to facilitate lead reclamation should be taken into account. For example, less and more widely spaced trees will facilitate lead reclamation.

Reclamation companies use several types of machinery to reclaim lead. Some companies drive their separation machinery over the site. The lead-laden soil is picked up, processed and then returned to the ground after most of the lead

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is removed. Other companies scrape off the top several inches of soil from the ground, using a front-end loader to bring the soil/lead to stationary reclamation machines, and then return the soil to the field after reclamation. Many companies till the top two to five inches of soil and grass immediately prior to reclamation to facilitate the process (some companies may require this to be done prior to arrival on the range).

Regardless of how it is collected, the actual reclamation of the lead follows the same general pattern. Most often, it is sifted through a series of shaking screens. The lead and soil pass through shaking screens (usually at least two screens) of decreasing mesh (hole) size, with the topmost screen having the largest mesh. This part of the reclamation machinery is usually adapted from machinery used for potato or gravel sizing.

Any soil/debris automatically screened out as being too big or too small is either returned to the field or re-screened to ensure no lead is caught in the debris. This procedure is why moist, clay soils are more difficult to reclaim. The moist, clay soils can bind together into shot-sized pellets producing more "product" for the second part of the reclamation. The wet soils can also clog the screens.

For some reclamation companies, their process ends after sifting the soil and returning it to the ground. However, some companies take reclamation one step further. After screening, the resulting lead, soil, and other lead-sized particles enter a blowing system. Here the lead shot is easily separated from the soil and other debris by the blowing air. The lead is much more dense than the soil and other lead-sized debris so that it falls out first. Figure 3-3 depicts examples of actual lead reclamation machinery.

Some lead reclamation companies will perform the reclamation during club off-hours so that club activities are not interrupted. Additionally, some perform the reclamation on a field-by-field basis, to minimize any disruptions to club activities. However, others companies require the club to shut down during the reclamation.

Reclamation time varies depending on weather, site accessibility, range size, and number of personnel assigned to perform the reclamation.

Reclamation activities may generate dust, especially in drier western locations. To prevent or minimize dust from traveling off the range and causing complaints from neighbors, reclamation activities generating dust should only be conducted during periods of no wind. In addition, such activities should be completed as quickly as possible.

Vacuumping

For ranges that are located on hilly, rocky, and/or densely vegetated terrain, several reclamation companies employ a vacuum system that collects the lead shot (and soil and other detritus). The resulting mix is then placed into the reclamation machinery discussed above. This method is especially effective for sporting clay ranges where lead shot tends to pile up around tree bases.

Vacuumping has traditionally been used for removal of lead shot from trap, skeet and sporting clay ranges. Another way to apply this method involves removing the top layer of an earthen backstop or sand trap with shovels. It is then spread thinly over an impermeable material such as plywood. A vacuumping device is then used to collect the materials that are lighter than lead (e.g., sand or soil), while leaving behind the heavier materials (i.e., lead bullets/shots and fragments). The soil can then be returned to the range. This process is most efficient for dry, sandy soils without a lot of organic material. A more recent innovation is the use of a high suction vacuum. This vacuum itself does not have to be moved about, since a very long hose (up to 600 feet) is used to move in and around trees during the collection of lead shot at trap and skeet ranges.

Soil Washing (Physical and Gravity Separation)

Soil washing is a proven technology and another lead reclamation method used by some reclaimers to separate the lead particles from

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the soils. Soil washing is the separation of soils into its constituent particles of gravel, sand, silt and clay. Because of the much higher surface area and surface binding properties of clay, most lead contaminants tend to adhere to the clay particles.

Soil washing, therefore, attempts to generate a clean sand and gravel fraction by removing any fines adhering to the larger soil particles and, if necessary, to transfer contaminants bound to the surface of the larger particles to the smaller soil particles. Typically, the soils are first excavated from the range and then mixed into a water-based wash solution. The wet soil is then separated using either wet screening or gravity separation techniques. One benefit of this system of reclamation is that it does not require that soils be dry.

In addition, soil washing may be able to recover all or almost all lead particles through a combination of wet screen sizing and density separation. This technique is an option for remediation of a range being closed and may compare favorably from an economic standpoint with the disposal option.

Soils treated using this method have been shown to be below 5 mg/L TCLP and to have up to 99% of particulate lead removed. Treatment costs are site specific, but can range from less than \$40 per ton (1999 levels) for simple physical/gravity separation up to about \$100 per ton for processes involving leaching. Credits for recycled lead help offset the treatment cost and the cost of recycling any treatment sludges and concentrated soil fines. Water used in soil washing is from a closed loop system and should only be disposed at completion of cleanup. Experience shows the water to not be a RCRA regulated hazardous waste, therefore probably allowing disposal to a local wastewater treatment plant.

Wet Screening

With this method, particles larger and smaller than the surrounding soils are passed through a series of large-mesh to small-mesh screens. Each time the mixture passes through a screen,

the volume of the soil mixture is reduced. Large particles such as lead shot/bullets and fragments are screened out of the soil/wash mixture early in the process and can be taken off-site for recycling - allowing the soil to be placed back on-site.

Gravity Separation

This technique can be used in cases where the lead particles are the same size as surrounding soil particles. The wet soil/wash mixture is passed through equipment, which allows the more dense materials (i.e., lead materials) to settle to the bottom of unit and separate out of the soil/wash mixture.

Pneumatic Separation

Pneumatic separation (see figure 3-3) is an effective means to enhance the traditional screening results. Traditional screening cannot separate shot and bullets from other shot and bullet sized material, i.e., rocks, stones, roots, and various debris. A recycling facility considers non-lead items as "contaminants" which drastically reduces the value of the recycled lead. Pneumatic separation utilizes an air stream, and specific density analysis, to effectively separate the shot/bullets from the other shot/bullet sized material.

3.3.5 BMPs to Assist Lead Reclamation and Recycling

There are several operational activities that should be conducted throughout the year to facilitate reclamation. The following is a discussion of these activities.

Frequency of Lead Removal

It is important to perform lead removal at a frequency appropriate for your site. The frequency is dependent on several factors. These include:

- ▶ Number of rounds fired
- ▶ Soil pH
- ▶ Annual precipitation
- ▶ Soil Type
- ▶ Depth to groundwater.

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Lead quantity, as estimated by the number of rounds fired, is a factor in determining the appropriate frequency of reclamation at ranges. It also assists in determining the cost of reclamation. One reclamation company indicated that reclamation was most cost effective when it contains at least 20 pounds of lead per square foot of backstop. Another source indicated that a minimum of 100,000 rounds per firing lane should be allowed before lead reclamation occurs. This would ensure good range operation and maintenance, while minimizing the cost per quantity of lead recovered.

For shotgun ranges, tracking the number of targets thrown can help indicate when the lead shot should be reclaimed. For example, considering environmental issues, the market for scrap lead and common cleanup methods, one source indicated that when a range has thrown at least 250,000 to 1,000,000 targets, depending on the shooting area, reclamation of the lead shot is encouraged. Another reclaimer indicated that if at least two pounds of lead per square foot have accumulated on the range, reclamation is recommended.

Because the number of rounds fired is important to know, establishing record keeping procedures to monitor the number of rounds fired is recommended. This can be accomplished by maintaining logbooks and asking shooters to list the number of rounds shot and the type/size of shot/bullets they use. This should be done by lane and by stand.

There are many ranges at which lead removal has not occurred for many years. Many of these ranges are used extensively. Such ranges are especially good candidates for lead removal and recycling. Subsequent removal frequency depends on range use and environmental factors. The NRA recommends a frequency of one to five years for lead cleanup, even on ranges with minimal use⁴. One possible approach to reducing the cost of reclamation

more cost effective is for a number of ranges in the same geographical area to work together in organizing coordinated removals at their ranges. This will reduce the reclaimer travel and mobilization cost for each range.

Minimization of Vegetation

As discussed previously, vegetation is useful both for controlling the amount of runoff and erosion from the range and inhibiting lead mobility. **However, excessive or unmaintained vegetative cover can interfere with reclamation activities.** For example, large amounts of vegetation impedes the screening and sifting processes used by many reclamation companies. Therefore, prior to reclamation activities, it is best to remove, reduce, or mow excessive vegetation from the area. Once the reclamation has been conducted, quick-growing vegetation such as a rye/fescue grass mix should be replanted. This process should be repeated for each reclamation event. In addition, heavily wooded areas may inhibit lead reclamation because they are less accessible by heavy reclamation machinery. For ranges that are heavily wooded, it is recommended that you minimize the vegetation or modify the range design to allow lead reclamation equipment access to the range. Access to the impact area should be developed to facilitate reclamation. **Make sure that the pathways do not present a safety risk.**

Innovative Landscaping

Some new ranges are landscaping their ranges to include a sand track (an area the size of the shotfall zone that is only sand) located behind some aesthetically pleasing shrubs. This allows the spent shot to concentrate on the sand, making it very easy to perform reclamation because there is no interference by vegetation.

Selecting a Lead Reclaimer

In ensuring that the reclamation is conducted appropriately, selecting a reclaimer that is right for your range is extremely important. Some lead reclamation companies will travel to your range and assess the range prior to conducting

4. National Rifle Association, "Metallic "Bullets" lead Deposits on Outdoor and Indoor Firing Ranges" 1991

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lead collection activities. This assessment trip allows the reclamation company to confirm information gained during initial discussions, as well as to assist in appropriately estimating costs, time required, and the estimated volume of lead at the range. Conducting this pre-assessment also allows you to determine which reclaimer is right for your situation.

Questions Commonly asked by the Reclaimer

When you contact a reclamation company, it is likely that the reclaimer will ask several general questions. Typical questions include:

- ▶ When was the last reclamation conducted?
- ▶ How many rounds have been shot since that last reclamation?
- ▶ What is the use frequency of the range?
- ▶ What are the site characteristics and soil types?
- ▶ What type of bullet containment device is used at the range?

Answering these questions will be a lot easier if you have maintained good records, as is suggested above.

Questions to ask the reclaimer

When choosing a reclaimer be sure to ask the general questions about prior cleanups (past projects), insurance to cover company and cleanup (general liability insurance, pollution insurance, bonding, etc.), and site plans to ensure health and safety of workers and range personnel. Other questions you may want to ask the reclaimer include:

- ▶ Can the reclamation take place outside normal hours of range operation?
- ▶ What costs are involved?
- ▶ How long will the reclamation take?
- ▶ Does vegetation at the range need to be removed?

Economic Considerations

Lead removal costs may vary dramatically depending upon the type and volume of soil or sediments, topography, amount of lead, location,

and reclamation company and technique used. Because the economics vary due to many factors, this manual does not provide specific estimates. However, it is important to understand that lead reclamation will generally require an expenditure by the range, even when considering any monetary returns from selling reclaimed lead. By tracking the range use and using the criteria discussed earlier (see Frequency of Lead Removal), the reclamation costs per quantity of lead can be optimized. For long term range management, routine lead removal will help future cost avoidance by minimizing the need for costly site remediation

Some reclaimers bid the lowest flat fee with all the lead provided to the range for selling. The range owners/operators must then consider the transportation costs and recycling fee associated with sending the reclaimed shot and bullets to a recycling company. Alternatively, the reclaimer will use the economic return of lead sold for recycling, based on the volume reclaimed and the current value of lead, to reduce the total cost of reclamation and recycling. Although the value of lead varies, the scrap value of reclaimed lead typically falls between \$.06 and \$.25 per pound, **excluding transportation cost**. See the appendix for contact information regarding lead reclamation companies that specialize in lead removal at outdoor ranges.

3.4 Documenting Activities and Record Keeping (Step 4)

Documenting activities and keeping good records is of paramount importance for an effective lead management program at a range. Owners/operators should document all activities done at the range with respect to BMPs and recycling of lead. Records should be kept on when services were provided and who provided them.

Owners/operators may want to document what type of BMP(s) were implemented to control lead migration, the date of service, and who did the services. The records should be kept for the life of the range. Records may be used to show that owners/operators are doing their part to

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help prevent lead migration off-site and show that they are doing their part to be stewards of the environment.

3.5 Additional Economic Considerations

Not all BMPs need to be implemented at once. Many can be phased in over time. However, it is important to begin implementing BMPs, especially lead reclamation and recycling, as soon as possible. Implementing the most appropriate BMPs for your range requires consideration of your range characteristics and costs associated with implementing the BMPs. This manual provides a large selection of BMPs that vary in both cost and sophistication. In selecting BMPs for your range, it is important to look at all costs and all the benefits (or potential problems) associated with each BMP.

3.6 Summary of Key BMPs for Shooting Ranges

There are several BMPs that are highly recommended to be implemented, if applicable to your range. Table 3-1 identifies the advantages and disadvantages of all BMPs discussed in this chapter. This table serves as a quick reference guide for potential BMPs. Readers should refer back to the detailed discussions above for further information regarding these BMPs.

3.7 Certificate of Recognition

EPA has established a voluntary process whereby a shooting range may apply for a "Certificate of Recognition." The Certificate is intended to be awarded to ranges that have certified that they have prepared and intend to implement, or have implemented, a written Environmental Stewardship Plan that is consistent with the EPA *Best Management Practices for Lead at Outdoor Shooting Ranges* manual. To assist in this process, Appendix E contains a template for an Environmental Stewardship Plan, an electronic copy of which is available on EPA's shooting range website (<http://www.epa.gov/region2/leadshot>) in several

formats. This template, combined with information provided throughout this manual, other resources and guidance, and site-specific factors, will help in guiding the process of evaluating relevant information about your facility and determining which BMP(s) might be appropriate for your ranges. EPA's template was adapted from Appendix C of the National Shooting Sports Foundation's manual, *Environmental Aspects of Construction and Management of Outdoor Shooting Ranges* (the NSSF manual.) Accordingly, use of that template would also be acceptable for use in EPA's Certificate of Recognition program.

In order to request this certificate, a range must submit a notice to the Lead Shot Coordinator in EPA Region 2 stating that they have completed an Environmental Stewardship Plan as indicated above and are intending to implement it within six months. The certificate is intended to convey, to all that may see it, that the range has declared its intention to properly manage lead shot and bullets. However, it must be noted that a certificate is not a permit to operate and provides no additional operational approval, implied or otherwise.

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Table 3-1 – Summary of Key BMPs

BMPs for Preventing Lead Migration		
Monitoring and Adjusting pH		
BMP Option	Advantages	Disadvantages
Lime Spreading	<ol style="list-style-type: none"> 1. Easy 2. Inexpensive 3. Effective 	<ol style="list-style-type: none"> 1. Does not offer a permanent solution 2. Will not work in extremely acidic conditions
Immobilizing Lead		
BMP Option	Advantages	Disadvantages
Phosphate Spreading	<ol style="list-style-type: none"> 1. Easy 2. Inexpensive 3. Effective 	<ol style="list-style-type: none"> 1. Does not offer a permanent solution
Controlling Runoff		
BMP Option	Advantages	Disadvantages
Vegetative Ground Cover (e.g., grass, etc.)	<ol style="list-style-type: none"> 1. Easy 2. Aesthetically pleasing 3. Relatively inexpensive 4. Effectively slows and can redirect runoff 5. Some may "bioabsorb" lead 	<ol style="list-style-type: none"> 1. Requires periodic maintenance 2. Must be removed or reduced prior to reclamation 3. Excessive vegetation will interfere with reclamation
Organic Surface Cover (e.g., mulch and compost)	<ol style="list-style-type: none"> 1. Easy 2. Aesthetically pleasing 3. Relatively inexpensive 4. Effectively slows and can redirect runoff 	<ol style="list-style-type: none"> 1. Requires periodic maintenance 2. Must be removed prior to reclamation 3. May not be suitable at ranges with acidic soil conditions
Filter Beds	<ol style="list-style-type: none"> 1. Diverts and treats lead contaminated runoff 2. Low maintenance 3. Assists with range drainage 	<ol style="list-style-type: none"> 1. May require hiring a licensed engineer 2. Higher initial setup cost

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Table 3-1 – Continued

Controlling Runoff (cont.)		
BMP Option	Advantages	Disadvantages
Water/Sediment Traps	1. Low maintenance 2. Assists with range drainage	1. May require hiring a licensed engineer 2. Higher initial setup cost
Dams and Dikes	1. Low maintenance 2. Assists with range drainage	2. Higher initial setup cost
Ground Contouring	1. Lower initial setup cost 2. Assists with range drainage	1. May require hiring a licensed engineer
Controlling and Containing Bullets		
Bullet Containment Devices		
BMP Option	Advantages	Disadvantages
Earthen Backstop	1. Minimal (if any) initial setup cost 2. Accepts firing from various guns and directions	1. Build up of bullets increases chances of ricochet and fragmentation problems 2. Lead removal requires mining 3. Potential decreased value of lead because it is less clean than lead reclaimed from other trap systems 4. Does not eliminate lead's introduction into the environment
Sand Trap	1. Low initial setup cost 2. Ease of maintenance 3. Accepts firing from various guns and directions	1. Build up of bullets increases chances of ricochet and fragmentation problems 2. Lead removal requires mining
Pit and Plate Trap (Sand)	1. Low initial setup cost 2. Simple installation 3. Lead removal and recycling requires less extensive mining	1. Lead builds up on top layer of sand causing ricochet problems 2. Increased bullet fragmentation 3. Higher level of maintenance than sand traps

¹ Much of this information was obtained from Action Target's Bullet Containment Trap Technologies video. Reference to various pros and cons of individual bullet containment devices is included in this manual for informational purposes only. The USEPA does not endorse any particular bullet containment device, design, or product.

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Table 3-1 – Continued

Controlling and Containing Bullets (Cont.)		
Bullet Containment Devices (cont.)		
BMP Option	Advantages	Disadvantages
Escalator Trap (Steel)	<ol style="list-style-type: none"> 1. Can be used indoors and outdoors 	<ol style="list-style-type: none"> 1. Deflection plates require regular oiling. The oil used is hazardous and can easily migrate at outdoor ranges 2. Relatively high maintenance 3. Poor lead collection because the bullets may become clogged at the spiral collection area at the top of the deflection plate 4. Increased bullet fragmentation 5. May require rubber curtains to be placed in front of the trap to slow bullets 6. More noise 7. Possible creation of lead dust
Vertical Swirl (Steel)	<ol style="list-style-type: none"> 1. Can be used indoors or outdoors 2. Bullets are captured in pure form in containers, thus removal and recycling is easy 	<ol style="list-style-type: none"> 1. Does not accept shooting from all directions 2. Corners where each unit meet can cause ricochet and fragmentation problems 3. More noise 4. May create lead dust
Wet Passive Bullet Trap (Steel)	<ol style="list-style-type: none"> 1. Can be used indoors and outdoors 2. Excellent results (i.e., low ricochet, low fragmentation, ease of removal) 3. Bullets are captured in containers, thus removal and recycling is easy 	<ol style="list-style-type: none"> 1. Expensive 2. Oil and water mixture is hazardous 3. More noise
Lamella Trap	<ol style="list-style-type: none"> 1. Can be used indoors or outdoors 2. Reduction of lead dust 	<ol style="list-style-type: none"> 1. Rubber strips quickly become destroyed and must be replaced 2. Potential fire hazard 3. High maintenance 4. Scattered lead fragments mixed with rubber can migrate; lead contaminated granules are hazardous and require special handling

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Table 3-1 – Continued

Controlling and Containing Bullets (Cont)		
Bullet Containment Devices (cont.)		
BMP Option	Advantages	Disadvantages
Rubber Granule	<ol style="list-style-type: none"> 1. Can be used indoors or outdoors 2. Reduction of lead dust 3. Minimizes fragmentation, compared with some backstops 	<ol style="list-style-type: none"> 1. Rubber strips can quickly become destroyed and must be replaced 2. Some pose potential fire hazard, although fire-retardant/resistant materials are available in some designs 3. High maintenance 4. Scattered lead fragments mixed with rubber can migrate; lead contaminated granules are hazardous and require special handling
Shock Absorbing Concrete	<ol style="list-style-type: none"> 1. Adaptable/can be formed in any shape 2. Can be used to reduce erosion in soil berms/target emplacements 3. Crushed concrete can potentially be recast after fragments removed 	<ol style="list-style-type: none"> 1. Mechanical lifting and handling equipment must be used during installation and maintenance 2. High maintenance (replacement) costs
Removal and Recycling of Lead		
Hand Raking and Sifting	<ol style="list-style-type: none"> 1. Easily done by club members 2. Inexpensive 3. Can be done outside operating hours 4. Relatively effective 	<ol style="list-style-type: none"> 1. May be more time consuming at large ranges 2. Weather sensitive (i.e., works best under dry conditions) 3. Exposure to lead and lead dust possible
Screening	<ol style="list-style-type: none"> 1. Effective 2. Potential economic returns 	<ol style="list-style-type: none"> 1. Vegetation must be removed 2. Weather sensitive (i.e., works best under dry conditions)
Vacuuming	<ol style="list-style-type: none"> 1. Effective 2. Can be used at least accessible ranges 3. Less vegetation needs to be removed 	<ol style="list-style-type: none"> 1. Weather sensitive (i.e., works best under dry conditions)
Soil Washing	<ol style="list-style-type: none"> 1. Effective at cleaning the soil to remove the lead particles so one is left with non-lead soil 	<ol style="list-style-type: none"> 1. Vegetation must be removed

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Appendix A: Resources

This manual provides contacts for lead reclamation companies, lead recycling companies, bullet trap manufacturers, and organizations that provide prevention and/or remediation techniques to assist clubs and firing ranges in implementing Best Management Practices for shooting ranges. The list was updated for the June 2005 printing. Vendors who are interested in being added to the list of lead reclaimers or remediation contractors should contact:

Lead Shot Coordinator
RCRA Compliance Branch
US EPA Region 2
290 Broadway
New York, NY 10007-1866
Telephone: (212)637-4145
E-mail: Leadshot.Region2@epa.gov



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Lead Recycling Companies

Below is a list of recycling companies for lead in soils and spent lead shot/bullets that were contacted during the writing of this manual. Lead recycling companies smelt lead. It is not inclusive and is included for informational purposes only. Local scrap metal recyclers may also accept spent lead shot or spent bullets. Mention of these companies does not serve as an endorsement by the EPA.

<p>The Doe Run Company Resource Recycling Division HC1 Box 1395 Boss, MO 65440</p> <p>800-633-8566 573-626-3476 Lou Magdits l.magdits@doerun.com</p>	<p>East Penn Manufacturing Company, Inc. P.O. Box 147 Lyon Station, PA 19536 610-682-6361 Rick Leiby</p> <p>Web Site: http://www.eastpenn-deka.com</p>
<p>Exide Spring Valley & Nolan Streets Reading, PA 19612 800-437-8495 Robert Jordan, Maritza Rojas-Suarez</p> <p>Web site: http://www.exide.com</p>	<p>Gopher Smelting and Refining 3385 Highway 149 South Eagan, MN 55121 651-454-3310 800-354-7451 Mark Kutoff</p> <p>Web Site: http://www.gopherresource.com/</p>
<p>Gulf Coast Recycling 1901 N. 66th St Tampa, FL 33619 813-626-6151 William Weston</p>	<p>Kinsbursky Brothers, Inc. 1314 N. Anaheim Blvd Anaheim, CA 92801 714-738-8516 Paul Schneider</p> <p>Web Site: http://www.kinsbursky.com</p>
<p>Reserve Trading Corp. P.O. Box 302 Medina, OH 44258 330-723-3228</p>	

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Lead Reclamation Companies

Below is a list of reclamation companies for lead in soils and spent lead shot/bullets that were contacted during the writing of this manual. Lead reclamation companies reclaim lead from ranges. It is not inclusive and is included for informational purposes only. Mention of these companies does not serve as an endorsement by the EPA.

<p>Brice Environmental 3200 Shell St, P.O. Box 73520, Fairbanks, AK 99707 Craig Jones 907-456-1955 www.briceinc.com</p> <p>Reclaims primarily from earthen backstops and sand traps.</p>	<p>En-Range, Inc. 3326 NW 29th St. Miami, FL 33142-6310 Thomas M. Taylor 305-999-9965 Fax 305-635-8645 Email: enrange1@yahoo.com www.en-range.com</p> <p>Provides lead reclamation and other environmental and maintenance services.</p>	<p>Entact 1010 Executive Court Suite 280 Westmont, IL 60559 630-986-2900 www.entact.com</p> <p>Performs physical removal of the lead from backstops, chemical treatment of soils and returns soil to the backstop.</p>
<p>Karl & Associates, Inc. 20 Lauck Road Mohnton, PA 19540 Edmund Karl III 610-856-7700</p> <p>Works primarily in the the mid-Atlantic area. Lead-containing soil is physically removed and sent to licensed disposal sites or licensed recycling facilities.</p>	<p>MARCOR 246 Cockeysville Road Hunt Valley, MD 21030 Dave Jungers 410-785-0001 www.marcor.com</p> <p>Uses a pneumatic separation unit to remove lead from contaminated soil and treats soil to pass TCLP.</p>	<p>Metals Treatment Technologies, LLC (MT²) 12441 West 49th Avenue Suite 3 Wheat Ridge, CO 80033 Jim Barthel 303-456-6977 www.metalstt.com</p> <p>Removes lead from soil and treats soils at all types of ranges.</p>
<p>Sears Trucking Company P.O. Box 38 El Reno, OK 73036 Garland Sears 800-522-3314 Fax 405-262-2811</p> <p>Physically removes lead from soils at trap and skeet ranges.</p>	<p>Solucorp Industries, Ltd. 250 West Nyack Road West Nyack, NY 10994 Mike DeLuca 845-623-2333 Fax 845-623-4987 Email: solucorpmbs@aol.com www.solucorpltd.com</p> <p>Removes and treats soil using their Molecular Bonding System (MBS) soil stabilization technology.</p>	<p>Southern Lead Removal P.O. Box 2645 Daytona Beach, FL 32115 Kevin Gilchrist 386-763-0115 Fax 386-761-6991</p> <p>Removes lead from indoor and outdoor pistol ranges only.</p>
<p>Sport Shooting Services P.O. Box 667 Crawfordville, FL 32326 Ed Tyer 850-926-7375 Cellphone 850-294-0132 Email: enviorange@aol.com</p> <p>Removes lead from earthen berms, uses a shaker and screen system to separate lead from soils, rents screening equipment, and consults on range design, primarily in Florida.</p>	<p>Terra Resources, Ltd. HC4 Box 9311 Palmer, AK 99645 Larry Wood 907-746-4981 Cellphone: (907) 232-5059 Fax: 907-746-4980 www.terrawash.com</p> <p>Uses gravimetric process to separate lead and TerraWash™ soil washing technology.</p>	<p>Waste Recycling Solutions, Inc. 1850 Route 112 Medford, NY 11763 Tommy Arabia, President 631-654-3811</p> <p>Uses a vacuum system to remove lead from trap and skeet ranges.</p>

BMP for Lead at Outdoor Shooting Ranges

Other Resources

Below is a list of additional phone numbers that may be of use if you have general questions including questions on range construction, design, and implementing BMPs.

<p>U.S. Fish and Wildlife Service 4401 North Fairfax Arlington, VA 22203 703/358-2156</p> <p>Web site: http://www.fws.gov/</p>	<p>Institute of Scrap Recycling Industries, Inc. 1325 G Street, NW, Suite 1000 Washington, DC 20005-3104 202/737-1770</p> <p>Web site: http://www.isri.org/</p>
<p>Lead Industries Association, Inc. 13 Main Street Sparta, NJ 07871 973/726-LEAD (973/726-5323) fax: 973/726-4484</p> <p>Web site: http://www.leadinfo.com</p>	<p>National Rifle Association of America 11250 Waples Mills Road Fairfax, VA 22030 800/NRA-3888</p> <p>Web site: http://www.nra.org</p>
<p>National Shooting Sports Foundation and National Association of Shooting Ranges 11 Mile Hill Road Newtown, CT 06470 203/426-1320</p> <p>NSSF web site: http://www.nssf.org NASR web site: http://www.rangeinfo.org</p>	<p>Sporting Arms and Ammunition Manufacturers' Institute, Inc. Flintlock Ridge Office Center 11 Mile Hill Road Newtown, CT 06470-2359 203/426-4358</p> <p>Web site: http://www.saami.org</p>
<p>Wildlife Management Institute 1101 14th Street, N.W. Suite 801 Washington, DC 20005 202/371-1808</p> <p>Web site: http://www.wildlifemanagementinstitute.org</p>	

BMP for Lead at Outdoor Shooting Ranges

Web Resources

Useful Web Sites	
Description	Web Address
<i>Federal Government Sites</i>	
U.S. EPA's Outdoor Shooting Range Home Page	http://www.epa.gov/region2/waste/leadshot/
U.S. EPA – Military Munitions Rule	http://www.epa.gov/epaoswer/hazwaste/military/ http://www.epa.gov/tribalmsw/thirds/remunition.htm
U.S. Occupational Safety and Health Administration (OSHA)	http://www.osha.gov/
National Institute for Occupational Safety and Health (NIOSH)	http://www.cdc.gov/niosh/
<i>State Government Sites</i>	
Florida: BMPs for Shooting Ranges	http://www.dep.state.fl.us/waste/categories/shooting_range/
Massachusetts : Lead Shot in the Environment	http://www.state.ma.us/dep/files/pbshot/pb_shot.htm
Minnesota: Poster for "Firing Range Hazards"	http://www.cdc.gov/niosh/mnables.html
Ohio: Lead Shot Reclaimers list	http://www.epa.ohio.gov/dhwm/leadrecy.htm
Wyoming: Lead Recyclers List	http://deq.state.wy.us/outreach/lead.htm
<i>Court Decisions</i>	
Connecticut Coastal Fishermen's Association v. Remington Arms	http://www.duedall.fit.edu/summer/rcra.htm
Long Island Soundkeeper Fund and NY Coastal Fishermen's Assoc. v. New York Athletic Club	http://www.epa.gov/region02/waste/leadshot/lisfnyac.htm
<i>Articles and Research</i>	
USAF - Lead Contamination in Soils at Military Small Arms Firing Ranges	http://www.afcee.brooks.af.mil/pro-act/fact/june98a.asp
U.S. Army Env. Center (AEC) – Small Arms Range Technology	http://aec.army.mil/usaec/range/operations03.html http://aec.army.mil/usaec/technology/rangexxi03.html http://aec.army.mil/usaec/publicaffairs/update/win97/range.htm
AEC – Green Bullets	http://aec.army.mil/usaec/publicaffairs/publicity02.html http://aec.army.mil/usaec/technology/rangexxi00a.html http://aec.army.mil/usaec/publicaffairs/update/spr97/bullets.htm
AEC - Recycling of Firing Range Scrap	http://aec.army.mil/usaec/publicaffairs/update/spr99/spr9911.htm
Florida Center for Solid and Hazardous Waste Management	http://www.floridacenter.org/
National Association of Shooting Ranges' Reference Library	http://www.rangeinfo.org/resource_library/facility_mngmnt/

Bullet Trap Manufacturers¹

BMP for Lead at Outdoor Shooting Ranges

Bullet Trap Manufacturer	Designs Available	Estimated Cost of Trap	Price Includes	Not Included in Price	Usage of Trap	Description	General Comments
Action Target (801) 377-8033 Contact: John Curtis, CEO actiontarget.com	Total Containment Trap (TCT)	\$1,600 to \$1,800 /linear foot (dependent on features selected)	Purchase of Equipment Installation Delivery (Freight included)		Rifle Pistol Armor - piercing* *depends on type of armor-piercing	The TCT is a funnel-style trap that uses steel plates mounted at low angles to direct bullets into a deceleration chamber. The low angles prevent break up of the bullets until they reach the chamber, where the bullets lose energy and drop into removeable storage containers. An optional dust collection unit uses a powerful vacuum to remove lead dust and other fine particles from the collection chamber.	The TCT is designed for both indoor and outdoor applications. It may be used safely with handguns, shotguns, and high-powered rifles, and has been successfully tested and used with 50-caliber fire.
Action Target (Cont.) see details above	Rubber Berm Trap (RBT)	\$1100/liner foot	Installation and Delivery		Rifle or Pistol. Armor-piercing. Cannot use incendiary rounds.	The RBT is very similar in form and function to a traditional sand or earthen berm trap, with the obvious difference being the use of chopped rubber instead of sand as a collection medium. Bullets fired into the trap are absorbed by the rubber and remain there until reclamation through mining of lead from the trap.	Because rubber is a softer collection medium, bullets can be captured with less break-up and fragmentation. The resulting reduction in lead dust levels is especially beneficial in indoor ranges. This benefit is decreased as more rounds accumulate in the trap, causing newly fired bullets to impact bullets already in the trap.

¹ EPA does not endorse any particular bullet containment device or product. Information on this table is offered to readers for a general understanding of some common bullet trap options and is based on vendor marketing literature.

Bullet Trap Manufacturers Con't¹

Bullet Trap Manufacturer	Designs Available	Estimated Cost of Trap	Price Includes	Not Included in Price	Usage of Trap	Description	General Comments
Copius Consultants (516) 783-7489 Contact: Craig Copius	Containment/ Recovery System	Ranges from \$600/linear foot to \$1,000/linear foot (Price varies with specific design selected)	Purchase of Equipment	Shipping	Rifle Pistol Machine gun Shotgun	This is a modification of the sand backstop. Sizes vary depending on the needs and characteristics of the range; however, average height is 10' - 12' and average width is 12' - 14'. The trap utilizes ballistic grade sand to trap bullets and bullet fragments in a sealed system. The system contains collection and filtration systems to ease reclamation and eliminate off-site migration of lead.	Specific recommended bullet trap is based on the following: 1) Type of usage, quantity of usage, etc. 2) Location in country 3) Environmental issues (e.g., location near a waterbody) Price will depend on the design adopted. One unique feature is that shooting can occur at any angle.
Meggitt Defense Systems Caswell (612) 706-6201 Contact: Brian Danielson	Granular Rubber Bullet Traps	\$940 to \$1,300/linear foot (dependent on type of trap and other features selected)	Purchase of Equipment Installation Delivery (Freight included)		Pistol Rifle Armor- Piercing Shotgun Machine gun Tracers (Speak to Sales Rep.)	The trap absorbs bullets fired from any angle or distance. No exposed steel surfaces; bullets are not fragmented. The granulated material used in the trap can be turned over quickly to recover the spent rounds.	Suitable for indoor and outdoor ranges. Eight types of traps available. Custom builds traps. Provides site-specific design, if requested. Reclamation is recommended after approximately 90,000 rounds have been fired (depending on trap type.)

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BMP for Lead at Outdoor Shooting Ranges

Bullet Trap Manufacturers Con't.¹

Bullet Trap Manufacturer	Designs Available	Estimated Cost of Trap	Price Includes	Not Included in Price	Usage of Trap	Description	General Comments
Range Systems (888) 999-1217 (763) 533-9200 Contact: Steve Thomas range-systems.com	Encasulator Bloc Trap™ Encasulator Granular Trap™	\$800-\$1,250/linear ft (Price varies with design criteria and product selection)	Purchase of Equipment Installation	Freight	Pistol Rifle Shotgun (shot and slugs)	The bullet traps are constructed for maximum bullet retention with minimum space and cost. The bullet traps virtually eliminate ricochet and airborne lead.	Full service shooting range provider from design and engineering to construction and maintenance. Custom-built traps with exclusive patented rubber technology.
Savage Range Systems (413) 568-7001 Contact: Joan Drucker snailtraps.com	The SNAIL™ Trap	Two types of traps: Pistol Wet: \$2,250/linear ft Pistol Dry: \$2,150/linear ft Rifle Wet: \$2,400/linear ft Rifle Dry: \$2,300/linear ft	Purchase of Equipment	Shipping Installation	Rifle (up to .50 cal BMG) Pistol	The SNAIL trap is designed with low angle entrance ramps to guide the bullet into the circular deceleration chamber without scarring the plate. The bullet loses all of its energy in the chamber and drops into a collection system. The use of water and synthetic oil contains the lead particulates and dust, and minimizes friction on the plates.	Usage for indoor and outdoor ranges. Can also be provided with a conveyance system that drops the bullet to a single collection point (e.g., 55-gallon drum) for recycling. Low-maintenance system

BMP for Lead at Outdoor Shooting Ranges

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Bullet Trap Manufacturers Con't¹

Bullet Trap Manufacturer	Designs Available	Estimated Cost of Trap	Price Includes	Not Included in Price	Usage of Trap	Description	General Comments
Stapp EBC, Incorporated (703) 239-9223 Contact: Matt Ciskowski, P.E. 8101 Ox Road Fairfax Station, VA 22039 Fax: (703) 239-9224 bulletcatcher.com	STAPP Bullet Catcher	Varies by specific design (measured by square foot)	Purchase of Equipment Installation Delivery (Freight)		Pistol & Rifle (best for calibers up to 12mm) Can handle jacketed rounds and tracers	The STAPP bullet catcher (consisting of a bottom rubber liner, drainpipe reservoir, rubber granule fill, and cover layer of rubber) collects lead and any infiltrating water without runoff. The system is constructed over an earthen berm and can be modified to any range configuration. Projectiles are completely collected by the bullet catcher with minimal fragmentation. The surrounding structure is ricochet-proof even under the most extreme temperatures.	Designs are site adapted. Reclamation can be performed by Stapp EBC or by range personnel. Email: mciskowski-trc@verizon.net

¹ EPA does not endorse any particular bullet containment device or product. Information on this table is offered to readers for a general understanding of some common bullet trap options and is based on vendor marketing literature.

Bullet Trap Manufacturers Con't.

BMP for Lead at Outdoor Shooting Ranges

Bullet Trap Manufacturer	Designs Available	Estimated Cost of Trap	Price Includes	Not Included in Price	Usage of Trap	Description	General Comments
<p>Super Trap Inc. (951) 736-9440 Contact: Art Fransen, Retired, L.A.S.D.</p> <p>1601 Commerce St Corona, CA 92880</p> <p>Fax: (951)736-9450</p> <p>Email: info@supertrap.com</p> <p>supertrap.com</p>	<p>Gel-Cor™ Class A, Fire-Rated Rubber Bullet Traps</p> <p>ELIxIR™ Tactical Shooting Ranges</p> <p>Super Trap® Range Backstops</p> <p>SACON® Perimeter Facilities, Walls, Blocks & Tiles</p>	<p>Approx \$520 to \$1,600 per linear foot</p> <p>Varies by design, including: - indoor - outdoor - foundation - width of trap</p>	<p>Purchase of Equipment</p> <p>Installation</p> <p>Training</p>	<p>Shipping (Price will depend on destination)</p>	<p>Rifle & Pistol (up to and including .50 cal)</p> <p>Machine Gun</p> <p>Armor Piercing</p> <p>Tracer & Incendiary Ammunition</p> <p><i>Also:</i> Frangible & Tungsten</p> <p>Traditional & Tactical Shooting</p>	<p>STI specializes in tactical shooting ranges. The firing range system captures and contains bullets whole, using a treated, granular ballistic media of recycled pure SBR (styrene-butadiene rubber), free of all steel and fiber contaminants that could normally allow fires to ignite.</p> <p>The infrastructure is 10 gauge galvanized steel and the hopper/deflection baffle is 3/8" AR 500 steel rifle rated (indoor and outdoor.)</p> <p>Outdoor Ranges: The backstop base typically lies on a graded berm at the appropriate angle determined by the user and STI staff.</p> <p>SACON® can absorb bullets and prevent lead contamination, replacing railroad ties, logs, brick walls and concrete enclosures on firing ranges.</p>	<p>STI's bullet trap systems eliminates hazardous materials contamination (TCLP tests below 1ppm), in addition to preventing ricochets and lead splash-back.</p> <p>Reclamation is recommended after approximately 100,000 to 130,000 rounds per 4 ft lane, based on type of shooter position and layout of targetry (static vs. dynamic.) Lead reclamation is performed using a vacuum air density separator system and rubber media is continuously reused.</p> <p>Use of recycled rubber media in the trap may qualify the range improvement for grant funding. Contact regional recycling associations for more information.</p> <p>STI offers more than six versions of Tactical Shooting Ranges, as well as custom built traps.</p>

¹ EPA does not endorse any particular bullet containment device or product. Information on this table is offered to readers for a general understanding of some common bullet trap options and is based on vendor marketing literature.

Appendix B: Lead Shot Alternatives

Another method of preventing lead contamination at pistol, rifle, trap, skeet, or sporting clays ranges is to use less toxic or non-lead ammunition.

Much progress has been made in the development of alternatives to lead shot for hunting uses. Information gathered since 1976 on lead poisoning of endangered and non-endangered migratory birds due to lead shot ingestion led the United States Fish and Wildlife Service (USFWS) to consider several alternatives to eliminate lead poisoning among migratory waterfowl birds. A ban on lead shot for water fowl hunting was phased in beginning in 1986 and finalized in 1991. Lead shot is also now banned for shotgun hunting occurring near wetlands in national wildlife refuges. Starting in the fall of 1998, the USFWS banned the use of lead shot in waterfowl production areas. Additionally, many state-managed hunting areas require non-toxic shot for upland/small game hunting.

There are several alternatives to lead shot on the market today and still more alternatives are being developed. Before being used for waterfowl hunting, these alternatives must be approved by the USFWS. Bismuth, steel, tungsten/iron, and tungsten/polymer shots have been approved by the USFWS and additional alternative shot materials are in the USFWS approval process. Most of the ammunition manufacturers in the United States, as well as the military, have developed non-toxic alternatives to lead. Research in Europe may also result in additional non-toxic shot alternatives from which U.S. shooters may choose in the future. The following pages compare lead shot to non-toxic, alternative shot.

Summary of Lead Shot Alternatives†

Shot Material	Approximate Cost per 25 Round Box ¹	Ballistic Performance	Availability	Comments
Lead	\$5.00/box \$3.00 - \$4.00/box of reloaded shells	Standard to which all alternatives are compared	Readily available	Lead is heavy and malleable
Bismuth* 97% Bismuth/ 3% tin	Bismuth shells are packed in 10 round boxes @ \$15.00 - \$25.00/ 10 round box	Similar to lead	Limited world supply of bismuth	Bismuth is a byproduct of lead and gold mining. There are currently many uses, including: medicine (Pepto-Bismol), cosmetics, pigments, and shotgun shot. The addition of tin makes bismuth more malleable and reduces frangibility. Bismuth shot is safe to use in older firearms.

† Product reference within this table is not an endorsement by EPA.

* Approved by USFWS for migratory waterfowl hunting.

¹ Costs will vary from store to store and were valid at the time of manual development.

Summary of Lead Shot Alternatives – Continued†

Shot Material	Approximate Cost per 25 Round Box ¹	Ballistic Performance	Availability	Comments
Steel [*]	<p>\$8.00 - \$12.95/box</p> <p>\$6.00/box of reloaded shells</p> <p>\$15.00/box (copper-plated)</p>	<p>In test performance by the Cooperative North American Shotgun Education Program (CONSEP) in hunting situations, no significant differences were found between lead and steel shot at reasonable distances. Lead is more effective at longer ranges.</p>	<p>Readily available from both domestic and imported sources.</p>	<p>Steel shot is about 33% lighter than lead. Therefore, the initial velocity must be increased so that downrange pellet energy remains similar. In hunting situations, larger, and therefore heavier, steel shot is used. Few shooting competitions allow steel shot at this point, but the number is increasing.</p> <p>While steel target loads are available, shooter perception that steel will adversely affect guns and scoring seems to be the limiting factor in acceptance of steel shot for target shooting.</p> <p>Steel shot will not damage newer guns, but may cause ring bulge in older guns if a very tight choke is used. This problem has been resolved in the newer guns with the use of screw-in chokes.</p>

† Product reference within this table is not an endorsement by EPA.

* Approved by USFWS for migratory waterfowl hunting.

¹ Costs will vary from store to store and were valid at the time of manual development.

Summary of Lead Shot Alternatives – Continued†

Shot Material	Approximate Cost per 25 Round Box¹	Ballistic Performance	Availability	Comments
<p>Steel* (cont.)</p>				<p>Another concern with steel shot is safety. Because steel is much less malleable than lead, steel shot is likely to ricochet if it strikes something hard. Lead shot, on the other hand, will deform and flatten. In Europe, steel shot is banned for hunting because it can become embedded in trees. The steel shot in trees cut for lumber can cause damage to sawmill equipment and raise concerns about worker safety.</p> <p>Although steel shot can be reloaded, components are not readily available.</p>
<p>Tungsten/Iron* 40% tungsten/ 60% iron</p>	<p>\$62.50/box (tungsten/iron shots are packed in 10 round boxes @ \$25.00/10 round box)</p>	<p>Preliminary reports indicate that tungsten/iron shot is as effective as lead shot. However, the amount of shot in each cartridge is significantly less than in typical lead cartridges or even steel cartridges. The density of tungsten/iron is 94% that of lead.</p>	<p>Readily available</p>	<p>The tungsten/iron shot currently available is harder than steel. It would, therefore, cause similar damage to older guns.</p>

† Product reference within this table is not an endorsement by EPA.

* Approved by USFWS for migratory waterfowl hunting.

¹ Costs will vary from store to store and were valid at the time of manual development.

Summary of Lead Shot Alternatives – Continued†

Shot Material	Approximate Cost per 25 Round Box ¹	Ballistic Performance	Availability	Comments
<p>Tungsten/polymer[†] Various manufacturers have received final approval from the USFWS to market this type of shot.</p>	<p>Not available yet</p>	<p>Comparable to tungsten/iron</p>	<p>Currently not available</p>	<p>Two ammunition manufacturers are currently producing tungsten/polymer shot. This shot is more malleable than the tungsten/iron alloy and would, therefore, be less damaging to shotguns.</p> <p>A research and development company has developed a tungsten/polymer material as a substitute for lead in all its uses. According to this company, its tungsten/polymer can be formulated to be flexible or stiff, depending on the application. This material has been tested by the US Army in projectiles, but has not been used to manufacture shot. However, the company has initiated the process of applying to the USFWS for approval of this material as non-toxic shot.</p>

† Product reference within this table is not an endorsement by EPA.

¹ Costs will vary from store to store and were valid at the time of manual development.

Summary of Lead Shot Alternatives – Continued†

Shot Material	Approximate Cost per 25 Round Box ¹	Ballistic Performance	Availability	Comments
Tungsten/steel Same as tungsten/iron				
Tin USFWS granted temporary approval for 1999-2000 hunting season	Not available yet	Since tin is just being developed as an alternative to lead, performance information is not yet available. However, since the density of tin is less than steel, performance may be less effective than steel.	Currently not available	This material is just being developed as a lead shot alternative. However, it has similar problems as steel in that it is lighter than lead. The International Tin Research Institute in England is developing this product.

Other materials that are currently being experimented with as alternatives to lead are molybdenum and zinc. Not enough information is available to have included these alternatives in the above table.

† Product reference within this table is not an endorsement by EPA.

BMP for Lead at Outdoor Shooting Ranges

Summary of Lead Shot Alternatives - Conclusions

The table clearly illustrates that a number of non-toxic alternatives to lead shot exist such as steel and tungsten as well as alloys and synthetic polymers. As demand for shot from these metals increases from migratory waterfowl hunters, it is anticipated that the costs will come down. However, alternatives currently cost approximately two to twenty times more than lead shot.

The ban on lead shot in hunting situations impacts target shooting. The alternatives to lead shot that are now being developed for or are already approved by the USFWS for migratory bird hunting could be considered for use by target shooters.

Although alternatives to lead shot are now being used by hunters, it is rare that the alternatives are used by target shooters. The limiting factors appear to be the expense and performance. All the alternatives to lead are much more expensive, some prohibitively. Unfortunately, the least expensive alternative, steel, is also perceived to be less effective.

To encourage use of lead shot alternatives, some ranges sponsor shooting competitions using lead-free ammunition, but these are rare. The use of steel or other alternative shot is a recommended BMP in established sporting clays areas at which reclamation of lead shot is difficult to impossible.

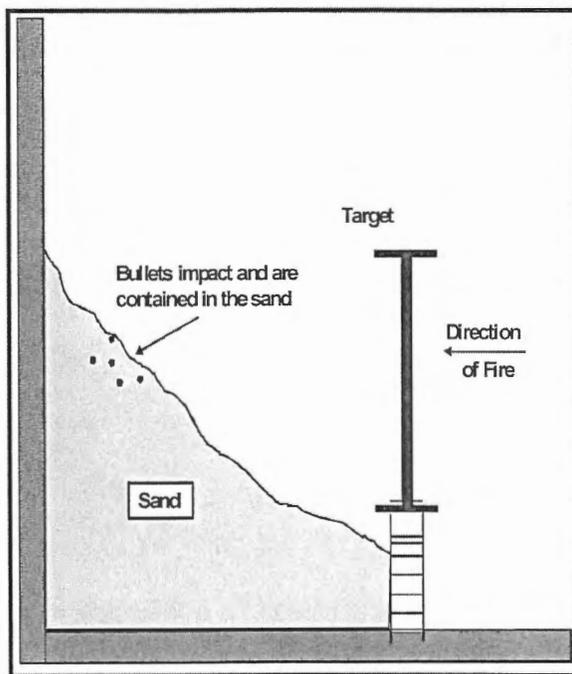
Note: Switching to non-toxic shot may create additional issues. For instance, steel has an increased risk of ricochet. Switching to steel may require additional safety features and/or operating procedures.

BMP for Lead at Outdoor Shooting Ranges

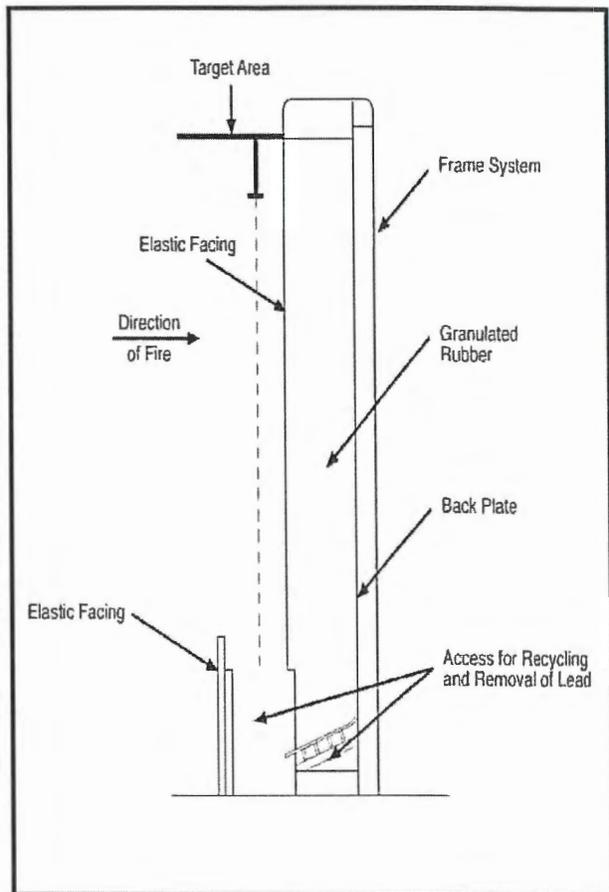
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Appendix C: Sample Bullet Containment Devices

The bullet containment designs in this appendix are sample designs for the containment systems mentioned in this manual. Design systems may vary from different manufacturers. Reference to various individual bullet containment devices is included in this manual for informational purposes only. EPA does not endorse any particular bullet containment device, design, or product.

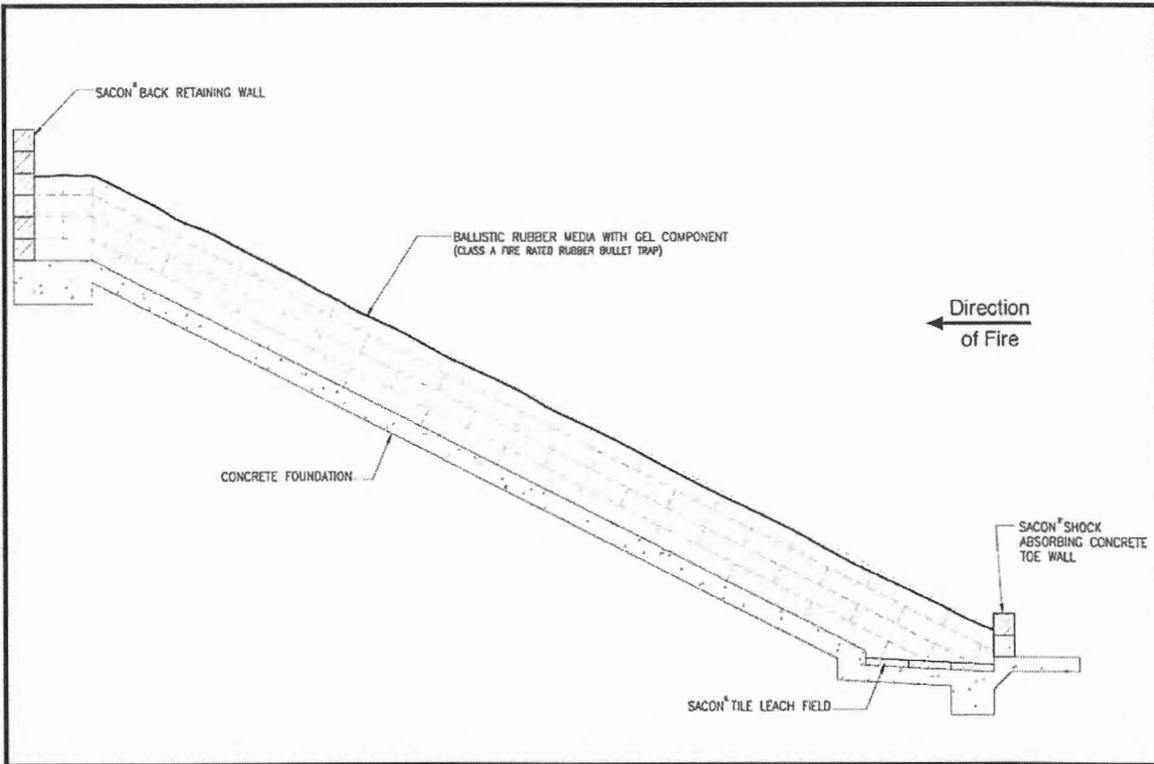


Sand Trap

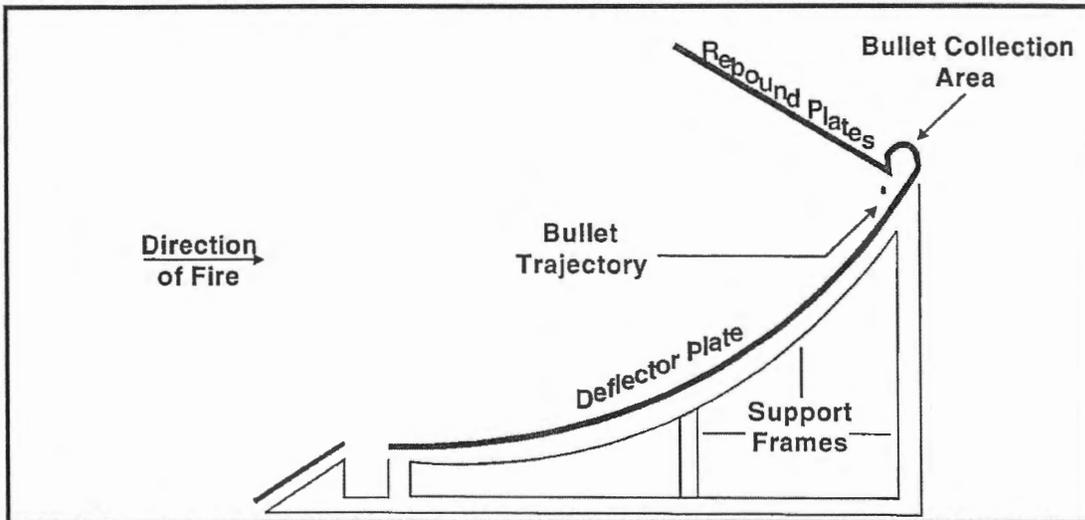


Rubber Granule Trap (Adapted from: *Bullet Trap Feasibility Assessment and Implementation Plan: Technology Identification Final Report*, U.S. Army Environmental Center, March 1996)

BMP for Lead at Outdoor Shooting Ranges

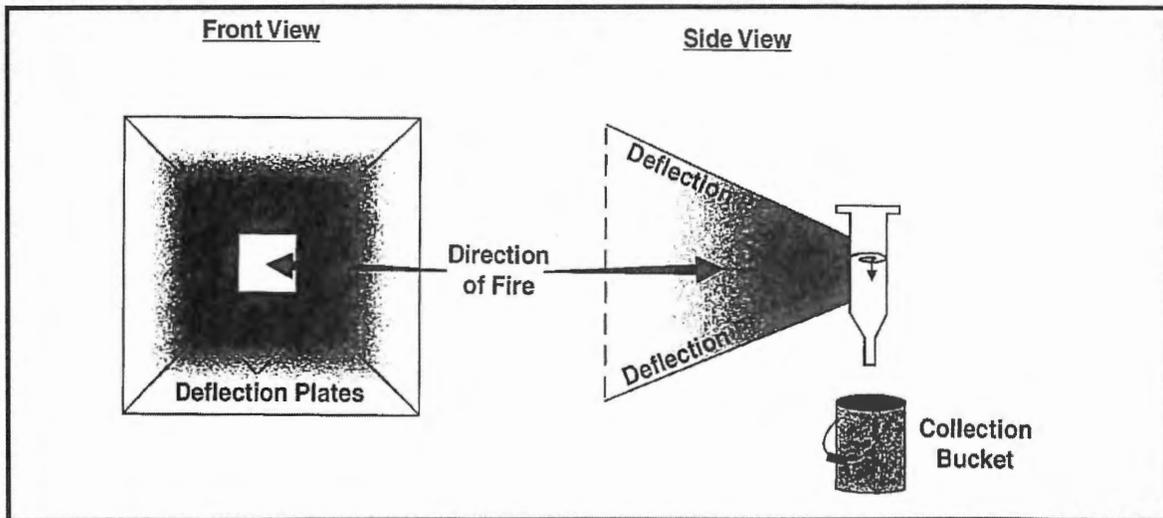


Gel-Cor Bullet Trap™ (Provided by Super Trap, Inc.)

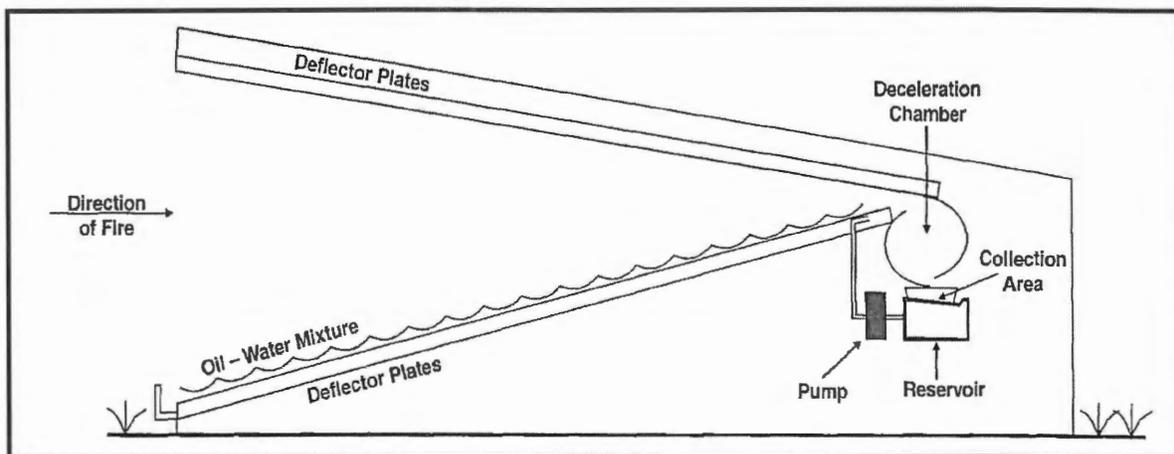


Escalator Trap (Adapted from: *Bullet Trap Technologies*, Action Target Educational Video Series)

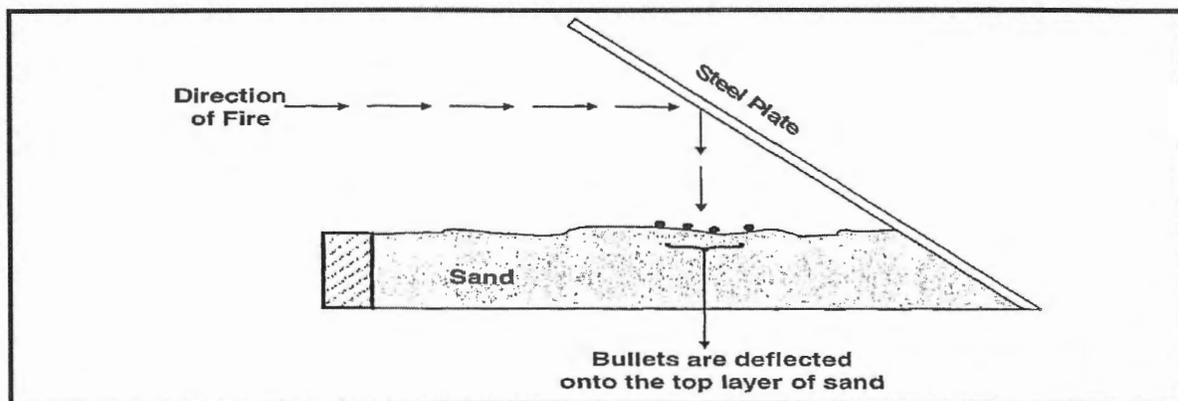
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Vertical Swirl Trap (Adapted from: *Bullet Trap Feasibility Assessment and Implementation Plan: Technology Identification Final Report*, U.S. Army Environmental Center, March 1996)

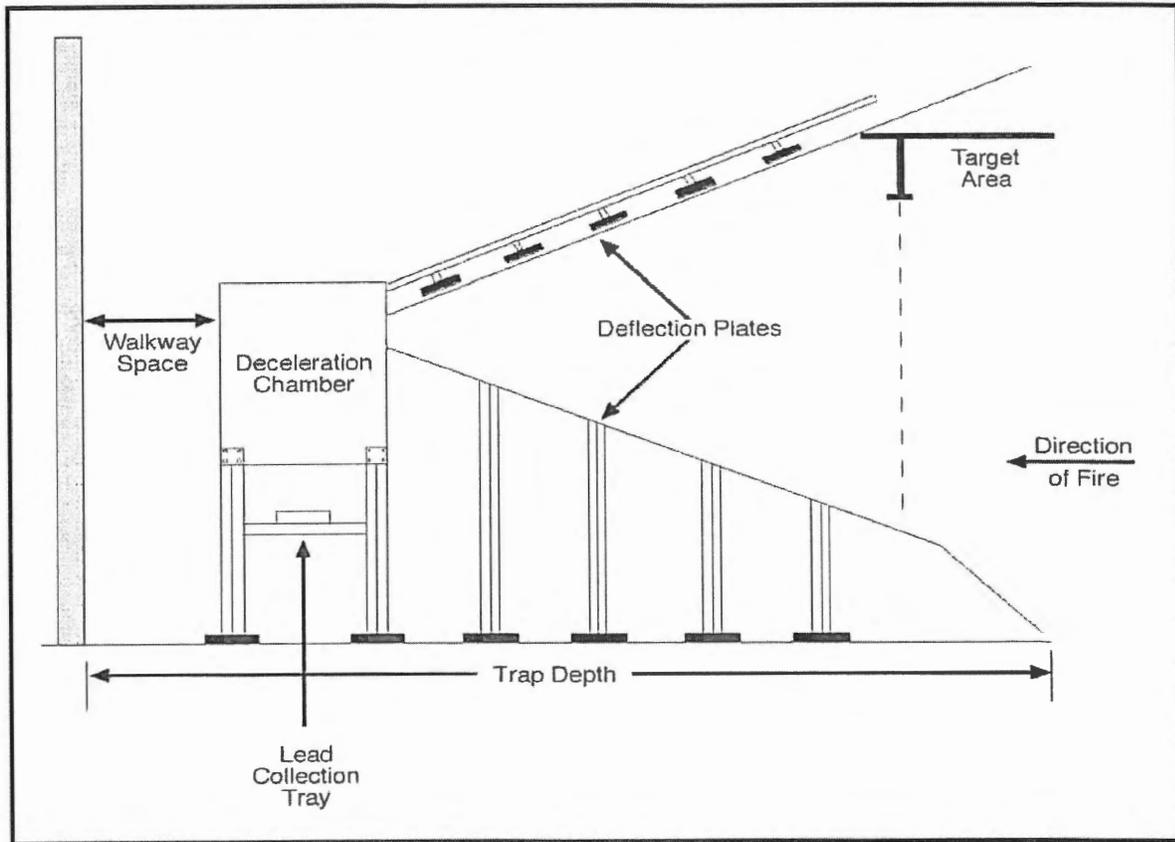


Wet Passive Trap (Adapted from: *Bullet Trap Feasibility Assessment and Implementation Plan: Technology Identification Final Report*, U.S. Army Environmental Center, March 1996)

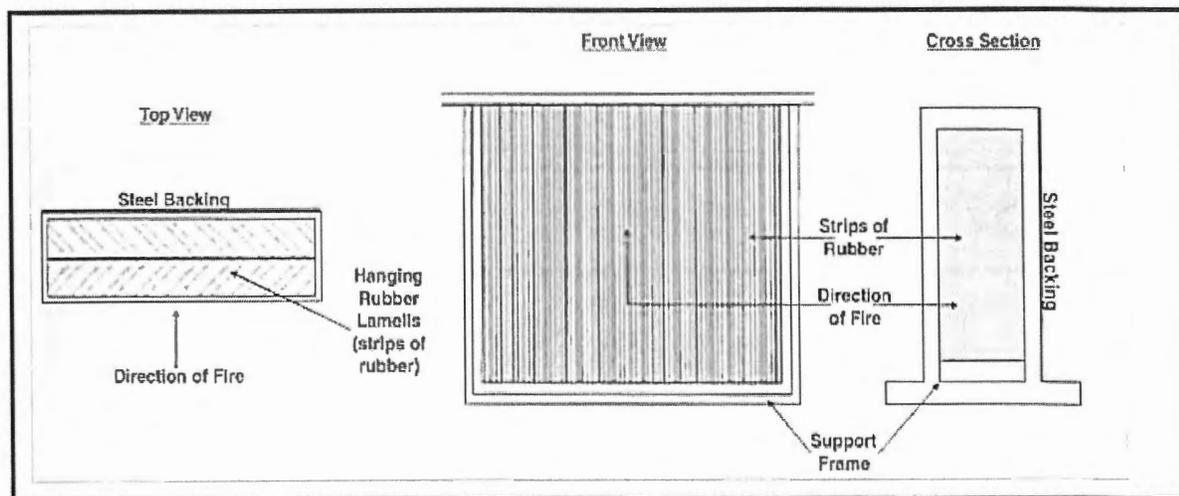


Pitt and Plate (Adapted from: *Bullet Trap Feasibility Assessment and Implementation Plan: Technology Identification Final Report*, U.S. Army Environmental Center, March 1996)

BMP for Lead at Outdoor Shooting Ranges



Steel Bullet Trap (Adapted from: *Bullet Trap Technologies*, Action Target Educational Video Series)



Lamella Trap (Adapted from: *Bullet Trap Feasibility Assessment and Implementation Plan: Technology Identification Final Report*, U.S. Army Environmental Center, March 1996)

Appendix D: RCRA Regulatory Requirements and Interpretations

Timely separation of lead shot and bullets from soil at active ranges, recycling of the lead, and subsequent redeposition of the soil on the active range is exempt from RCRA regulation.

1. Reclaiming and Recycling Lead Shot

EPA's Office of Solid Waste issued guidance in 1997 indicating that lead shot, when recycled, is considered a scrap metal and is therefore exempt from RCRA regulation. A copy of the March 17, 1997 letter with this guidance is attached. Under the RCRA Subtitle C hazardous waste management regulations, lead shot would be considered scrap metal, which is exempt from hazardous waste regulations if it is recycled (see 40 CFR 261.6(a)(3)(ii)). Although storage of scrap metal being recycled is not affected by specific time limits such as the speculative accumulation provision (40 CFR 261.1(b)(8)), the scrap metal must legitimately be recycled to remain exempt under this provision. It should also be noted that lead shot may be subject to the authority of RCRA 7003, which addresses imminent hazards. However, use of best management practices is likely to prevent situations which would present an imminent hazard. Using such practices, together with following a clear, written policy governing the facility's recycling efforts, should also assist in assuring that the facility's practices can be demonstrated to be legitimate recycling.

2. Storage of Lead on Shooting Ranges Prior to Recycling

Some ranges have indicated that it may be desirable to store recovered lead shot and bullets on the range property for some periods of time prior to sale for recycling.

Provided that best management practices are followed in terms of storing and recycling the sorted lead, a range that follows such practices, and engages in legitimate recycling, should be able to store such material prior to recycling without RCRA regulatory controls (see discussion below). Best practices would suggest that the sorted lead, at a minimum, should not be exposed to the elements and should be managed so as to prevent releases to the environment. Best practices also indicate that the sorted lead should be stored in containers in good condition, regular inspections of the container condition should be conducted, and the records of inspections should be maintained and be readily available. Further, best practices also suggest that the sorted lead should be recycled in a timely manner and storage times should not exceed the time-frames or goals articulated in a clear, written policy.

BMP for Lead at Outdoor Shooting Ranges

3. Placement of Soil After Removal of Lead

For soil placed back on an active range after a BMP has been applied to remove the lead, the following regulatory approach has been followed. On February 12, 1997, EPA published the RCRA Subtitle C Military Munitions Rule in the Federal Register (62 Fed. Reg. 6621). The Military Munitions Rule considers range management to be a necessary part of the safe use of munitions for their intended purpose. Thus, the range clearance activity (recovery of lead shot and bullets) is an intrinsic part of the range operation. Therefore, the rule excludes range clearance activities (including the placement of soil back on the range) from RCRA Subtitle C regulation. Although the Military Munitions Rule did not apply to non-military ranges, EPA, in its response to comments on the proposed rule, clearly stated that "it felt that the 'range clearance' interpretation in the final Military Munitions Rule is consistent with the EPA's interpretations for non-military ranges." In addition, the EPA's Director of the Office of Solid Waste sent the New York State Department of Environmental Conservation a letter dated April 29, 1997, confirming that the Military Munitions Rule range clearance principles apply equally to non-military ranges. A copy of the letter is attached.

4. Relocation of Backstop and Shotfall Zone Soil

Some ranges have indicated to the EPA that it may be desirable to transport and/or relocate a backstop in order to reorient or modify their range. This may occur when there is a need to reorient the range due to environmental concerns (e.g., shooting over water (wetland, stream, pond) or excessive runoff), alter the layout to improve shooter safety, or redesign to modify shooting conditions (e.g., adjusting number of shooting positions, increasing or decreasing target distance.) In some cases backstop material would not be moved off the range property, but to another area on the range property.

EPA's position is that range backstop materials are part of the range and are not wastes when they are moved or relocated, as long as the range continues to be used as a range and the backstop materials continue to be used as backstop materials. Hence, backstop materials that are still in use are not subject to the RCRA hazardous waste management regulations and need not be tested for hazardous waste characteristics. However, removal of lead from backstop materials that are to be relocated or moved is a normal practice of good range management in that it extends the usable life of the materials and reduces the possibility of releases of lead into the environment. If lead removal does not occur before moving the backstop material, the lead will become more dispersed throughout the material during movement and will thus be more difficult to recover in future reclamation events.

As a range management practice, it is environmentally preferable to use soil that may already contain lead and is on an active portion of the range, which will therefore undergo regular lead reclamation in the future, than to leave such soil in place and construct a new backstop with lead-free soil. Records of all movements of berm and shotfall zone soils, along with corresponding site plans, should be maintained indefinitely, as they will be necessary in evaluating cleanup needs during subsequent construction or range closure.

BMP for Lead at Outdoor Shooting Ranges

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
March 17, 1997

Mr. Duncan Campbell
Environmental Protection Agency, Region V
RCRA Enforcement
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Dear Mr. Campbell:

Enclosed please find a memorandum on the regulatory status of lead shot, which includes a general discussion on the regulatory status of lead shot as scrap metal. I hope that this information is sufficient to address your specific concerns as they relate to the pile of lead shot at the Saxon Metals facility.

If you have any questions or would like to discuss this matter further, please contact me at (703) 308-8826.

Sincerely,
Jeffery S. Hannapel
Office of Solid Waste

Enclosure

To: Duncan Campbell, EPA Region V
From: Jeff Hannapel, EPA Office of Solid Waste
Date: March 13, 1997
Re: Regulatory Status of Lead Shot

Based on our conversations, it is my understanding that Saxon Metals received for recycling a shipment of approximately 30,000 pounds of lead shot from a commercial indoor shooting range. Smokeless gun powder is, presumably, commingled with the lead shot. The mixture appears to exhibit the ignitability characteristic of hazardous waste (as evidenced by the incident in which the material ignited when Saxon Metals was attempting to load it into the furnace with a front-end loader). You have asked our office to provide you with guidance on the regulatory status of the lead shot portion of the mixture, specifically whether it is considered a spent material or scrap metal.

The Agency has taken the position that the discharge of ammunition or lead shot does not constitute hazardous waste disposal because the Agency does not consider the rounds from the weapons to be "discarded." As you know, discard is a necessary criterion to be met

BMP for Lead at Outdoor Shooting Ranges

before a material can be considered a solid waste and subsequently a hazardous waste. (40 CFR §261.2(a).) The Agency's interpretation regarding discard is based on the fact that shooting is in the normal and expected use pattern of the manufactured product, i.e., the lead shot. Enclosed for your information is a September 6, 1988 letter from EPA to IDEM on this particular point.

In the federal regulations, the term, "scrap metal," is defined as "bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled." (40 C.F.R. §261.1.) In the Federal Register preamble for the final regulations on the definition of solid waste, EPA indicated that "scrap metal is defined as products made of metal that become worn out (or are off-specification) and are recycled to recover their metal content, or metal pieces that are generated from machine operations (i.e., turnings, stampings, etc.) which are recycled to recover metal." (50 Fed. Reg. 614, 624 (1985).) The lead shot portion of the Saxon Metals pile would be considered scrap metal pursuant to the regulatory definition of scrap metal.

EPA provided further clarification on the regulatory status of scrap metal in the Federal Register preamble to the definition of solid waste final regulations:

[a]t proposal, scrap metal that was generated as a result of use by consumers (copper wire scrap, for example) was defined as a spent material. (This type of scrap is usually referred to as "obsolete scrap.") Scrap from metal processing, on the other hand (such as turnings from machining operations) was defined as a by-product. (It is usually called "prompt scrap.") Yet the scrap metal in both cases is physically identical (i.e., the composition and hazard of both by-product and spent scrap is essentially the same) and, when recycled is recycled in the same way - by being utilized for metal recovery (generally in a secondary smelting operation). In light of the physical similarity and identical means of recycling of prompt scrap and obsolete scrap, the Agency has determined that all scrap metal should be classified the same way for regulatory purposes. Rather than squeeze scrap metal into either the spent material or by-product category, we have placed it in its own category.

(50 Fed. Reg. at p. 624) Based on these regulatory passages, the lead shot portion of the pile would be considered scrap metal, and not a spent material. The lead shot is a product that is made of metal that can be recycled to recover metal content. Furthermore, the lead shot has not been "discarded" by virtue of its discharge at the shooting range, because the discharge is within the normal and expected use pattern of the manufactured product. Accordingly, lead shot would be considered scrap metal for regulatory purposes. Scrap metal is a solid waste, but it is exempt from the regulatory requirements of Subtitle C when it is recycled. (40 C.F.R. §261.6(a)(3)(ii).) As part of the Phase IV land disposal restrictions supplemental rulemaking (which was proposed January 25, 1996 and is expected to be finalized in April 1997), processed scrap metal and two categories of unprocessed scrap metal that is being recycled would be excluded from RCRA jurisdiction.

BMP for Lead at Outdoor Shooting Ranges

Please note that this discussion of the regulatory status is limited to the lead shot portion of the pile as you requested. To the extent that the entire pile exhibits the ignitability or reactive characteristic of hazardous waste, the mixture of materials would be considered hazardous waste and not scrap metal. The scrap metal designation for the lead shot would be applicable only to the extent that the lead shot could be segregated from the other materials in the pile.

I hope that this guidance on the regulatory status of lead shot recovered from shooting ranges provides you with the clarification that you needed. If you have any questions or would like to discuss this matter further, please contact me.

BMP for Lead at Outdoor Shooting Ranges

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BMP for Lead at Outdoor Shooting Ranges

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
APR 29 1997

Mr. John P. Cahill
Acting Commissioner
State of New York
Department of Environmental Conservation
Albany, New York 12233-1010

Dear Mr. Cahill:

Thank you for your letter of April 3, 1997 to Administrator Browner requesting a clarification of the Environmental Protection Agency (EPA) Final Military Munitions Rule regarding the extension of its range clearance principles to non-military ranges. Although the final rule addresses only military ranges, we agree with your view that the range clearance principles apply equally to non-military ranges [see comment no. 5 on page 36 of the enclosed excerpt from the Military Munitions Final Rule Response to Comments Background Document].

We are aware of the State of New York's active leadership role in the clean-up of private firing ranges. We appreciate your writing in support of the range clearance aspects of the final Military Munitions Rule and we will consider your suggestions that we issue broader guidance on the applicability of its principles to non-military ranges.

Sincerely yours,

Elizabeth Cotsworth, Acting Director
Office of Solid Waste

Enclosure

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**Appendix E:
Template for an Environmental
Stewardship Plan for Management
of Lead Shot/Bullets**

Instructions

EPA encourages outdoor shooting ranges to adopt and implement the Best Management Practices (BMPs) found in this manual. To this end, it is recommended that ranges first prepare an Environmental Stewardship Plan (ESP or Plan), which gathers information about, and guides evaluation of, site specific conditions of each range. As such, the ESP assists in selection of appropriate BMPs.

This document serves as a template that may be used by sportsmen's clubs and shooting ranges in their preparation of an ESP. This template was adapted from Appendix C of the National Shooting Sports Foundation's manual, *Environmental Aspects of Construction and Management of Outdoor Shooting Ranges* (the NSSF manual.) This template is only a tool to assist in making ESP preparation easier and can, and in some cases should, be modified to incorporate specific information relative to your club and its ranges. It is intended to be used in conjunction with a full understanding of the NSSF, U.S. Environmental Protection Agency (EPA) and, for ranges in Florida, Florida Department of Environmental Protection (DEP) manuals for the safe management of lead at outdoor shooting ranges. This template is intended to encourage ranges to prepare ESPs and submit them to EPA or NSSF to obtain a Certificate of Recognition from EPA. In this regard, either the following template or the NSSF template is recommended for use in conjunction with EPA's Certificate of Recognition program.

An electronic copy of this template is available on EPA's shooting range website (<http://www.epa.gov/region2/leadshot>) in several formats.

Disclaimer: This template does not serve as a substitute for understanding the concepts and techniques discussed in the EPA manual or other manuals. This template is not to be used as a substitute for consultation with scientists, engineers, attorneys, other professionals, or U.S. EPA.

BMP for Lead at Outdoor Shooting Ranges

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Environmental Stewardship Plan for Management of Lead/Bullets at Outdoor Shooting Ranges

Club Name

Address
City/Town, State & Zip Code
Phone #:

Date

BMP for Lead at Outdoor Shooting Ranges

Table of Contents

- **Introduction**
 - Mission Statement
 - Purpose
 - Goal
 - Delete

- **Site Assessment**
 - Description of Ranges and Support Facilities
 - Existing Environmental Conditions
 - Trap and Skeet Fields
 - Sporting Clays Course
 - Rifle and Black Powder Range(s)
 - Outdoor Handgun Range(s)

- **Trap and Skeet Fields**
 - Action Plan
 - Potential Management Options
 - Selection of Management Options to be Implemented
 - Options Selected
 - a) Management Actions
 - b) Operational Actions
 - c) Construction Actions
 - Plan Implementation
 - Schedule for Implementation
 - Responsibilities

- **Rifle, Black Powder, and Outdoor Handgun Ranges**
 - Action Plan
 - Potential Management Options.....
 - Selection of Management Options to be Implemented.....
 - Options Selected.....
 - a) Management Actions.....
 - b) Operational Actions.....
 - c) Construction Actions.....
 - Plan Implementation.....
 - Schedule for Implementation.....
 - Responsibilities.....

BMP for Lead at Outdoor Shooting Ranges

Table of Contents (continued)

- **Sporting Clays Course**.....
 - Action Plan.....
 - Potential Management Options.....
 - Selection of Management Options to be Implemented.....
 - Options Selected.....
 - a) Management Actions.....
 - b) Operational Actions.....
 - c) Construction Actions.....
 - Plan Implementation.....
 - Schedule for Implementation.....
 - Responsibilities.....

- **Measuring Success**.....
 - Vegetation.....
 - Soil and Runoff pH.....
 - Erosion.....

- **Plan Review and Revisions**.....

Figures

- Figure 1: Site Location Map
- Figure 2: Facilities Diagram
- (Additional figures, as appropriate)

Tables

- Table 1:
- Table 2:

Appendices

- Appendix A:
- Appendix B:
- (Additional Appendices, as appropriate)

BMP for Lead at Outdoor Shooting Ranges

Introduction

The XYZ Club, Inc. is located at 123 X Road in Anytown, USA...

Mission Statement

The XYZ Club, Inc. is committed to...

- *Purpose:*

The Purpose of this Environmental Stewardship Plan (i.e., the Plan) is to:

- Identify potential environmental concerns that may exist;
- Identify, evaluate, and prioritize appropriate actions to manage lead shot and bullets safely, as well as identifying and addressing environmental concerns;
- List short- and long-term steps needed for implementation;
- Develop an implementation schedule;
- Identify ways to measure the Plan's success;
- Evaluate annual progress made towards achieving environmental stewardship goals;
- etc.

- *Goal* – To minimize the release of lead into the environment.

Activities to Reach Goal:

Examples include:

- ▷ Avoid shooting over and into water and wetlands.
- ▷ Prevent off-site migration of lead through groundwater and surface water runoff.
- ▷ Conduct lead recovery.
- ▷ Discourage ingestion of lead by wildlife.
- ▷ Maintain soil pH between 6.5 and 8.5 in the shotfall zone.

Site Assessment

Description of Ranges and Support Facilities

The XYZ Club has an x position Trap Range, a y position Skeet Range, a z position Sporting Clays Course, and a q position Small Arms Range. These ranges are located in a rural setting and are oriented away from residential areas and surface water bodies.

[Briefly describe each range, its dimensions, orientation, vegetative cover, numbers of shooters and targets used per year, wildlife usage, etc.]

Existing Environmental Conditions

[Describe any known environmental conditions associated with the ranges. This might include type of soil, depth to groundwater, soil pH, drainage to surface water, unique animal or bird populations, etc. Refer to figures, tables, the results of surveys, inspections, professional opinions, etc.]

BMP for Lead at Outdoor Shooting Ranges

- *Trap and Skeet Fields*
- *Sporting Clays Course*
- *Rifle and Black Powder Range(s)*
- *Outdoor Handgun Range(s)*

Trap and Skeet Fields**Action Plan**

[Briefly describe the management options selected.]

- *Potentially Applicable Management Options*

[See EPA or NSSF guidance manual for full listing of options]

Examples include:

- Vegetate sparse grass area of trap/skeet field.
- Reorient trap field to avoid lead shot entering wetlands.
- Reorient sporting clays stations to maximize the overlap of falling shot into the open field where it can be more easily recovered for recycling.
- Limit use of the trap/skeet range to only those stations that do not have wetland area within the shotfall zone.
- Apply lime to shotfall zones if soil test results indicate this would be beneficial.
- Prepare fields for lead reclamation.
- Get bids for lead reclamation project.
- Conduct lead reclamation within the trap/skeet shotfall zones.
- Change mowing frequency to closely mow grass in shotfall zones.
- Construct lean-tos at backstop berms.
- Construct a lime lined drainage swale for stormwater management.
- List additional Best Management Practices that may be appropriate to your club.

In addition to appropriate site-specific management options, the list should always include conducting lead reclamation within the berm for rifle and pistol ranges and conducting lead reclamation within the trap, skeet, and sporting clays shotfall zones.

- *Selection of Management Options to be Implemented*

Option x:

Option y:

Option z:

[Describe why the above options were selected and the general roles of club officers, the membership, and outside consultants, as applicable, in implementation.]

BMP for Lead at Outdoor Shooting Ranges

In order to implement the options selected, the following actions are necessary.

- a) Management Actions: [Examples include: assign personnel responsible for initiating, conducting, and completing the alternatives selected above.]
- b) Operational Actions: [Examples include: collect soil samples for pH analysis, consult with USDA's Natural Resources Conservation Service and/or the county Cooperative Extension Service regarding best suited vegetative management recommendations.]
- c) Construction Actions: [Examples include: do site preparation work, get bids, institute mowing and vegetative management recommendations, reorient shooting position as appropriate.]

Plan Implementation

- Schedule for Implementation

Winter/Spring: [Examples include: pH survey, contact local officials for vegetation management recommendations, reorient shooting positions as appropriate, realign shooting positions as appropriate.]

Summer/Fall: [Examples include: prepare site for reclamation project, apply lime/fertilizer/seed, get bids for berm lean-tos/reclamation. As a rule of thumb, 50 pounds of lime per 1,000 square feet should raise soil pH by 1 once the residual acidity is overcome.]

- Responsibilities

[Specific duties (i.e., the trap/skeet chairman/chairmen will..., The club treasurer will..., The membership will provide the labor to...)]

Rifle, Black Powder, and Outdoor Handgun Range(s)

Action Plan

[Briefly describe the management options selected.]

Potentially Applicable Management Options

[See EPA or NSSF guidance manual for full listing of options]

Examples include:

- Culvert the stream through the shooting ranges.
- Vegetate the backstop berm(s) to minimize erosion.
- Construct a lime lined drainage swale for stormwater management.
- Apply lime to the berm and foreground if pH test determines it is necessary.
- Begin planning a lead reclamation project.
- Construct lean-tos at berms.
- List additional Best Management Practices that may be appropriate to your club.

BMP for Lead at Outdoor Shooting Ranges

Selection of Management Options to be Implemented

- Option x:
- Option y:
- Option z:

[Describe why the above options were selected and the general roles of club officers, the membership, and outside consultants, as applicable, in implementation.]

In order to implement the options selected, the following actions are necessary.

- a) Management Actions: [examples include: assign personnel responsible for initiating, conducting, and completing the alternatives selected above.]
- b) Operational Actions: [examples include: collect soil samples for pH analysis, consult with USDA's Natural Resources Conservation Service and/or the county Service Forester regarding best suited vegetative management recommendations.]
- c) Construction Actions: [examples include: do site preparation work, get bids, institute mowing and vegetative management recommendations, reorient shooting position as appropriate.]

Plan Implementation

- Schedule for Implementation

Winter/Spring: [examples include: pH survey, contact local officials for vegetation management recommendations, reorient shooting positions as appropriate, realign shooting positions as appropriate.]

Summer/Fall: [examples include: prepare site for reclamation project, apply lime/fertilizer/seed, get bids for berm lean-tos/reclamation.]

- Responsibilities

[Specific duties (i.e.: the small arms range chairman/chairmen will..., The club treasurer will..., The membership will provide the labor to...)]

Sporting Clays Course

Action Plan

- Potentially Applicable Management Options

[See EPA or NSSF guidance manual for full listing of options]

- Selection of Management Options to be Implemented

- Options Selected

BMP for Lead at Outdoor Shooting Ranges

Plan Implementation

- *Schedule for Implementation*
- *Responsibilities*

Measuring Success

By monitoring the success of the Plan, the club is best prepared to make whatever changes may be necessary to reinforce success and make the most of environmental stewardship efforts. Below are some examples of areas to monitor:

Lead Recovery

[Document the quantity (pounds) of lead recovered and recycled, along with the cost of conducting the activities.]

Vegetation

[The density of vegetation growth should be measured throughout the growing season, especially in areas of sparse growth where steps have been taken to increase the vegetative cover. This can be done by taking periodic photographs (e.g., once a month) from the same places to document the impact of the Plan.]

Wildlife

[Keep a log of visual observations made regarding the frequency of range usage by the variety of species in your area.]

Soil and Runoff pH

[Track soil and runoff pH through semiannual monitoring and adjust the amount of lime applied to different areas of the range to maintain a pH level that will prevent lead from dissolving (i.e., a pH of 6.5-8.5).]

Erosion

[Again, keeping a photographic record of problem areas best prepares your club to document achievements and adjust the Plan as appropriate.]

Plan Review and Revisions

Review the Plan on an annual basis. Update the Plan as needed and schedule activities for subsequent years. Make recommendations for future club officers to consider when updating the Plan and designating future activities to be conducted (tell them what worked, what didn't work, and what still needs to be done.)

FIGURES

Figure 1
Facility diagrams

Figure 2
Resource maps (USGS topographic map, wetlands maps, soil survey maps, FEMA floodplain map, etc.)

Figure 3 (Optional)
Site photographs

Figure 4 (Optional)
Aerial photo of range and surrounding area

Appendix A
(Optional)

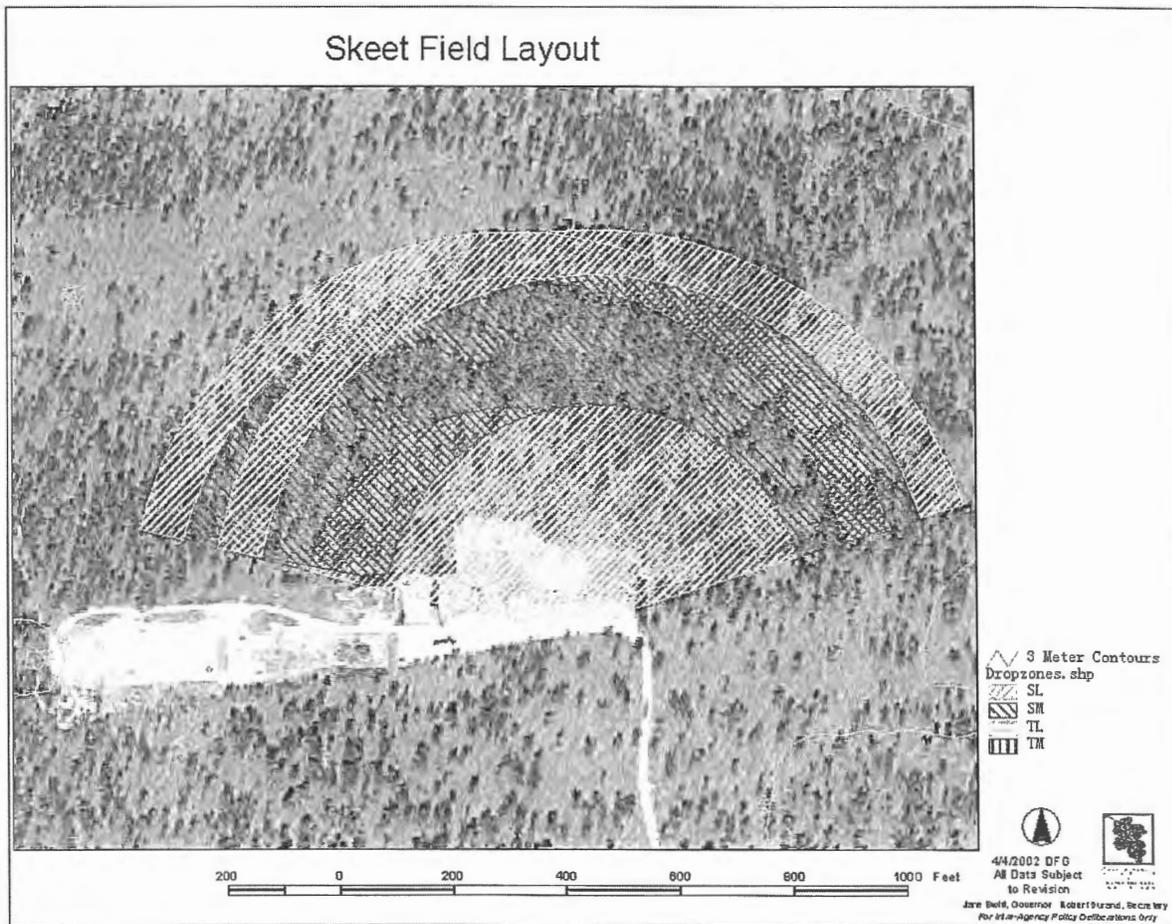
Appendix B
(Optional)

BMP for Lead at Outdoor Shooting Ranges

[Insert other figures as necessary to support the text]

Other figures may include an aerial photograph, and sketches of the Club property in general and/or specific ranges in particular.

Example:



BMP for Lead at Outdoor Shooting Ranges

[Insert Site Location Map Here]

Typically, a Site Location Map is cut from a USGS Topographic Map of your Club's area. The Club should be centered on the map. Indicate the property boundaries and layout of the range.

Appendix A

Information from USDA, Natural Resources Conservation Service [and/or county Cooperative Extension Service]

[concerning soil and vegetation management recommendations]

Appendix B (etc.)
[For other supporting documentation as needed.]



U.S. Environmental
Protection Agency
Region 2

EPA-902-B-01-001
Revised June 2005

OR 20-025
IM 20-047

United States Environmental Protection Agency
290 Broadway
New York, NY 10007-1866
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Penalty for Private Use \$300
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MAILED FROM ZIP CODE 10007
PERMIT NO. G-35

RANGE DESIGN CRITERIA



**U.S. DEPARTMENT OF ENERGY
Office of Health, Safety and Security**

AVAILABLE ONLINE AT:
<http://www.hss.energy.gov>

INITIATED BY:
Office of Health, Safety and Security

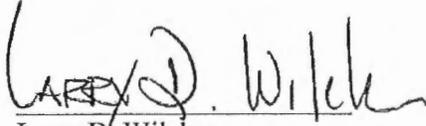
Notices

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Local DOE management is responsible for the proper execution of firearms-related programs for DOE entities. Implementation of this document's provisions constitutes only one segment of a comprehensive firearms safety, training, and qualification program designed to ensure that armed DOE protective force personnel are able to discharge their duties safely, effectively, and professionally. Because firearms-related activities are inherently dangerous, proper use of any equipment, procedures, or techniques etc., identified herein can only reduce, not entirely eliminate, all risk. A complete safety analysis that accounts for all conditions associated with intended applications is required prior to the contents of this document being put into practice.

CERTIFICATION

This document contains the currently-approved firearms "Range Design Criteria" referred to in DOE O 473.3, *Protection Program Operations*.



Larry D. Wilcher
Director
Office of Security
Office of Health, Safety and Security

6/4/2012
Date

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Range Design Criteria
June 2012

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ATTACHMENT 1 -- RANGE DESIGN FIGURESAttachment 1-1

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Range Design Criteria
June 2012

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RANGE DESIGN CRITERIA

1. PURPOSE. This document contains design criteria for U.S. Department of Energy (DOE) live-fire ranges for use in planning new facilities and major rehabilitation of existing facilities. This document will be approved and maintained by the Office of Security, Office of Health, Safety and Security (HSS) as a stand-alone document on the HSS website: <http://www.hss.doe.gov/SecPolicy/pfs.html>.
2. PLANNING FACTORS. All applicable local, State, Federal, U.S. Environmental Protection Agency, Occupational Health and Safety Administration (OSHA), and National Environmental Policy Act requirements should be addressed and be reviewed annually (at least every 12 months) by the site to incorporate any requirements and/or changes that occur.
3. PLANNING OVERVIEW.
 - a. General Considerations.
 - (1) Live-fire range design should: (a) promote safe, efficient operation; (b) include provisions for ease of maintenance; and (c) be affordable to construct and maintain.
 - (2) Live-fire ranges should be designed to prevent injury to personnel and to prevent property damage outside the range from misdirected or accidental firing and ricochets. They should also be designed to direct ricochets away from the firing line inside the range.
 - (3) An open range may be established provided that enough distance and land area available to allow for surface danger zones (SDZs) appropriate for the weapons to be used. Lack of SDZs may require baffled ranges. Extreme weather conditions may necessitate indoor ranges.
 - b. Type of Range.
 - (1) Range requirements should be considered when determining the type and size of the range and the material to be used.
 - (2) The range should be suitable for training and qualifications for all courses of fire used on the site as set forth in the HSS-approved Firearms Qualification Courses.
 - (3) The range should be designed for shooting day and reduced-lighting DOE firearms courses, moving targets, multiple targets, and advanced shooting courses/activities (e.g., shooting at steel targets) that may be required by the site.

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Range Design Criteria
June 2012

- (4) When determining whether the facility will be an indoor, open outdoor, partially baffled, or fully baffled range, the decision-making process should include site weather conditions, available land, available funding, and environmental, safety, and health considerations. The following additional factors should be considered.
 - (a) How many shooters must be accommodated?
 - (b) Will emphasis be on training or competitive activities?
 - (c) What types of firearms and range of ammunition will be used? (See Table 1.)
 - (d) Will the facility be used exclusively by DOE or will it be open to other organizations?
 - (e) What special uses will be made of the facility; e.g., advanced training, special weapons, or explosives?
 - (f) What lighting will be required, and what lighting is desired?
 - (g) What administrative space will be needed?
 - (h) What types of target mechanisms will be used?
 - (i) Will spectator safety areas be needed?
 - (j) What types of acoustics will be needed?
 - (k) How will lead contamination be controlled?
 - (l) Where will bullet traps be needed?
 - (m) Where will firearms cleaning and maintenance be performed?
- c. Site Selection Preparation. The site selected should accommodate the required facility. It should meet acceptable standards for safety and have sufficient space, access, and acceptable zoning and construction costs. Land acquisition costs, future land values, and possible restrictions should also be examined. To ensure the project is feasible the following data should be considered.
 - (1) Documents. Copies of specific site, environmental, and construction criteria; applicable mandated regulations from Federal, State, county, and local authorities; copies of ordinances, zoning regulations, soil conservation standards, health department requirements, and any other regulations that may pertain to the project should be obtained.

Range Design Criteria
June 2012

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- (2) Alternate Sites. Identify alternate sites, because one or more of the potential sites may be unsuitable or construction costs may be prohibitive.
 - (3) Technical Data. Gather technical data relevant to each site including zoning maps, aerial photographs, topographic maps, and onsite ground and aerial information.
- d. Considerations. The criteria to be considered in this process are:
- (1) environmental restrictions; e.g., Endangered Species Act, Wilderness Act, and air and water pollution criteria;
 - (2) access; e.g., is it adequate or should a roadway be constructed to the site;
 - (3) construction cost; e.g., berms, baffles, barriers, earth moving;
 - (4) other restrictive Federal or State statutes and local ordinances; and
 - (5) community growth, especially in areas where urban growth is rapid. Escalating property values may make it unwise to construct in a particular area.
- e. Preliminary Design Stage.
- (1) Prepare:
 - (a) a preliminary layout sketch of each site;
 - (b) a draft document, which should include specifications for applicable zoning, building codes, environmental, safety, and health considerations, and other pertinent restrictions;
 - (c) alternative preliminary site plans showing different range layouts;
 - (d) a planning cost estimate; and
 - (e) a risk analysis report.
 - (2) Submit all environmental, zoning and building permit applications for approval. Be prepared, via the draft document, to present and, if necessary, defend the proposal at public hearings before zoning boards, health officials, and other governmental bodies involved in issuing permits.
- f. Final Design Stage.
- (1) The preliminary site plans include a layout of the proposed range with its accompanying safety fan in a cross section and top view.

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June 2012

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- (2) The range master/manager, training manager, safety manager, industrial hygienist, appropriate operating personnel and public works engineer should review and approve the design requirements during the planning phase, before the construction drawings are started, and during the construction phase.

4. OUTDOOR RANGE DESIGN.a. Site Selection.

- (1) Outdoor range sites should be remote from other activities but accessible by road. SDZs should not extend across traveled roads, navigable waterways, railroads, or other areas.
- (2) To protect against unauthorized access, SDZs should be controlled while firearms are being discharged. To prevent future encroachment, SDZs should be recorded on site maps.
- (3) If other methods to control access to SDZs are not effective, then the zones should be fenced in. Natural barriers around the site; e.g., rivers, hills or a large drainage channel may be used to prevent encroachment and will ensure privacy. The best site is one with a natural backstop for projectiles to reduce the cost of constructing earth impact berms and to provide natural sound abatement.
- (4) Outdoor ranges should be oriented to eliminate firing into the sun. The range should be oriented to the north or slightly to the northeast. The ideal direction is between due north and 25° northeast.

b. Range Planning.

- (1) Firing into upward sloping land and land with natural backstops of hills or mountains is recommended.
- (2) Firing platforms, access roads, and targets should be elevated above the flood level.
- (3) The line of fire in rough terrain should be perpendicular to high ground. The line of fire on flat terrain should be free of knolls, ridges, and trees that reduce visibility.
- (4) Known distance ranges should be as flat or evenly graded as possible. If the grade between the firing points and target does not exceed 2 percent, then the firing points may be below the target.
- (5) Roads used for setting and servicing targets in impact areas and for maintenance of earth berm may be graded pathways. Roads in areas not subject to disturbance; e.g., vehicle parking areas, and roadways behind

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firing lines or out of range of weapons, should be designed for anticipated vehicle weight and usage.

- (6) The ground between the targets and firing line should be free of any hardened surface (smooth-surfaced walkways excepted) such as rocks or other ricochet-producing material.
 - (7) The surface may be sodded or planted with low-growing ground cover.
 - (8) The surface should be smooth, firm, and graded to drain away from the targets. A slight side-to-side grade of 1 percent to 2 percent should be provided for storm water runoff. For baffled ranges, the lateral slope should not exceed 2 percent because of the geometry of the baffle system.
 - (9) The overall size will be governed by the range distance and number of firing positions.
 - (10) Range distances from the firing line to the target are determined by the approved DOE qualification courses of fire for all weapons available for use by Protective Force (PF) personnel and by site-specific training courses of fire. The distances from the firing line to the target should be accurate to ± 0.1 percent. It is important that any inaccuracy in the firing line-to-target distance is a greater, rather than lesser, distance (e.g., 101 yards for a 100-yard range instead of 99 yards).
 - (11) Shooters should have secure footing.
- c. Surface Danger Zones. SDZs should be established to contain all projectiles and debris caused by firing ammunition and explosives (see Table 1). SDZ dimensions are dictated by the types of ammunition, types of targets, and types of firing activities allowed on the range. A basic SDZ consists of three parts: impact area, ricochet area, and secondary danger area (Figure 1). Figures 2 through 6 illustrate the application of the basic parts in the design of SDZs for various kinds of range activities.
- (1) The primary danger area established for the impact of all rounds extends 5° to either side of the left and right limits of fire and downrange to the maximum range of any ammunition to be used on the range.
 - (2) The ricochet area is 5° to either side of the impact area and extends downrange to the maximum range of any ammunition to be used on the range.
 - (3) The secondary danger area is that area paralleling, and 100 yards outside of, the outermost limits of the ricochet area and extending downrange to the maximum range of any ammunition to be used on the range.

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- (4) Boundaries of SDZs must be posted with permanent signs warning persons of the danger of the live-fire range and prohibiting trespassing. The signs must be posted in a way that will ensure a person cannot enter the SDZ without seeing at least one legible sign (i.e., usually 200 yards distant or less).
 - (5) Limit of fire markers, both external and internal, must be placed to denote right and left limits of fire. Where cross firing is to be conducted, internal limit markers must be emplaced to denote internal right or left limits of fire from specific firing positions.
 - (6) Ranges may be located parallel to one another if in compliance with Figure 19 for separation.
 - (7) When there is insufficient distance to lay out a new range with the required SDZ or utilize other ammunition with a maximum range that does not exceed the SDZ, engineered or administrative controls can be used to control firing on that range. Permission to deviate from established SDZ requirements must be granted by the DOE cognizant security authority and supported by a safety risk analysis.
 - (8) Administrative controls such as use of the low-ready position or engineered controls such as muzzle traverse/elevation limiters can be used to control the firearm. Natural terrain such as a mountain or a hill provides an excellent backstop for firing. The terrain should be high enough to capture rounds fired at up to a maximum 15° muzzle elevation.
 - (9) To change the size and shape of an SDZ, baffles may be installed. Partial and full baffle systems consist of the following components: overhead baffles, a canopy shield over firing points, bullet impact berm, and side berms, sidewalls, or side baffles. A fully baffled range must be constructed so all direct fire can be contained within the range (see Figures 7 and 8).
- d. Support Facilities. Range planners should consider the site-specific need for the following range support facilities.
- (1) Targets.
 - (2) Target storage.
 - (3) Bunkers, trenches, and protective barriers for personnel protection.
 - (4) Range control towers.
 - (5) Toilets.
 - (6) Range poles, banners, markers, and signs.

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- (7) Communication systems.
- (8) Access and range roads.
- (9) Parking areas.
- (10) Potable water.
- (11) Target maintenance.
- (12) Ammunition storage.
- (13) Power.
- (14) Sewer.
- (15) All other necessary utilities.

Table 1. Maximum Range of Small Arms Ammunition

Maximum Range of Small Arms Ammunition	
Caliber	Maximum range of small arms ammunition (distance in meters/yards)
.22 long rifle	1400/1531
.38 revolver	
Ball, M41	1600/1749
Ball PGU-12/8	1900/2077
.40 pistol	
Ball	1783/1950
JHP	1908/2086
Frangible	1000/1093
.45 pistol	1500/1640
.45 submachine gun	1600/1749
.357 magnum	2160/2362
9mm pistol	1740/1902
9mm submachine gun	1920/2099
.44 magnum	2290/2504
.50 machine gun	
Ball, M33	6500/7108
AP, M26	6100/6671
12 gauge shotgun, riot 00 buckshot	600/656
.30 rifle and machine gun	
Ball, M23	3100/3390
AP, M2	4400/4811
.30 carbine	2300/2515
5.56mm rifle	
Ball, M193	3100/3390
7.62mm rifle and machine gun	
Ball, M80	4100/4483
Match, M118	4800/5249
40mm	
M79	400/437
Mk-19 40mm	2200/2406

e. Design Criteria.(1) Firing Line Items. Provide the following components:

- (a) Floor Surface. The surface should be smooth, firm, and graded to drain away from the targets. A slight side-to-side grade of 1 percent to 2 percent should be provided for storm water runoff. Transverse firing line grading should match target line transverse grading. The distance between the firing line(s) must be sufficient to support the type of training conducted. Firing lanes must be clearly marked on the surface to match the targets. Depending on the number of personnel to be supported and the funds available, the following surfaces should be considered:
- 1 ground firmly compacted with mown grass;
 - 2 sand or fine gravel;
 - 3 wood decking of sufficient thickness and support to prevent movement; and
 - 4 concrete topped with appropriate cushioning material.
- (b) Overhead Containment. On partially and fully baffled ranges, a ballistic canopy (see Figure 9) should be provided over all locations where a weapon may be expected to be discharged (firing line, by definition). Figure 9 represents one construction approach, but the canopy must contain the direct fire effects of the most energetic round fired on the range. This canopy should begin at least 3 feet behind the firing line. General structural requirements may dictate more distance. The canopy should extend forward a minimum distance of 13 feet minimum, which will work geometrically with the first overhead baffle to prevent a weapon from firing directly out of the range (see Figures 16 and 17). The canopy should be constructed of ballistic material with sacrificial cladding as described below. Sound reduction ceiling waffles should be considered. Weather roofing is required above the ballistic material and it must slope sufficiently to drain.

(2) Firing Point. The depth of the firing point is determined by the shooting activity; e.g., rifle firing requires more depth than pistol firing.

- (a) The minimum depth of the firing point is the area required for the shooter, shooter's equipment, scorers, and range officers. For example, a pistol range might have a firing line approximately 6 to 10 feet deep, while a rifle range would have a firing line up to 20 feet deep. This variation is based on available space, type of

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shooting, size of target frames and carriers, and the spacing of target frames or carriers.

- (b) For rifle ranges, each firing point should be 9 feet wide (see Figure 10). Firing lanes for pistols and shotguns should be 5 feet center to center (see Figure 11).
- (3) Ballistic Material. The purpose of this material is to absorb, deflect, or fragment projectiles. Material for baffles on partially and fully baffled ranges is shown in Figures 12 and 18. Wood that is used should be of middle grade exterior timber or plywood. Timber in contact with the ground must be pressure-treated for this purpose. Avoid exposed connectors if possible. Refer to Table 2, Thickness of Material for Positive Protection Against the Caliber of Ammunition Listed, for the thickness of various materials.
- (4) Sacrificial Cladding. Provide ¾-inch thick plywood with a ¾-inch air gap on any surfaces (baffles, wing walls, metal connectors, etc.) that are within 11 yards of the firing line to prevent back splatter.
- (5) Firing Line Cover Material. The firing line should be covered to protect the shooter and allow activities to be held regardless of the weather. On ranges with several firing lines, the cover is generally installed at the longest firing distance. The firing line covers described below are for shelter only and should not be confused with the ballistic firing line canopies required on baffled ranges. Material that can be used for firing line covers includes wood, concrete, steel, and plastic. Most covers are constructed from wood products and are a shed or gable roof design. In some cases, corrugated metal or fiberglass roofing material can actually increase sound levels at the firing line and in areas around the range. Therefore, to reduce noise, corrugated metal or fiberglass roofing material should not be used unless it is acoustically treated. The structure should be designed to include the following:
 - (a) The shed roof should have a 6-inch cavity filled with fiberglass insulation (or equivalent) and be enclosed on the bottom with ¾-inch plywood or insulation board. Although this will not provide a completely effective sound barrier, sound waves will strike and penetrate the inside layer of plywood, and the sound will be reduced;
 - (b) A plywood shed roof should have a 6-inch hollow core enclosed with a small grid mesh screen and a six-mil polymer barrier to retain the insulation. The intervening space should be filled with blown-in insulation to trap sound waves and reduce the drum effect of an open roof; and

- (c) A gable roof has a large hollow area above the joists; however, additional sound damping materials should be installed to reduce the drum effect and the sound pressure level as they are reflected onto the firing line area. The underside of the roof surface will require a minimum of 4 inches of insulation to fill in between the rafters and a minimum of 3 inches of insulation above the ceiling and between the joists. This will reduce the drum effect caused when sound waves strike surface material (e.g., corrugated metal) and will absorb a portion of the reflected sound waves.
- (6) Surface Material. Positions should be hard-surfaced (e.g., concrete, gravel, wood, asphalt, or sod).
 - (a) For ranges where prone shooting is conducted, gravel or similar materials may cause difficulty for the shooter. When the surface material is concrete or asphalt, shooting mats or padding will be required when the kneeling or prone positions are used.
 - (b) For ranges with multiple firing lines, hard-surfaced firing lines located downrange of another firing line should be recessed or shielded from bullet impact to avoid ricochets off exposed edges.
- (7) Landscaping. The site should be landscaped to provide for erosion control, noise abatement, maintenance, appearance, fire protection, and safety.

NOTE: Any landscaping will complicate the removal of lead in the berms, especially on impact surfaces, and will create higher maintenance costs.

- (a) Berms should be planted with grass to prevent erosion. Ground cover is acceptable on existing berms that have been maintained and where erosion is not a problem.
- (b) When grass is selected as a ground cover, it should be appropriate for the geographic area and should readily grow and provide good coverage. The degree of shading caused by overhead baffles will determine the type of grass for the range floor. Use grasses and cover for earth berms that will not be accessed by moving equipment so that natural growth heights will be acceptable. In areas where the soil is poor or extremely sandy, plants such as Bermuda grass, ice plant, or vine root can be used to control soil erosion.
- (c) Heavy landscaping may be used to cut down on noise transmission. Plants and trees may be planted behind the firing position shelters to alleviate noise transmission problems.

Soundproofing the firing line structures should be considered in problem areas. Trees should be kept away from firing lines to allow range control officers to see all shooters.

- (d) For windbreaks, trees may be planted along the length of the range with partial side berms or wing walls where strong prevailing crosswinds are problems to shooting accuracy.
 - (e) Densely planted rows of fast-growing, compact, and thorny shrubs may be planted below the trees at ranges with partial berms or wing walls to abate noise, prevent encroachment, and alleviate crosswind problems.
- (8) Target Line and Mechanisms. Components must be as follows:
- (a) The target line should be a minimum of 30 feet from the toe of the impact berm. The distance between targets must be the same as the distance between firing positions.
 - (b) Target line bases must match grading with the firing line. Mechanical target support bases must be protected from the direct line of fire. They may be buried flush with the ground or placed behind a protective wall. Note that a small raised earth berm at this location generates significant ricochet. The complexity of the mechanism will dictate the protection requirement. See Figure 13 for wall or trench protection of high cost target line mechanisms.
 - (c) Target supports can be made of steel angles and channels, PVC pipe or wood. Do not use metal parts within 33 feet of the firing line where direct fire strikes are anticipated. Discharging weapons close to metal surfaces is extremely dangerous. Present the smallest surface area that is structurally sound to the line of fire to minimize ricochet. Design the target holders for easy and inexpensive replacement. Portable, self-supporting 2- by 4-inch wood frames or 2-inch by 2-inch wood plank placed into buried PVC pipe work well on simple ranges. The full face of the target must be visible to the shooter.
 - (d) Turning targets and the display time are at the discretion of the user. Commercially available, electrically motorized target carrier and electronic scoring systems should be considered where economically feasible.
 - (e) On open ranges, a single target line with multiple firing lines is preferred. On partially or fully baffled ranges, in most instances, a single firing line with multiple target lines will produce the most cost-effective range because of the firing line canopy. An

extremely advanced target mechanism may be significantly more expensive than multiple canopies.

- (9) Impact Structures. The structure varies depending on the type of range. Natural terrain such as a mountain, cliff, or steep hill may be incorporated into impact structures provided the completed structure complies with the minimum design requirements. Acceptable structures by range type are listed below.
- (a) For open ranges, the top elevation of the earth impact berm should be 26 feet above the range surface for ranges 100 yards long or longer and 16 feet above the range surface for ranges 50 yards long or less. The impact berm should extend 50 yards beyond where the target line ends for 100-yard-long ranges or until joining with the side containment, if provided for ranges 50 yards long or less.
 - (b) The suggested elevation may be met by designing a combination of earth berm and vertical baffle (see Figure 14). The earth berm portion should have a top elevation of 16 feet above the surface of the range. The vertical baffle should be constructed of ballistic material and designed to withstand local seismic and wind loads. This combination arrangement would reduce the footprint and the amount of material in the earth berm.
 - (c) The preferred slope of the impact berm face is 1 to 1 or steeper. The steeper the slope, the more likely the berm is to absorb projectiles. The top should be 10 feet wide. The impact slope should be constructed with a 3-foot layer of easily filtered soil (to reclaim the lead projectiles) free of boulders, trees, rocks, stones, or other material that will cause ricochet. The rear slope should be appropriate to the native soil and maintenance requirements.
 - (d) For partially and fully baffled ranges, the top elevation of the impact structure will vary depending on the overhead baffle and impact structure arrangement. The impact structure for a partially baffled range can be: standard impact berm, bullet trap, or hybrid. For fully baffled ranges, the impact structure must be a bullet trap. In all instances, the impact structure must connect to the side containment. The top of the berm should be at an elevation 5 feet above the point where the highest line of direct fire can strike the berm.
 - (e) Outdoor baffled bullet stops can be constructed by placing the last vertical overhead baffle over the last target line and placing a sloped baffle to connect from the top of the earth berm to the back of the last vertical baffle. The bottom of this lower-sloped overhead baffle should be 2 feet above the highest point on the

berm where direct fire might strike. See Figure 15 for material and construction details. Rainfall runoff from the sloped baffle onto the berm must be considered. (See “Use of Bullet Traps and Steel Targets” for Shoot House bullet trap information.)

- (10) Side Containment. For partially and fully baffled ranges (Figures 7 and 8), the top elevation of the side containment must geometrically mate with the overhead baffles to be high enough to prevent any direct fire from exiting the range. Full-side height containment should extend 3 feet to the rear of the firing line. Locate the side containment at least 10 feet outside of the centerline of the outermost firing lane. Construction may be in the following forms.
 - (a) Earth Berm. Construct earth berms to an inside slope of 1 to 1.5. If native soil characteristics will not produce a stable slope at this angle, provide geotechnical fabric reinforcement in the fill. The top width of the berm should be at least 10 feet. No rocks are permitted in the top 3 feet of the inside surface. Generally, earth berms cannot be used on partially or fully baffled ranges; however, earth berms are permissible if the firing range is small and the overhead baffle and berm geometry intercept ricochets.
 - (b) Continuous Walls. Construct continuous walls of ballistic material to withstand local wind and seismic loads. Provide sacrificial cladding to 13 feet forward of the firing line and 3 feet behind the firing line. Continuous walls are preferred for fully baffled ranges.

Table 2. Thickness of Material for Positive Protection Against the Caliber of Ammunition Listed

Cover material	Caliber and thickness required to stop penetration		
	5.56 mm	7.62 mm and Cal. 30	Cal. 50
Concrete (5,000 lbf/in ²)	5 inches	7 inches	12 inches
Gravel-filled concrete masonry units	8 inches	12 inches	24 inches
Broken stone	14 inches	20 inches	30 inches
Dry sand	16 inches	24 inches	32 inches
Wet sand	25 inches	36 inches	48 inches
Oak logs (wired)	28 inches	40 inches	56 inches
Earth			
Packed or tamped	32 inches	48 inches	60 inches
Undisturbed compact	35 inches	52 inches	66 inches
Freshly turned	38 inches	56 inches	72 inches
Plastic clay	44 inches	65 inches	100 inches

NOTE: Figures are based on new material. Degradation may occur over time.

- (c) Wing Walls. Wing walls (side baffles) are discontinuous side protection set at 45° to the line of fire. Locate the wing walls so that they are overlapped by 6 inches based on any line of fire that may strike them. Construct the wing walls of ballistic material to

withstand wind and seismic loads. Additionally, provide sacrificial cladding on wing walls closer than 30 feet to the firing line.

- (d) End Walls. End walls may be constructed at the firing lane edge on the firing line in lieu of extending side containment 3 feet behind the firing line. Walls should be long enough to close off any line of sight between the end of the side containment and the rear 3 feet mark. The end walls should be constructed of ballistic material with sacrificial cladding extending from the canopy to the firing line surface.
- (11) Overhead Baffles. Overhead baffles must be located so that no direct fire can exit the range from any firing position. The first overhead baffle must be geometrically coordinated with the firing line ballistic canopy (see Figure 9). The elevation of the top of each succeeding baffle should be 6 inches higher than a line of fire that just clears beneath each preceding baffle (see Figure 16). Overhead baffles should be the same height and spaced apart down range to achieve the required geometry (see Figure 17). The last baffle should be placed so the line of fire will strike the impact structure no higher than 5 feet below the top elevation of the structure. On a fully baffled range, the last overhead baffle must be over the last target line.
- (a) On partially baffled ranges, overhead baffles must extend laterally to within 1 foot of the side containment. On fully baffled ranges, the overhead baffle must tie into the side containment.
 - (b) The vertical dimension of an overhead baffle when it is vertical varies with the number and spacing of the baffles. Normally, the height is between 5 and 8 feet when considering structural support size and costs.
 - (c) The baffles must be constructed of ballistic material. Baffles within 11 yards of the firing line should be covered with sacrificial cladding. See Figures 12 and 18 for possible configurations.
 - (d) Space the structural columns as far apart laterally as possible to open firing lanes. If possible, do not construct columns within the range. Design columns or beams to withstand local wind and seismic loads, and provide protective steel plate on the faces of the columns exposed to the firing line in accordance with Figures 12 and 18. Provide sacrificial cladding if the column is within 10 yards of the firing line. Overhead baffles may be placed on a flatter slope and overlapped to function as firing line canopies if multiple firing lines are to be used (see Figure 17). This arrangement is cost-effective for baffled combat lanes.

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5. INDOOR RANGE DESIGN.

a. Use of Indoor Ranges.

- (1) Indoor ranges must be designed so projectiles cannot penetrate the walls, floor or ceiling, and ricochets or back splatter cannot harm range users. Considerations should be made for cleaning of all surfaces and handling of hazardous wastes.
- (2) Lead exposure requirements must be reviewed for applicability.

b. Site Selection.

- (1) Walls and Partitions. Indoor ranges must incorporate walls and partitions capable of stopping all projectiles fired on the range by containing or redirecting bullets to the backstop.
- (2) Existing Buildings. If there are existing drawings of the facility, copies should be obtained from the original owner, architect, engineer, builder, or building permit. If original drawings of the building are not available, a sketch can be made of each floor of the building with a special emphasis on the load-bearing walls. The following considerations should be used when making the initial evaluation of an existing building.
 - (a) General Construction. Buildings constructed of wood products should be avoided. Modifications to reinforce the structure to support metal backstops or to reduce fire hazards may not be cost-effective.
 - (b) Exterior Walls. The type of exterior wall construction (e.g., masonry, wood, concrete, metal, combination, other) should be identified. Masonry buildings should be given primary consideration, especially those constructed on concrete slabs.
 - (c) Floors, Walls, and Ceilings. Floors, walls, and ceilings must be able to contain the sound in addition to the bullet fired.
 - 1 The ideal wall is made of poured concrete a minimum of 6 inches thick.
 - 2 To aid in range cleaning, concrete floors should be finished so they have a nonporous surface.
 - 3 Ceilings should be 8 feet high and enclosed to reduce air turbulence created by ventilation systems.
 - 4 Evaluate the structural support designs of older buildings for their ability to withstand new loading. Original design

considerations usually do not allow for installing heavy backstops and other range equipment.

- 5 To decide if modifications are necessary, slab buildings must be analyzed carefully to determine the capacity for floor loading. If there are no floor drains and it is economically feasible, modifications should also include adding one or more floor drains.
 - 6 Ceiling joists may require strengthening to support baffles and shielding material.
- (d) Electrical. Electrical needs may require the installation of heavy-duty wiring both internally and externally to accommodate the added power needs of range ventilation, heating, lighting, and target-carrier mechanisms.
- (e) Plumbing. Plumbing does not usually require major modifications; however, heavy metals may be prohibited from area wastewater treatment collection systems. Therefore, an approved filtration system may be necessary for disposal of hazardous waste material; e.g., lead.
- (3) Precast Buildings.
- (a) Precast concrete companies can provide complete precast buildings (job site-delivered) if engineering specifications for steel placement are provided on a set of plans (drawings) for the proposed building.
 - (b) Precast assembly allows for installation of a roof design more suitable for an indoor range. Gabled or hip roof designs should not be used.
 - (c) Hollow, precast concrete panels provide an option to bar joists, eliminating bullet ricochet or splatter. A flat bar joist design is the recommended alternative to hollow, precast concrete panels.
 - (d) The flat roof design also provides support for heating, ventilating, and air conditioning (HVAC) equipment outside of the range, which saves space and reduces cost.
- (4) New Construction. New indoor construction projects require the same guidelines as existing buildings; however, they offer the advantage of building a structure specifically for use as an indoor shooting range.

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- c. Range Planning. Design work for ventilation, wall structures, floors, ceiling, acoustics, backstops, and lighting will depend on how the range will be used.
- (1) A determination for the type of building required includes the following considerations.
 - (a) Can the range be built in an existing building or is a new one required?
 - (b) How large should it be?
 - (c) How many shooters will it be expected to serve?
 - (d) Will it be used for competition?
 - (e) Should space be allowed for classrooms?
 - (f) How much will the facility cost?
 - (2) The planning process should include:
 - (a) obtaining ordinances, zoning regulations, building codes, soil conservation regulations and other information pertaining to legal requirements;
 - (b) for evaluation, identifying a site for a new building or several existing buildings that may have the suitable design characteristics; and
 - (c) gathering other technical information relevant to the project. This information includes zoning requirements, onsite information, and range design criteria. Local zoning codes or health department regulations normally will provide answers or solutions on how the project is to be handled.
- d. Design Criteria. Based on the site selected, type of shooting, number of users, and site layout, the next step is to design the facility by preparing detailed drawings showing specifications and necessary dimensions. The four main considerations for indoor ranges are shooter needs, type of shooting activity, number of firing points, and number of users. Special consideration should be given to ventilation, lighting, safety baffles, and backstop design. The following standard and optional features for indoor ranges should be considered.
- (1) Backstops and Outdoor Baffled Bullet Stops. See “Use of Bullet Traps and Steel Targets” for Shoot House bullet trap information.

- (a) The design of a backstop or baffled bullet stop is a contributing factor to the service life of the unit. Steel should be installed according to the type of ammunition to be used and to proven angle configurations.
- (b) The design criteria should be based on the planned use of the facility. Metal plates selected for use in a backstop or baffled bullet stops must resist repeated stress according to the degree of stress applied. Necessary characteristics are resistance to abrasion, resistance to penetration, surface hardness, thickness, and alloyed strength to resist metal fatigue.
- (c) The main backstop is generally a fabricated steel plate or series of plates used to stop bullets fired on a range. Backstop configurations and plate thickness will change according to type of shooting activity.
- (d) Steel backstops with sand or water pits are common; however, a few indoor ranges use earthen or sand backstops.

CAUTION: Earthen or sand-filled backstops are not recommended because they can create health hazards for maintenance workers from silica and lead dust. They also cause excessive wear on ventilation fans.

- (e) Backstops must extend from side to side and from ceiling to floor to protect the end of the range completely from penetration by direct bullet strike and prevent ricochets, back splatter, and splatter erosion of side walls.
- (f) Four basic backstop designs are used for indoor ranges: Venetian blind, escalator, Lead-a-lator[®], and the angled backstop (45°) back plate. Other backstop designs exist and should be researched for applicable use.

1 Venetian Blind Backstop. Requires less space, but without proper installation and regular maintenance it can cause back splatter problems from exposed edges of each main segment of the backstop. Keeping the exposed edges ground to original specifications is time-consuming, difficult, and requires skilled personnel.

- a To control back splatter, a curtain should be hung in front of the backstop. Tests have been conducted on materials including canvas, burlap, cardboard, insulation board, and synthetic rubber. Properly installed, these materials effectively stop back

splatter. Walls using insulation board or a synthetic rubber curtain are best.

- b The main advantage of the venetian blind backstop is minimal space requirements. While an angled plate or an escalator will use 14 feet of space, the venetian blind uses only 5 feet.

2 Escalator Backstop. Sets up with flat steel plates laid out on a framework sloping away from the shooter. Between each series of plates, an offset allows a bullet sliding down the facing surface to drop into a hidden tray for easy cleanup. At the top or back of the backstop, a swirl chamber is provided to trap the bullets or bullet fragments as they exit the backstop surface. Once the bullet's flight ends in a spin-out chamber, the bullet or pieces fall into a cleanup tray.

3 Lead-a-lator[®]. A variation of the escalator-type backstop that uses a curved instead of flat piece of steel. The surface is concave and operates so that a bullet will follow the contour of the surface into a dry lead spinout chamber where it is trapped.

4 Angled Backstop (or 45° Inclined Plates). Uses a sand or water trap and has been the traditional alternative for indoor ranges.

- a The angle of the plate should never exceed 45° from the ground. The 45° plate and pit backstop is relatively inexpensive, but there are several disadvantages. Sand traps require frequent cleaning to remove bullet fragments. Cleaning operations require workers to wear high-efficiency particulate air (HEPA) filter masks if material is removed dry. It is best to dampen the sand trap material before and during cleaning operations to eliminate dust. To maintain a healthier internal environment, frequent removal, disposal, and replacement of lead-laden sand is required. The surface should be continually raked to keep the sand level and to guard against splatter as lead buildup occurs.

- b The cleaning operations are easier when a water trap is used. However, a water trap requires chlorine and other chemicals to retard algae growth and antifreeze in colder months to prevent freezing.

Installing a water pit requires a different approach to foundations and footings, especially in areas affected by earthquakes or freezing.

- (2) General Range Cleaning. Both dry and wet methods can be used to clean the range. The method selected depends on the frequency of use. The wet method is preferred when floor drains are available, and keeping materials wet during cleaning operations reduces or eliminates release of microscopic dust particles. When dry methods must be used, workers must use the appropriate personal protective equipment (PPE) that has been established by local industrial hygiene personnel. After cleaning operations are complete, workers must shower and have work clothing laundered.
- (3) Backstop Steel Plate Specifications.
 - (a) Steel plates supported by concrete or masonry should be anchored by expansion bolts or toggle bolts, as suitable for construction, with flush countersunk heads not more than 12 inches on center of all edges of each plate. Joints and edge lines should be backed with continuous ½-inch thick plate no less than 4 inches wide. Bolts should pierce both the facing and back plates. Expansion bolts should penetrate concrete not less than 2 inches. Steel plates must have milled edges at all joints.
 - (b) Joints must be butted flush and smooth. After the plates are erected, they must not have any buckles or waves. Exposed edges must be beveled at 42° to a fillet approximately ½-inch thick. There must be no horizontal joints in any steel plate work.
 - (c) Welding must meet the American Welding Society code for welding in building construction. Steel plates joined at, and supported on, structural steel supports must be spot-welded to steel supports not more than 6 inches on center.
- (4) Baffles, Deflectors, and Shields. Baffles on indoor ranges protect lighting fixtures, HVAC ducts, ceilings, and target carrier apparatus. Baffles are designed to protect against the occasional errant bullet but not for repeated bullet strikes.
 - (a) To cover or protect vulnerable ceiling areas or range fixtures, baffles must extend the entire width of the range and downward. Spacing of baffles on a 50 to 75 foot range depends on the ceiling design. Range distance (firing line to target line) and height are factors. Ceilings must be impenetrable.

- (b) Baffles or deflector plates must be used when modifying an existing building, especially in a building constructed of wood. This will prevent bullets from escaping or penetrating. Baffles should be a minimum of 10-gauge steel covered with a minimum of 1 inch of soft wood to prevent back splatter. The wood traps the projectile, whereas bare steel redirects it downward into the range area. A wood surface must be applied to overhead baffles, because ranges with untreated baffles usually show significant damage to concrete floors and often complete penetration through wood floors.
- (c) Baffles should be installed at a 25° angle as measured from the horizontal plane of the ceiling. The baffle size and placement depends on what surface areas require protection. For example, ceiling baffles are wider than side baffles.
- (d) Unlike baffles, deflectors are installed vertically and horizontally to redirect wide-angle shots into the backstop area. Deflector shields protect pilasters, leading edges of sand traps, bottom edges of backstops, doorways, windows, ventilation registers along the wall, etc. Deflectors are not covered with wood generally, but may be. These devices are also installed at a 25° angle either to the wall surface or floor.
- (e) To protect ceiling areas, special impenetrable shields are installed above the firing line, especially in wood frame buildings.
 - 1 Shields should extend the entire width of the range and 12 feet forward of the firing line. Floor shields may be required on wood floors.
 - 2 Shields must be constructed from metal sheets according to planned use. For example, 10-gauge steel covered with a minimum of 1 inch of soft wood is effective in stopping most pistol calibers.
- (5) Floors, Walls, and Ceilings. Indoor range facility floors, walls, and ceilings must be impenetrable; therefore, an existing building must have a structural analysis to determine loading factors that may exceed original design specifications. Wooden buildings may require modifications to support the increased weight. Specifications for new construction call for either poured-in-place concrete, pre-cast concrete, or dense masonry block. Solid cinder block should be used in place of hollow-core block. Specifications for modifying existing buildings call for adding additional materials to prevent bullet escape, which can be done with wood and steel laminated shields. Laminated shields can be constructed onsite by placing sheet-steel or steel plates between two sheets of 3/4-inch plywood. While

this method is more expensive than the extended booth design, it allows for an open firing line and better visibility for the range officer. Walls should be treated beginning 3 feet to the rear of, and extending forward of, the firing line until all vulnerable surfaces are protected. Acoustical material should be applied to the surfaces to aid in sound control.

- (a) Floors. The range floor should be constructed by using a single pour and a fine, uniform-aggregate mix of concrete. Reinforcement should be No. 4 steel rods placed 12 inches on center along with 6- by 6-inch 8/8-gauge welded wire fabric. This may vary according to soil conditions. Very large floor areas may require two or more pours with expansion joints between each slab.
- 1 The floor should be designed to slope down toward the target line, beginning at the firing line, ¼-inch per foot.
 - 2 The floor should be no less than 4 inches thick.
 - 3 Floor size is governed by design. Larger size will result in higher costs for ventilation, lighting, heating, and overall building design. The decisions should be based on expected number of users versus overall cost.
- (b) Floor Guards. Floor guards are provided to protect leading edges or protrusions; e.g., drains, traps or other protrusions from the floor area. Floor guards are designed to redirect errant bullets into the backstop area, which minimizes range damage.
- 1 Floor guards are constructed from 10-gauge steel and may be covered with wood.
 - 2 Floor guards are installed horizontally along the floor surface parallel to the firing line.
 - 3 Floor guards typically slope away from the firing line at a 25° angle to the horizontal.
 - 4 Floor guards should extend only as high as necessary to protect exposed surfaces.
- (c) Floor Drains. Floor drains should be constructed of cast iron soil pipe. The drain pipe should be attached to a lateral drain located 1 foot forward of the backstop floor guard. The drain pipe must lead to a filtration system approved by the cognizant environmental, safety, and health organization on the site.

- (d) Walls. Poured concrete or masonry is preferred for wall construction, but wood may be used. Wall thickness must conform to acceptable engineering standards and comply with Federal, State, county and local zoning codes. Usually, no less than 3-inch thick, reinforced walls should be constructed to prevent the exit of any projectiles.
- NOTE: This specification usually requires the use of steel or similar material where wooden walls are used. The size depends on building design, geological conditions, and climate. Size includes the height, thickness, and length of the running wall.
- (e) Ceiling. Ceiling material should reduce sound, protect lighting devices, reflect light and be impenetrable. Typically, ceilings include 10-gauge steel baffles, 2- by 4-foot white acoustic panels, and clear-light panels.
- 1 The ceiling should be a minimum of 8 feet above the floor level and have an acoustically treated, smooth surface to allow for positive air movement downrange.
 - 2 Baffles to protect adjoining areas should be above a false ceiling or designed into the roof/ceiling structure.
- (6) Shooting Booths. Commercial or locally built shooting booths may be desirable on pistol ranges; however, they are not recommended for rifle ranges. Shooting booth panels can provide an impenetrable barrier between shooters, reduce sound levels, restrict the travel of brass, and act as a spray shield when revolvers are used.
- (a) Shooting booths should be omitted for ranges that use only rifles.
 - (b) A shooting booth should never extend more than 18 inches behind the firing line because greater extension may obstruct the range control officer's visibility.
 - (c) Bullets fired from any firearm used on the range must not be able to penetrate booth panels. The booth panel must be able to withstand the impact of a bullet fired at any angle to the surface and at point-blank range.
 - (d) Design criteria for the construction of booth panels are as follows:
 - 1 Cover the 10-gauge steel plate with a nominal 2 inches of soft wood. In a series of tests using 10-gauge steel plate, firing all lead bullets at right angles, the plate covered with a nominal 2 inches of soft wood withstood direct hits from

- all standard pistol calibers up to, and including, .44 caliber magnum;
- 2 Use special acoustical materials to ensure that panels reduce muzzle blast effects on all shooters and range personnel;
 - 3 Ensure that panels do not restrict airflow;
 - 4 Ensure that panels do not restrict the range officer's visibility of the firing line; and
 - 5 Construct panels so they extend from the floor to a minimum height of 6 feet. Panels should be ceiling height.
- (7) Target Carriers and Turning Mechanisms. An indoor range can be operated more efficiently and safely by installing a target transport system. This system may be a simple, hand-made device or a completely automatic, electrically powered system. Either one will enhance safety by eliminating the need to walk downrange to replace targets. Target carrier systems speed up range operations. A turning target mechanism is available that faces the target parallel to the line of sight and then turns the target 90° to the line of sight to begin the stated time period. The target carriers should position the targets in the approximate center of the backstop.
- (8) Control Booth. Range control booths must allow for maximum visibility and provide for easy access into and out of the range and ready area. The control booth should provide seclusion from and immediate access to the range environment. This design protects the range officer from frequent exposure to high sound levels and lead emissions.
- (9) Communications. A communications system capable of relaying range commands distinct and separate from the sounds generated by shooting activities is required. Communications systems must account for shooters who wear two pairs of hearing protectors and persons who have substantial hearing loss.
- (10) Ventilation and Filtering Systems. This section deals with the design or redesign of ventilation systems for indoor firing ranges. Administrative or engineering controls must be instituted to prevent shooters from being exposed to airborne lead levels exceeding acceptable limits. Administrative controls are used either when engineering controls fail to reduce exposure or when range use exceeds HVAC system specifications. Administrative controls are especially applicable to reducing risks on existing ranges.

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- (a) Administrative controls used to reduce exposure levels on an indoor range must be rigidly followed and enforced, and compliance must be recorded in a log book for purposes of analysis and reference.
 - (b) The following administrative controls are provided and must be used where individuals are frequently exposed to airborne lead.
 - 1 Provide range maintenance personnel with appropriate PPE; e.g., safety glasses and respirators.
 - 2 Provide proper HEPA filter cleaning equipment. The equipment must be able to remove accumulated lead dust from floors, walls, and ledges and must include attachments capable of removing lead-laden sand from the backstop area.
 - (c) A ventilation system must be installed that will provide clean air in the user's breathing zone to reduce exposure to potentially dangerous materials to safe levels.
 - (d) Adopt administrative controls that monitor and control exposure time for a given user and/or assigned range personnel.
- (11) Lighting.
- (a) A visually safe facility should be free of excessive glare and major differences in light levels. Therefore, floors and ceilings should be designed to provide light reflection. In the event of a power outage, battery-powered emergency lighting must be provided for emergency exits.
 - (b) Rheostat-controlled lighting fixtures, which can reproduce near-daylight and low-light conditions, are best suited for indoor ranges. Range lighting involves three systems: general lighting, local lighting, and semi-direct lighting.
 - 1 General lighting provides uniform light levels over the entire range area and adjoining areas and is usually installed in a symmetrical arrangement to blend with the architecture.
 - 2 Local lighting supplements general lighting along the firing line to provide better visibility for those tasks associated with the loading and firing of firearms.
 - 3 Semi-direct lighting distribution directs 60 to 90 percent of the lighting on the target with a small upward component to

reflect from the ceiling and walls to soften shadows and generally improve range brightness. When ceilings are white, lighting fixtures mounted too close together create excessive glare.

- (c) Lamp specifications for general lighting must be adjustable to provide 0.2 to 50 foot-candles of luminance measured at a point 7 yards from the target line. Local lighting should produce 0.2 to 60 foot-candles of luminance on the firing line. Semi-direct lighting on the targets should achieve 0.2 to 100 foot-candles of luminance. Glare should be reduced or eliminated by incorporating pastel colors in the interior design.
 - (d) Lighting designs should also seek to balance the color of light emissions. For example, most fluorescent fixtures produce high levels of blue, which alone are not suitable for indoor ranges. If fluorescent fixtures are used, green tubes or other light sources should be installed to balance the colors.
- (12) Plumbing. Plumbing requirements specify that there must be a fresh water supply for personal hygiene and for range cleaning chores. There also must be a waste removal system for normal waste material and material removed from the range. An approved filtration system must be provided for range cleaning waste. Floor drains should be connected to this alternate waste system. Restrooms, showers, and sinks should be connected to a regular sewer system.
- (13) Sound Control. Sound control on indoor ranges includes two distinct components: airborne and structure-borne sound. For airborne sound, all leaks into outer areas should be sealed, which includes airtight insulation around doors, windows, HVAC ducts, walls, and ceilings. Structure-borne sound reduction is necessary to protect adjoining, occupied rooms. Acoustical material should be applied to walls, HVAC ducts, floor, and ceiling areas.
- (14) Range Control. Range control provides rules and supervision that encourage safe and proper use of a range. Safety devices control the physical use of an indoor range and may include warning lights, alarm bells, switch locations, etc. For example, an indoor range with a door in the downrange area should be equipped with an alarm. The door could also be secured by a mortise lock or barred from within but must remain a fire exit. Fire codes generally prohibit bars on doors that would delay escape from a building. Emergency personnel must be able to access the doors. Any door that can be accessed from the outside must be marked with warning devices to indicate when the range is in use. When installing doors on indoor ranges, refer to Life Safety Code National Fire Protection Association (NFPA) 101.

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- (15) Target Carriers. Target carriers are used for the convenience of shooters to allow them to continue shooting without delay when target changes are necessary. For health considerations, target carriers keep shooters out of the high lead concentration areas and safely behind the firing line.
- (16) Heaters. Protected heating units should be installed behind and above the firing position to provide a comfort zone for shooters.
- (17) Gun Racks. Gun racks should be mounted behind the firing positions as an additional safety feature to reduce gun handling and to keep the range areas orderly. Appropriate material should be used to construct the gun racks, and the design must correspond to the weapons being used.

6. LIVE FIRE SHOOT HOUSE.

a. Introduction.

- (1) A live fire shoot house (LFSH) is intended for use in advanced tactical training for Security Police Officers. Use of this facility includes individual tactics or Special Response Team force option training. All LFSHs must have an elevated observation control platform (EOCP). The following sections illustrate recognized construction methods for LFSHs. However, they do not eliminate the requirement for sound professional engineering design and validation.
- (2) Administrative controls not directly related to design and construction must be in place during facility use. The administrative controls and engineering design allow for a reduction in physical barriers that prevent rounds from escaping the facility. Designed barriers must prevent a round fired with a vertical upward error of 15° from escaping the facility.

b. Site Selection.

- (1) Site selection for an LFSH is similar to that for any range facility. Terrain features, noise, and availability of utilities and access roads must be considered, as already discussed in previous sections for indoor and outdoor ranges. The LFSH should be placed adjacent to other range facilities whenever possible so that it may utilize the same support facilities, access roads, etc.
- (2) Facility design, target and shooter placement, and other administrative controls minimize the possibility of rounds being fired over the top of the walls and leaving the structure and mitigate the need for an SDZ outside the confines of the LFSH proper.

c. Design and Layout.

- (1) The interior layout of the facility is based on the mission and training requirements of the site. Facility design should incorporate a wide variety of room configurations. Some of the room configurations that should be considered are: multiple floors, an L-shaped room, stairwells, rooms within a room, hallways, and closets.
- (2) The floor plan design should accommodate the movement of target systems, bullet traps, and other equipment into and out of the LFSH.
- (3) Exposure to airborne contaminants for a fully enclosed LFSH must be controlled by adequate ventilation. The lighting requirements are similar to those for indoor ranges.

d. Wall Construction.

- (1) Wall Height. Exterior walls of the LFSH must be designed to absorb the most energetic projectile identified for use within the facility. Wall height must be a minimum of 8 feet. The wall height should allow a maximum error angle of 15° from horizontal standing shooting distance from the target and still enable a projectile to be contained by the wall, which can be described by the following equation: Wall Height is equal to the muzzle height plus 0.27 (tangent 15°) times the target distance. The following table assumes a muzzle height of 5 feet.

<u>Distance from Muzzle to Ballistic Wall (Feet)</u>	<u>Wall Height (Feet)</u>
11' 1"	8' 0"
13' 3"	8' 6"
14' 10"	9' 0"
17' 0"	9' 6"
18' 6"	10' 0"
20' 9"	10' 6"
22' 2"	11' 0"
24' 5"	11' 6"
25' 11"	12' 0"

If the distance from muzzle to ballistic wall exceeds the required wall height, other administrative, engineering or natural ballistic wall controls must be administered or considered such as shooter-to-instructor ratio, canopies, baffles, natural terrain, existing SDZ, standard operating procedures, and training.

- (2) Ballistic Walls. Ballistic interior walls are the preferred method of construction. Where non-ballistic interior walls are used, additional administrative controls must be applied to target placement and team

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choreography. Ballistic walls are required in all cases where containment of the round and protection of personnel is paramount.

- (a) Footings. Footings must be designed using the engineering criteria that best ensures structural integrity and stability of wall construction.
- (b) Composite Walls.
 - 1 A combination of $\frac{3}{4}$ -inch exterior grade plywood and steel is effective. Minimum thickness will be $\frac{1}{4}$ -inch mild steel with an exterior-grade plywood separated by a minimum of $\frac{3}{4}$ inch with a maximum of $1\frac{1}{2}$ inches from the steel surface.
 - 2 Other combinations are possible. The main criterion is that the wall must stop any round fired and contain bullet fragments.
- (3) Non-Ballistic Walls. These walls are constructed of materials that offer no protection to personnel or equipment in adjoining rooms. Material used for these walls must not contribute to or enhance ricochet or splatter. Additional administrative controls must be applied such as target placement and team choreography.
- e. Doors. All doors must be constructed of wood with no glass. Additionally, at least a portion of the rooms must have working doors, some opening inward, some opening outward, and doors opening left and right.

NOTE: All devices in the LFSH, such as brackets and hangers, used to secure walls to floors or secure doors must be covered or protected to mitigate any tripping or ricochet hazards.
- f. Ceiling or Roofs. Ceilings or roofs can be of value when the shoot house is required for year-round use in areas with severe weather conditions. Exposure to airborne contaminants must be controlled by adequate ventilation. The lighting requirements for fully enclosed shoot houses are similar to those for indoor ranges. When training exercises require target placement above the wall design, the ceiling or roof must be protected unless firing into an approved SDZ.
- g. Floors.
 - (1) Floor construction must be selected for its ability to absorb direct fire, minimize ricochets, and provide a walking surface free of slipping/tripping hazards. Floors should provide the same ricochet protection as walls. Options include:

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- (a) exterior-grade plywood floor constructed in accordance with American Plywood Association guidelines over smooth finished concrete;
 - (b) concrete with brushed surface that minimizes slip and tripping hazards;
 - (c) asphalt;
 - (d) exterior-grade plywood;
 - (e) shredded bias-ply tires; and
 - (f) earth, free of rocks and debris that could cause ricochet.
 - (2) Construction joints between walls and floors must be designed to contain projectiles within the LFSH.
- h. Bullet Traps.
 - (1) General Information.
 - (a) Targets used in LFSHs must be placed so that fire is directed into a bullet trap designed to capture the rounds.
 - (b) Bullet traps must be constructed to contain the most energetic projectile to be fired into them without dimpling/pitting the steel and contain splatter and fragments in all directions. The size and shape of a bullet trap may be altered, but materials may not be substituted.
 - (2) Specifications for construction. See “Use of Bullet Traps and Steel Targets” for Shoot House bullet trap information.
- i. Elevated Observation Control Platform (EOCP).
 - (1) EOCPs enhance the ability to observe and control LFSH operations. Administrative controls must be considered when constructing the EOCP. Platform construction and location is based on the training to be conducted. EOCPs must be constructed in accordance with all applicable regulations for elevated work platforms.
 - (2) EOCPs must be constructed to:
 - (a) maximize instructors’ observation and control of the entry team fire and movement;

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- (b) facilitate communication between instructors on the EOCP and the floor;
- (c) position the lowest point of the horizontal walking surface higher than the 15° vertical error for any target engaged;
- (d) provide ready access;
- (e) integrate instructors' movement with team flow;
- (f) maximize instructors' ability to see shooters clearly at all times;
and
- (g) have supporting structures placed so that they pose no additional hazards such as tripping, ricochet, splatter, etc.

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Attachment 1
Attachment 1-1

ATTACHMENT 1 -- RANGE DESIGN FIGURES

- Figure 1. Surface Danger Zone for Small Arms Firing at Fixed Ground Targets
- Figure 2. SDZ for Small Arms Weapons Firing at Moving Ground Targets
- Figure 3. SDZ for Small Arms Firing at Fixed Ground Targets with Rocky Soil or Targets Causing Ricochet
- Figure 4. SDZ for Firing M79, M203, and M19 40mm Grenade Launchers
- Figure 5. SDZ with Impact Berm for Small Arms Firing at Fixed Ground Targets
- Figure 6. Open Range with Impact Berm and Side Protection SDZ for Small Arms Firing at Fixed Ground Targets
- Figure 7. SDZ for Partially Baffled Range (Small Arms Firing at Fixed Ground Targets)
- Figure 8. SDZ for Fully Baffled Range (Small Arms Firing at Fixed Ground Targets)
- Figure 9. Ballistic Overhead Canopy
- Figure 10. Outdoor Rifle Range Layout
- Figure 11. Pistol Range Layout
- Figure 12. Ballistic Material
- Figure 13. Ballistic Protection of Target Mechanism
- Figure 14. Impact Berm for Open and Partially Baffled Ranges
- Figure 15. Outdoor Baffled Bullet Stop
- Figure 16. Baffled Range Profile
- Figure 17. Baffled System Geometry
- Figure 18. Overhead Baffle Ballistic Designs
- Figure 19. Parallel Ranges

Attachment 1
Attachment 1-2

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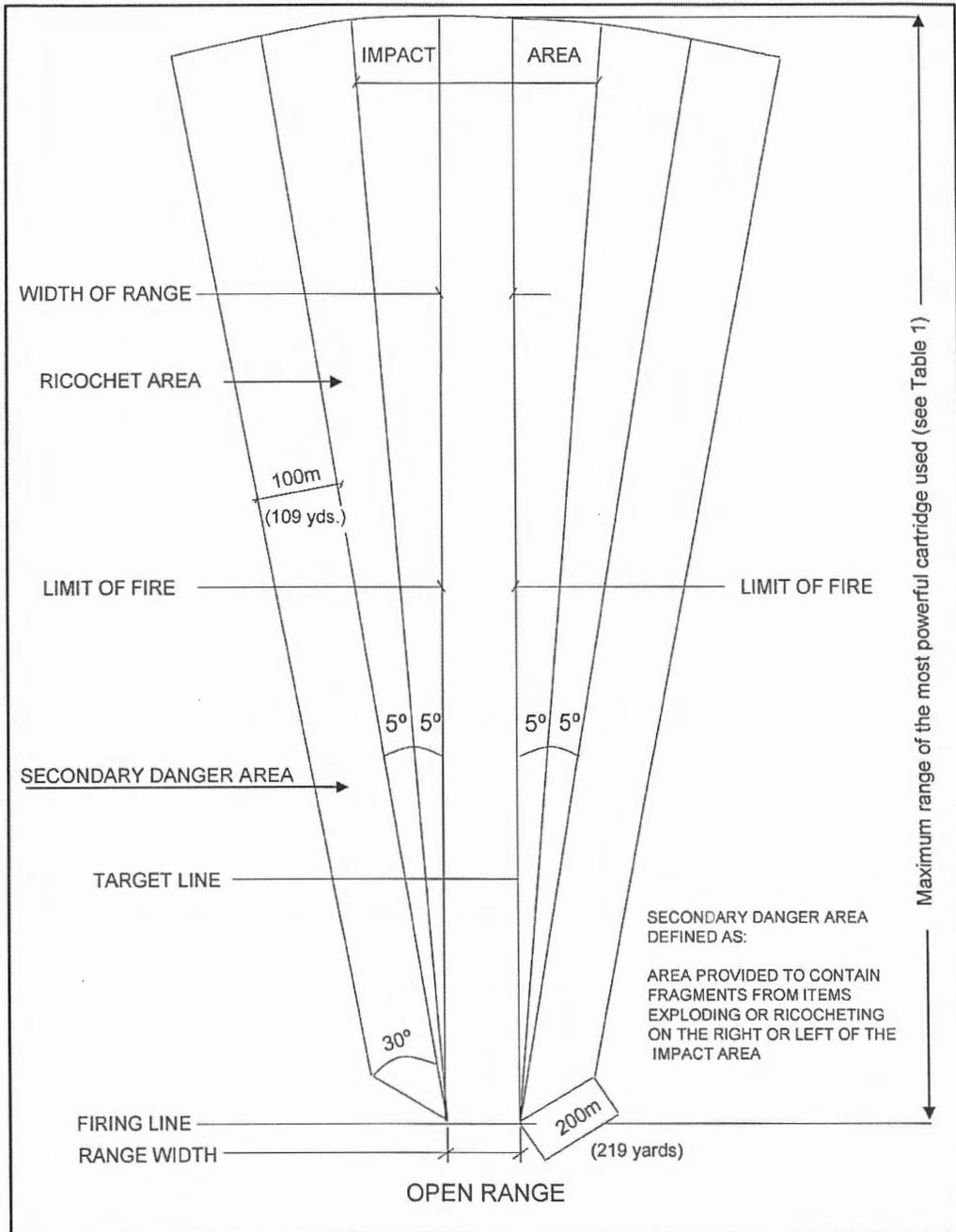


Figure 1
Surface Danger Zone for Small Arms
Firing at Fixed Ground Targets

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Attachment 1
Attachment 1-3

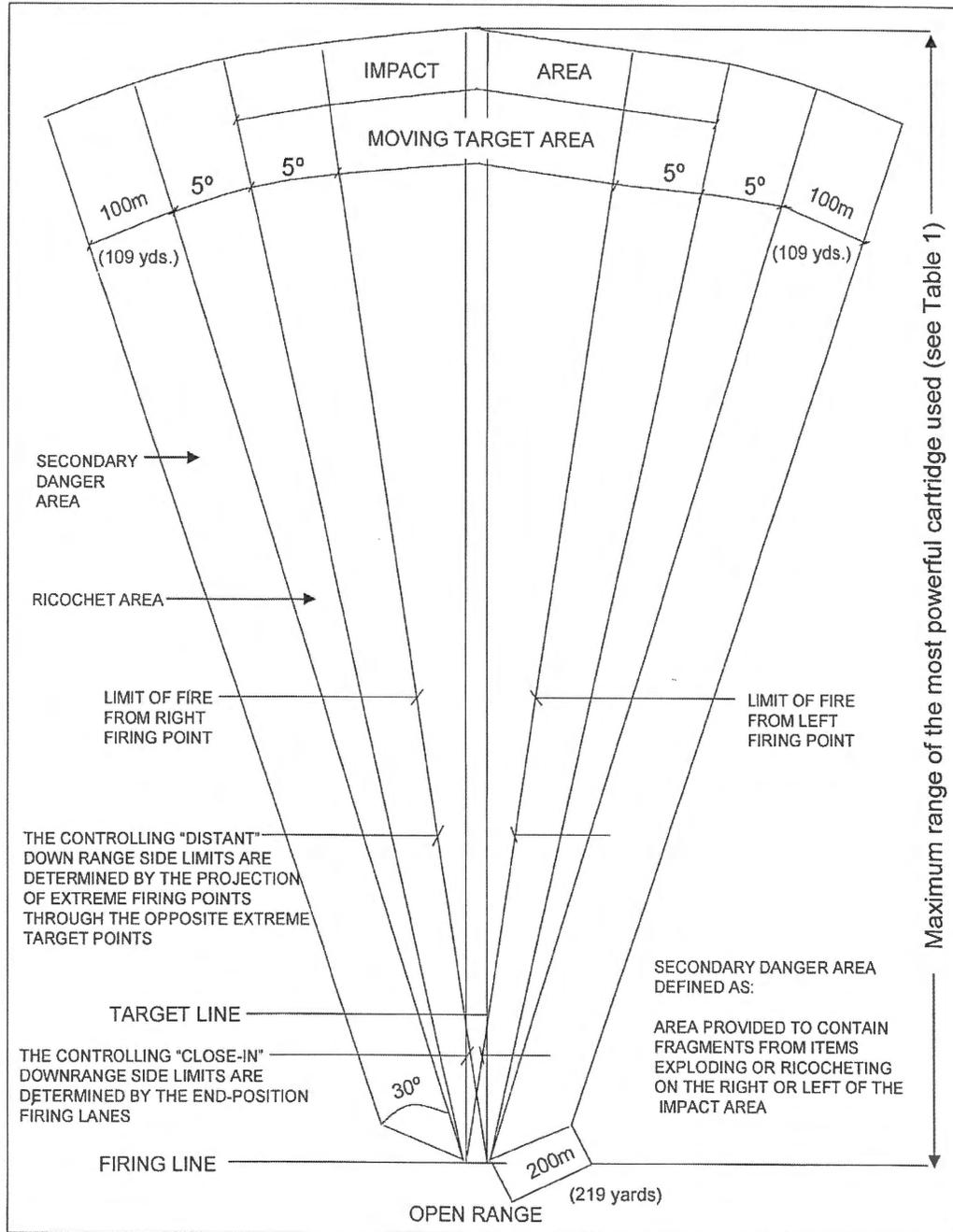


Figure 2
Surface Danger Zone for Small Arms Weapons
Firing at Moving Ground Targets

Attachment 1
Attachment 1-4

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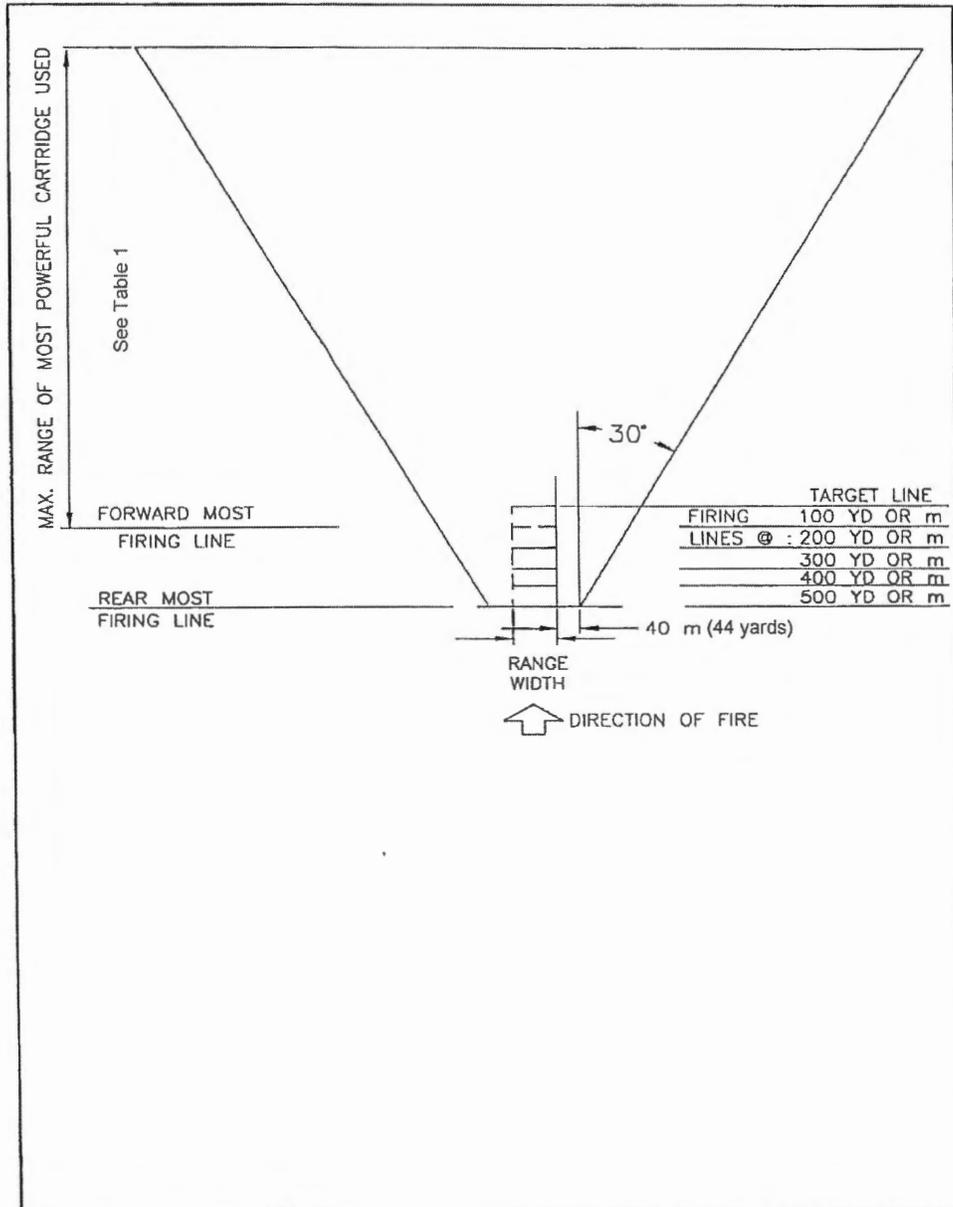


Figure 3
Surface Danger Zone for Small Arms Firing
At Fixed Ground Targets with Rocky Soil
Or Targets Causing Ricochet

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Attachment 1
Attachment 1-5

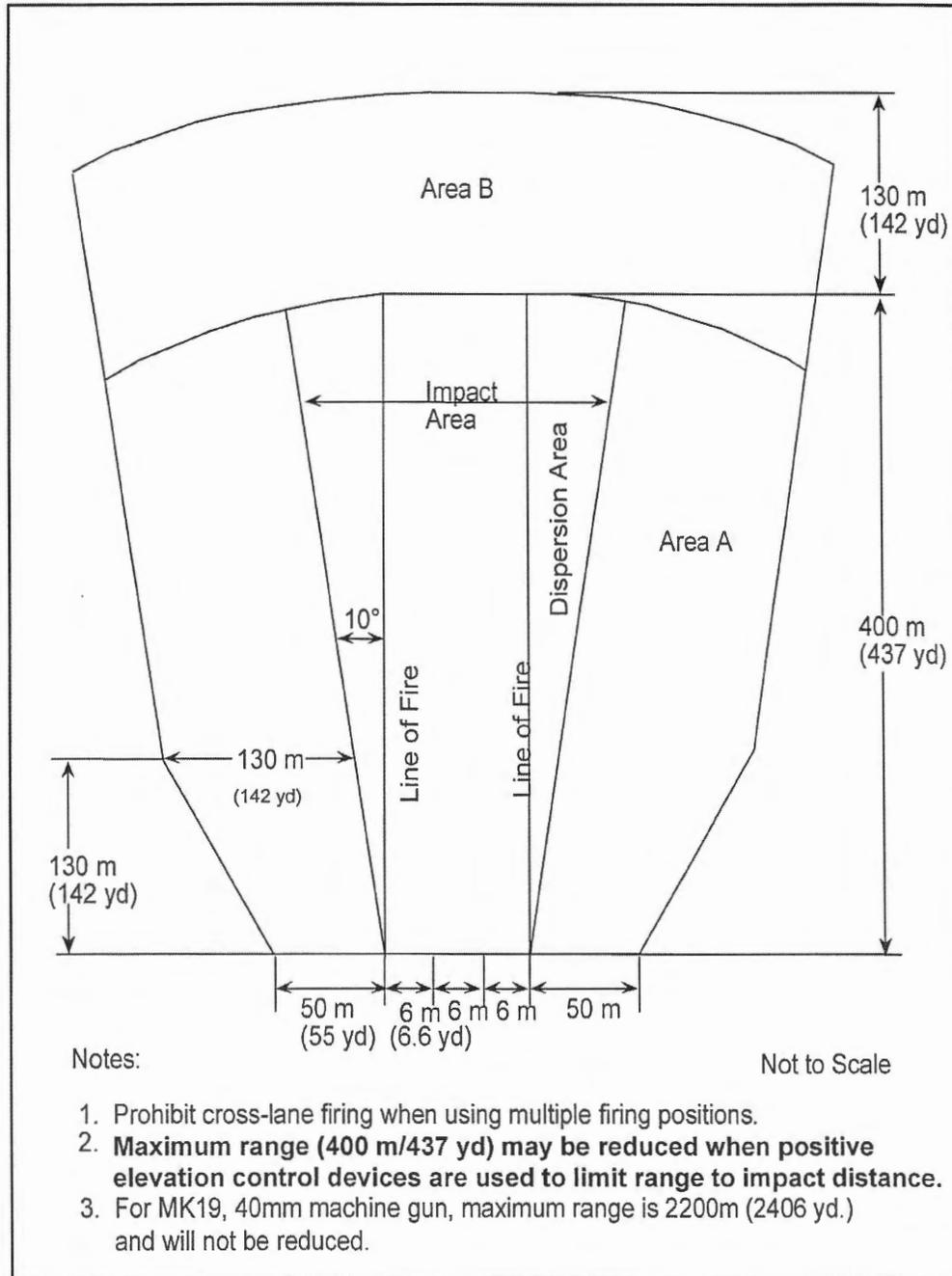


Figure 4
Surface Danger Zone for Firing
M79, M203, and M19 40mm Grenade Launchers

Attachment 1
Attachment 1-6

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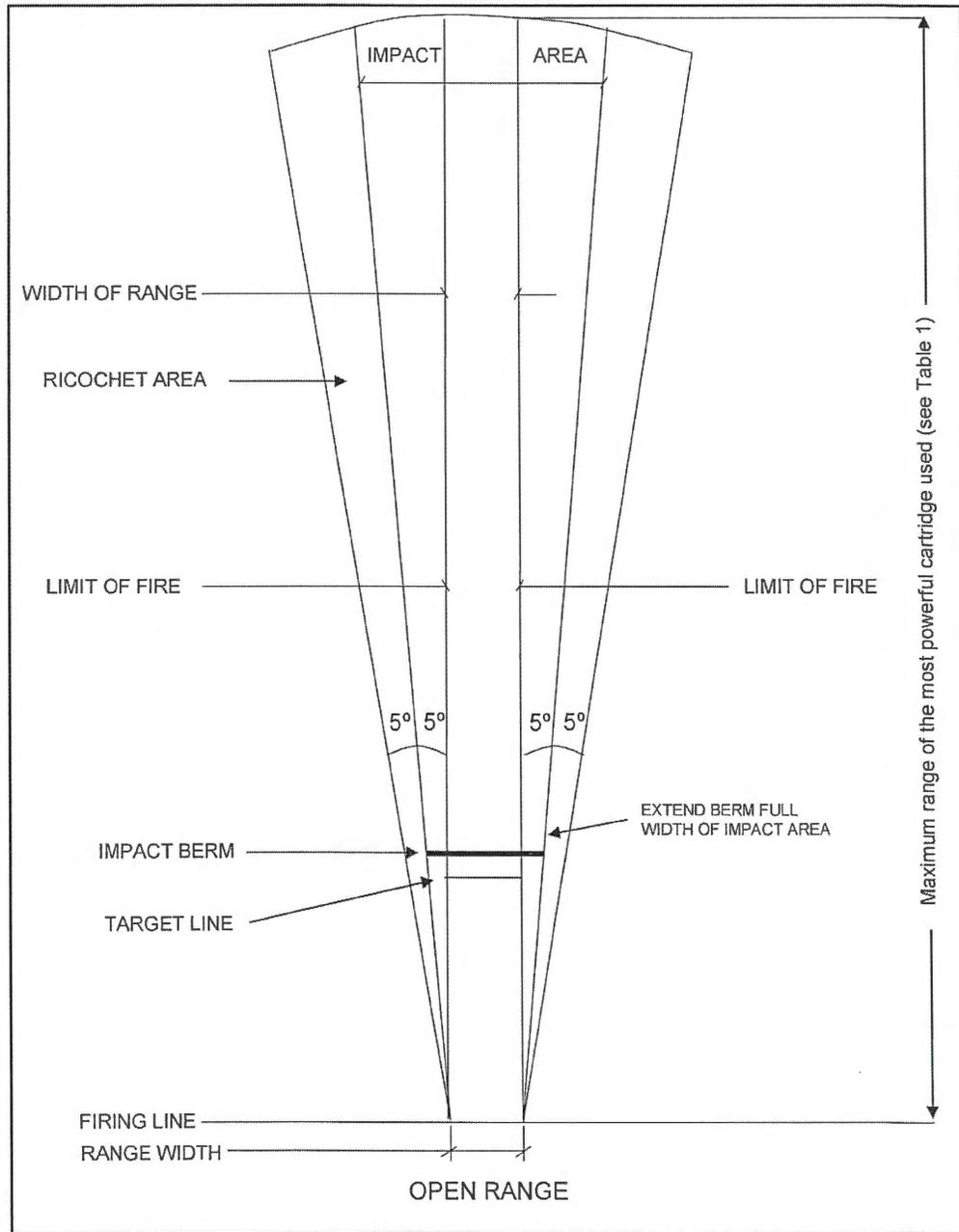


Figure 5
Surface Danger Zone with Impact Berm
for Small Arms Firing at Fixed Ground Targets

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Attachment 1
Attachment 1-7

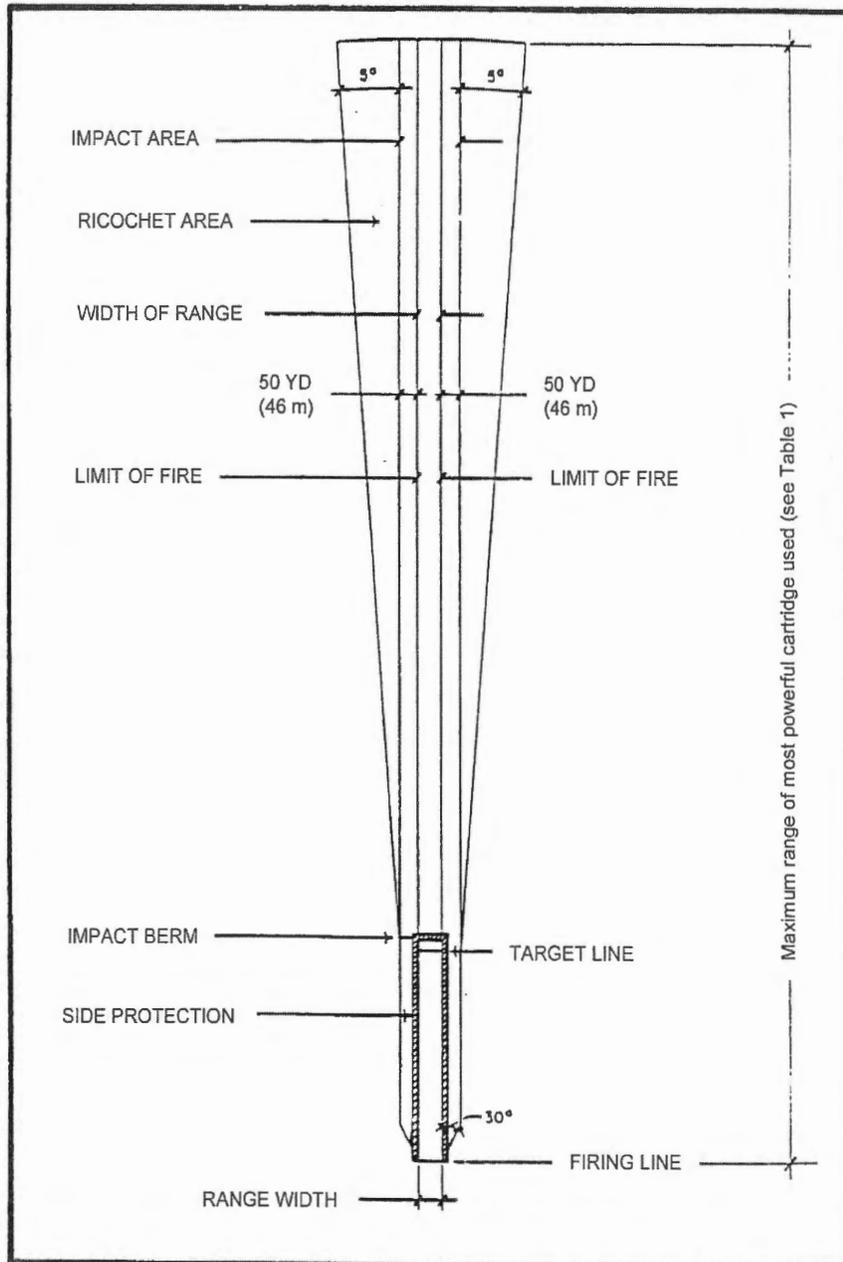


Figure 6

Open Range with Impact Berm and Side
Protection Surface Danger Zone for Small Arms
Firing at Fixed Ground Targets

Attachment 1
Attachment 1-8

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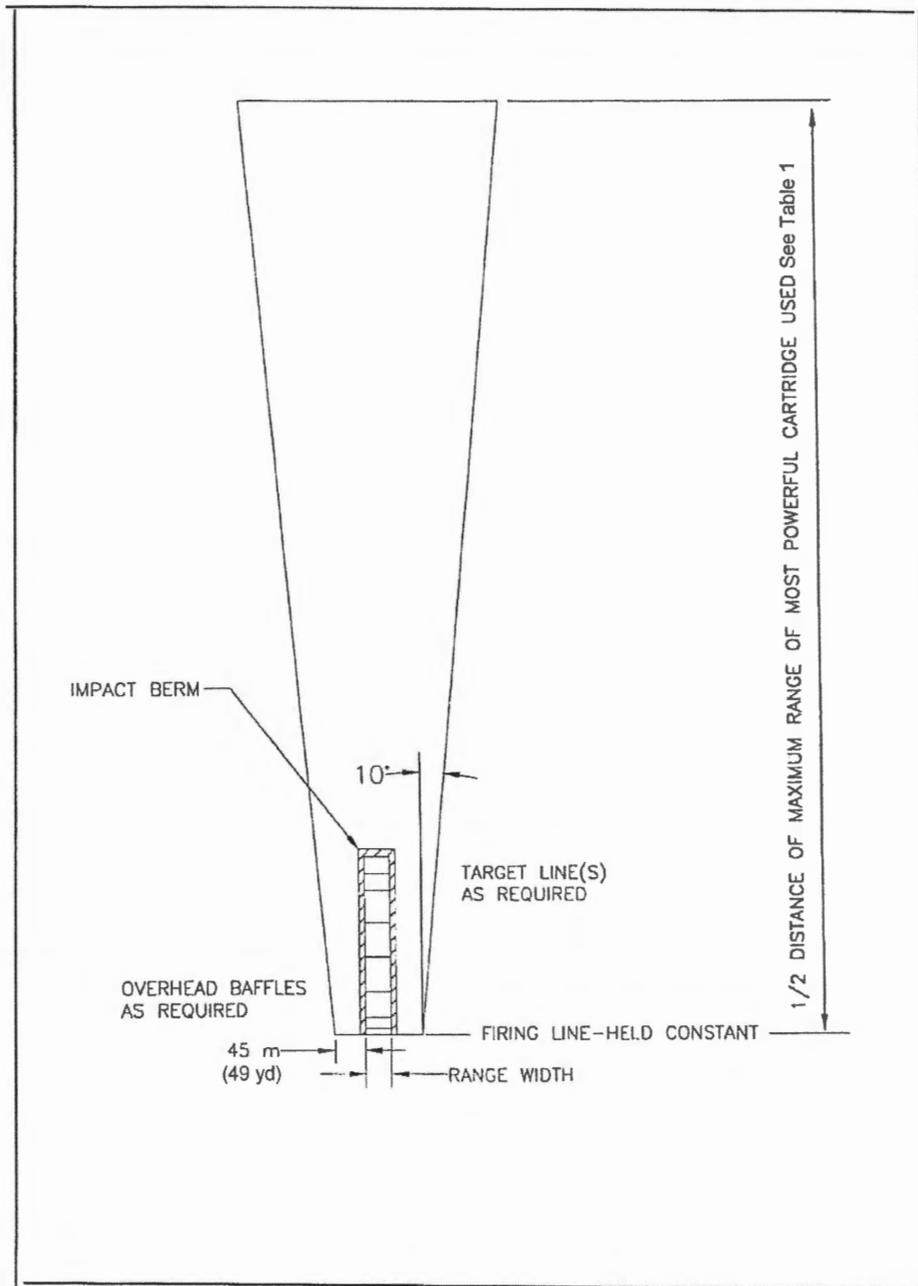


Figure 7
Surface Danger Zone for Partially Baffled Range
(Small Arms Firing at Fixed Ground Targets)

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Attachment 1
Attachment 1-9

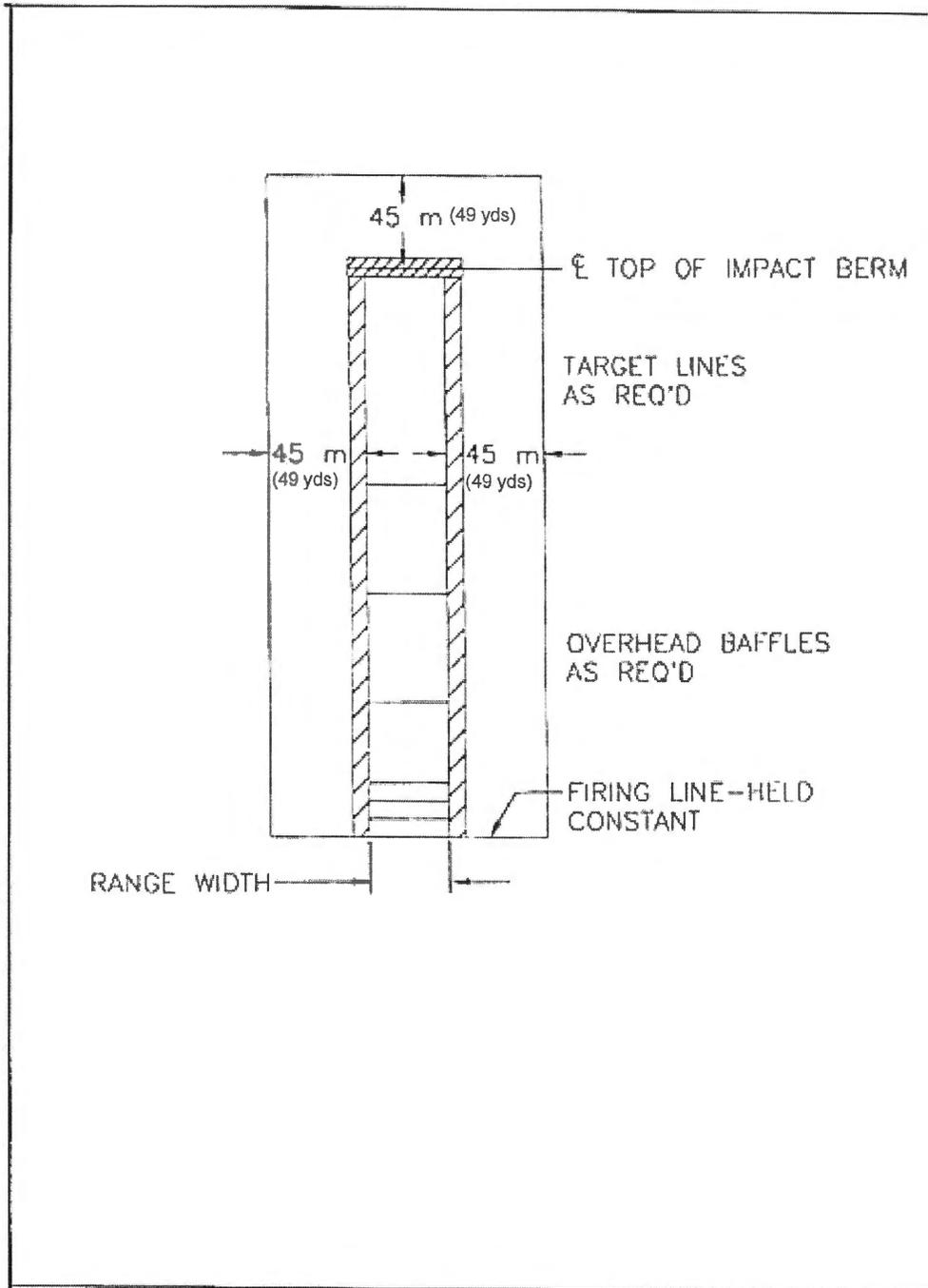


Figure 8
Surface Danger Zone for Fully Baffled Range
(Small Arms Firing at Fixed Ground Targets)

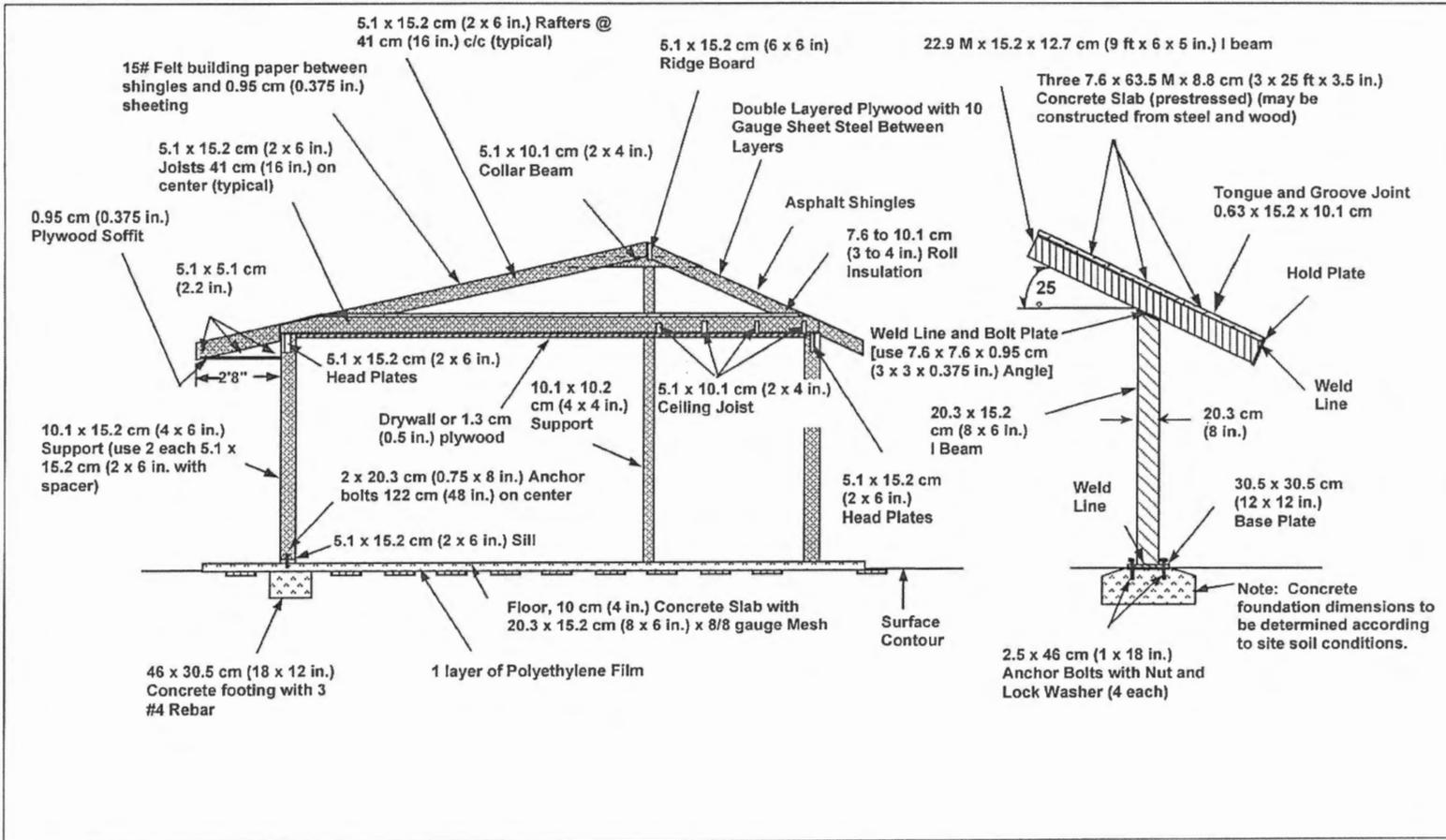


Figure 9
Ballistic Overhead Canopy

Attachment 1
Attachment 1-10

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Attachment I
Attachment I-11

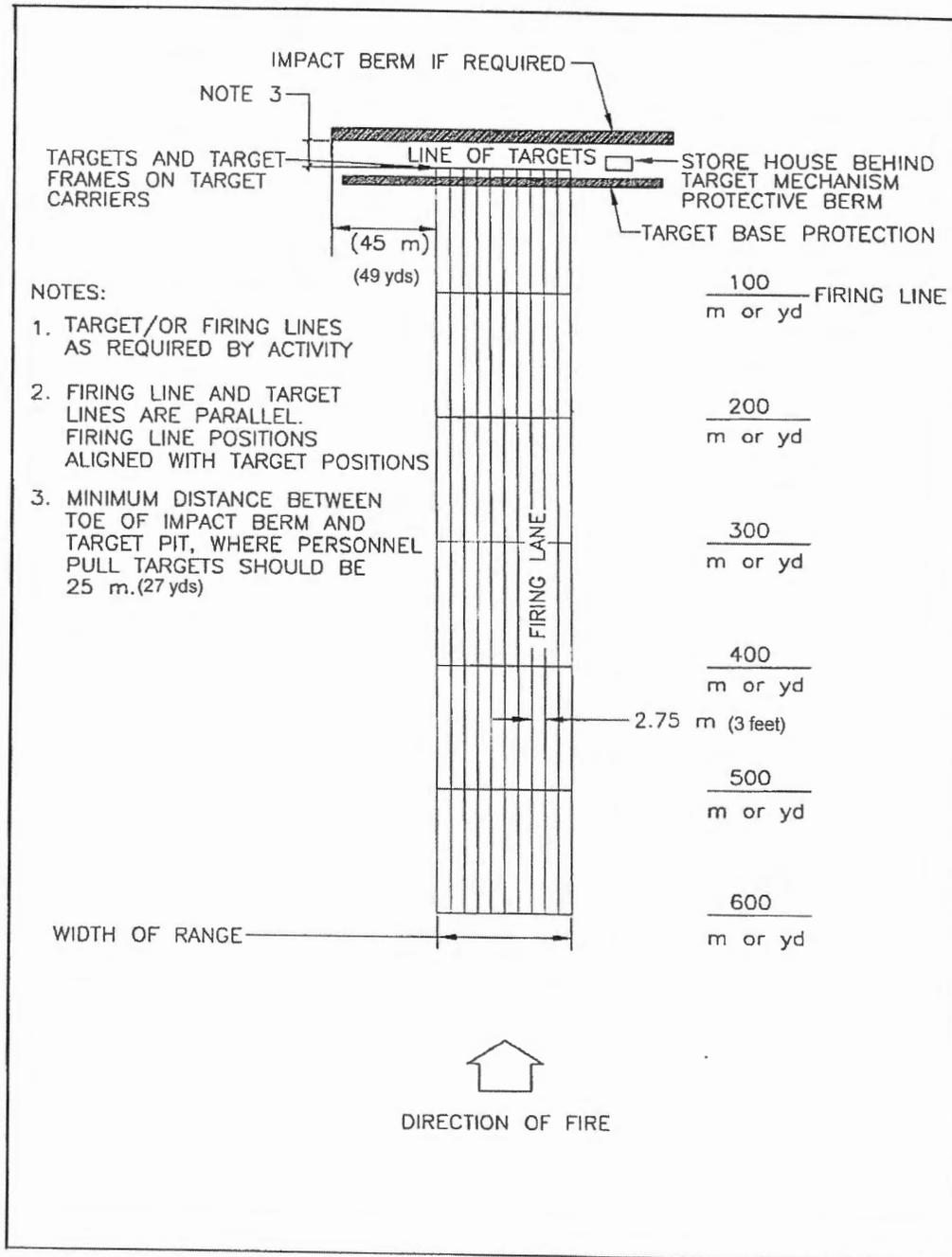


Figure 10
Outdoor Rifle Range Layout

Attachment 1
Attachment 1-12

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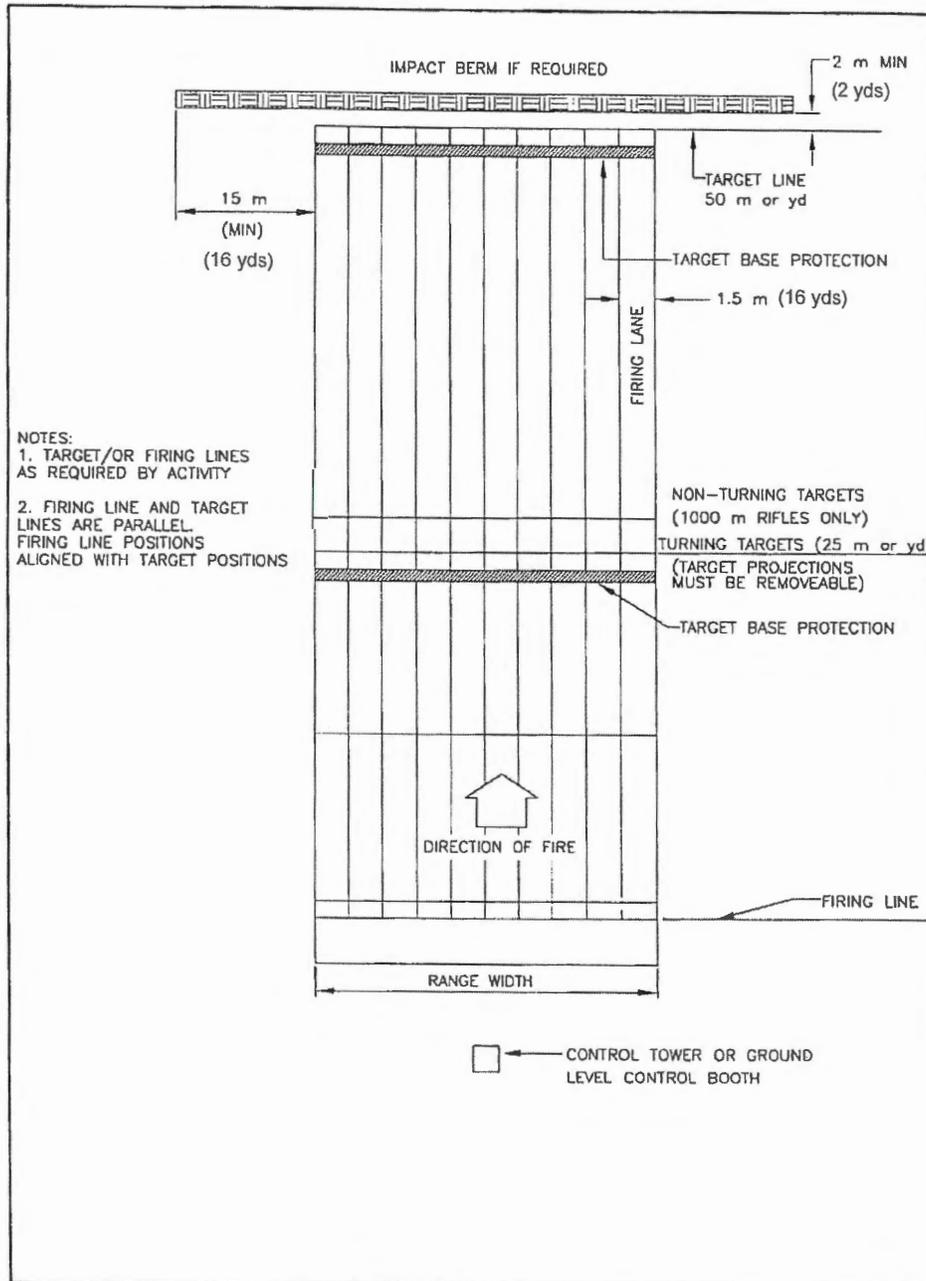


Figure 11
Pistol Range Layout

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Attachment 1
Attachment 1-13

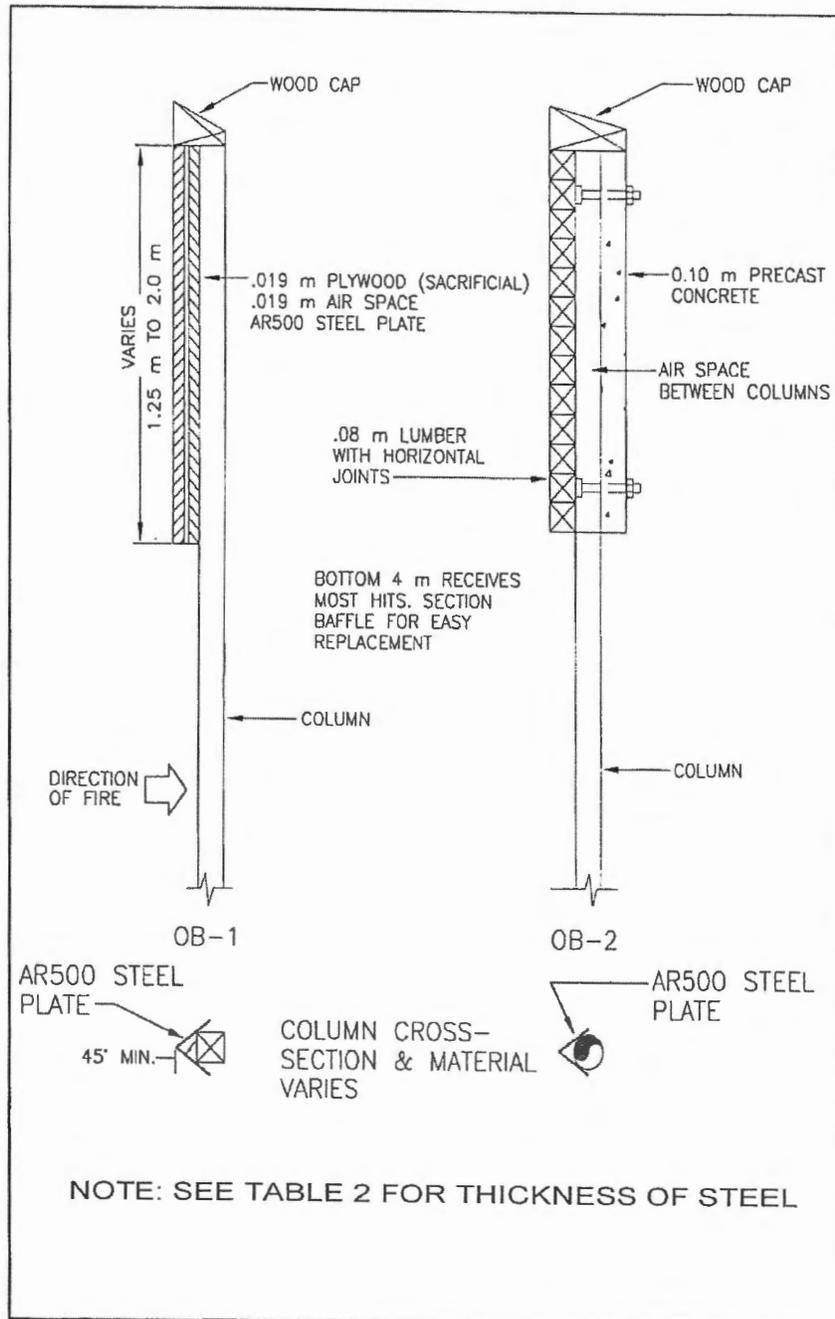


Figure 12
Ballistic Material

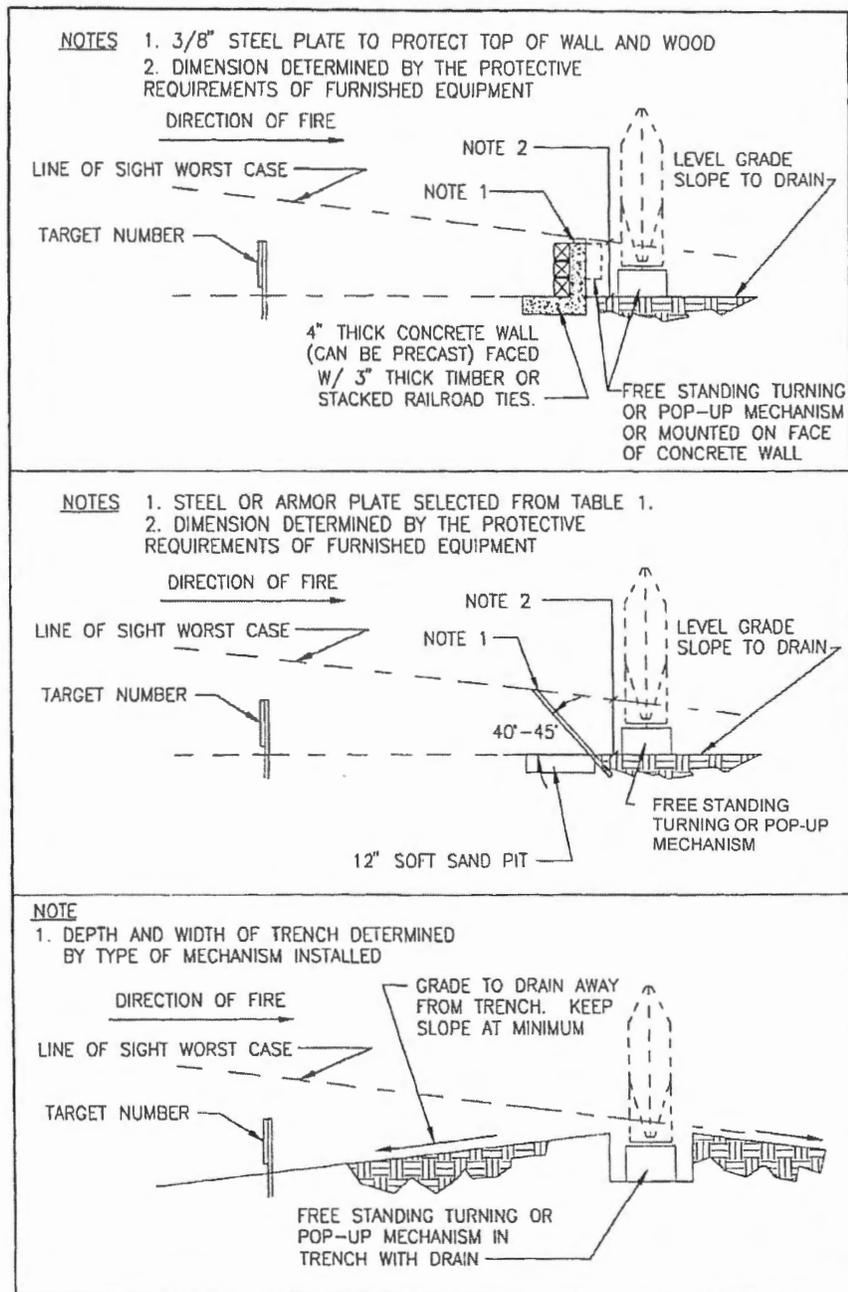


Figure 13
Ballistic Protection of Target Mechanism

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Attachment 1
Attachment 1-15

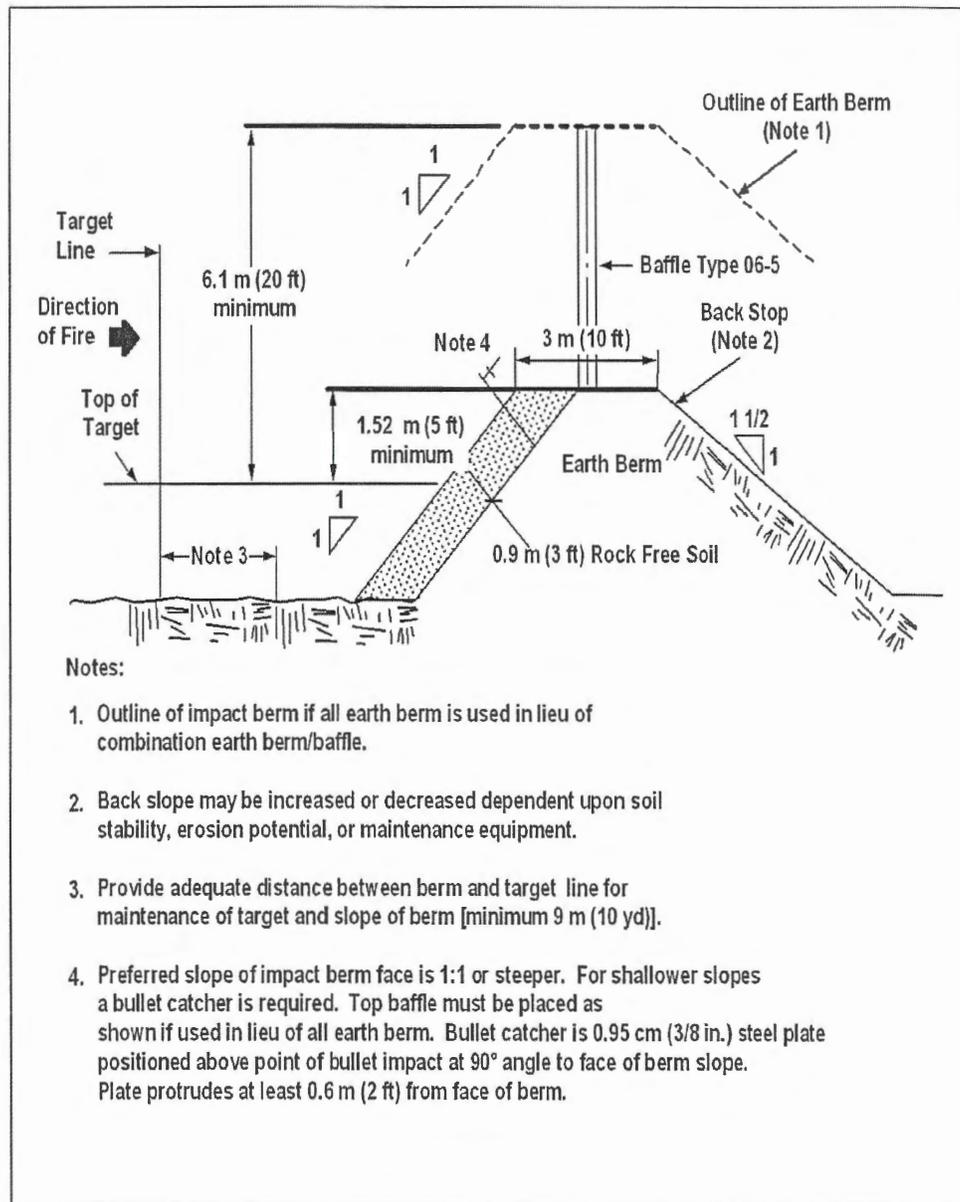
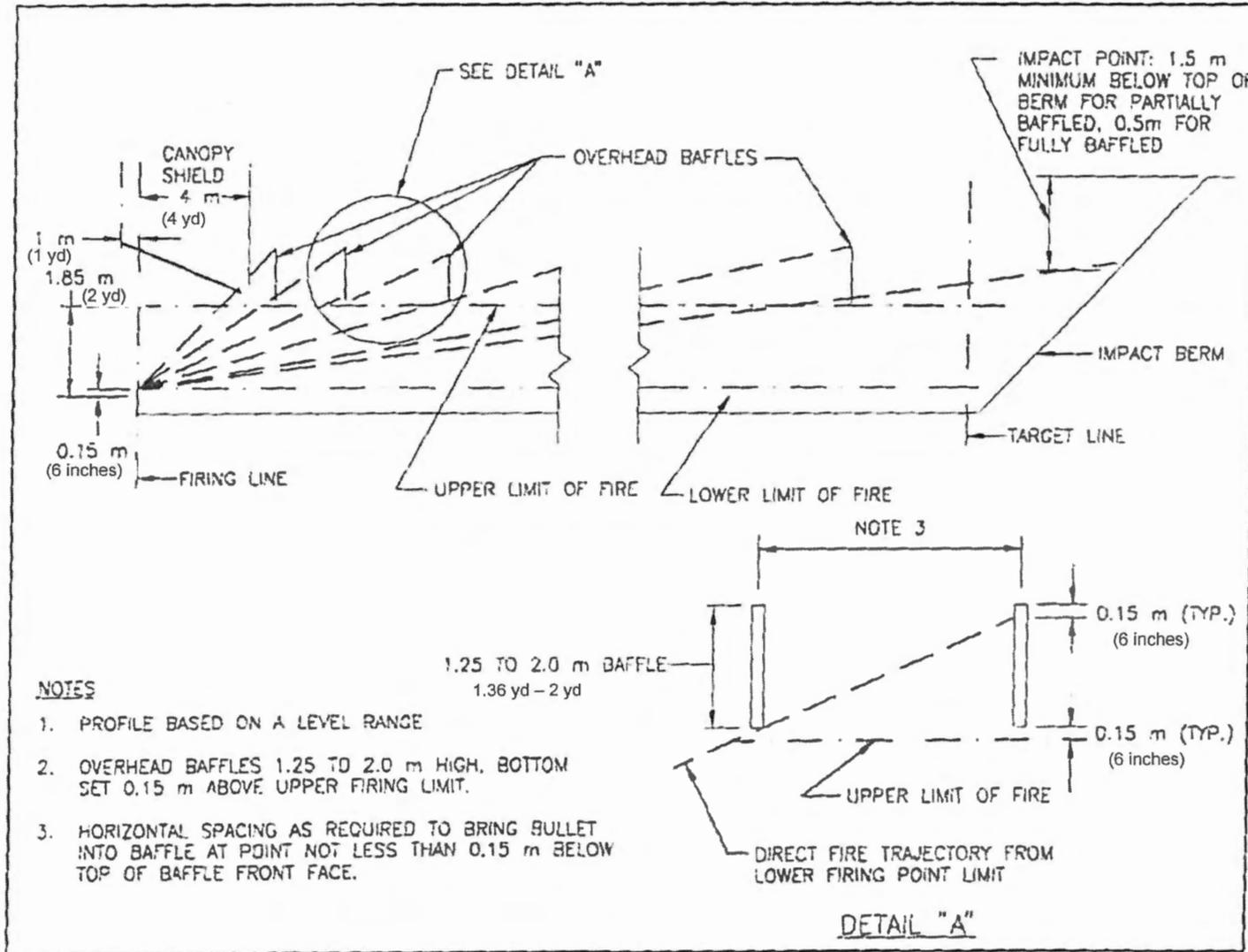


Figure 14
Impact Berm for Open and
Partially Baffled Ranges

Figure 16
Baffled Range Profile



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Attachment 1
Attachment 1-17

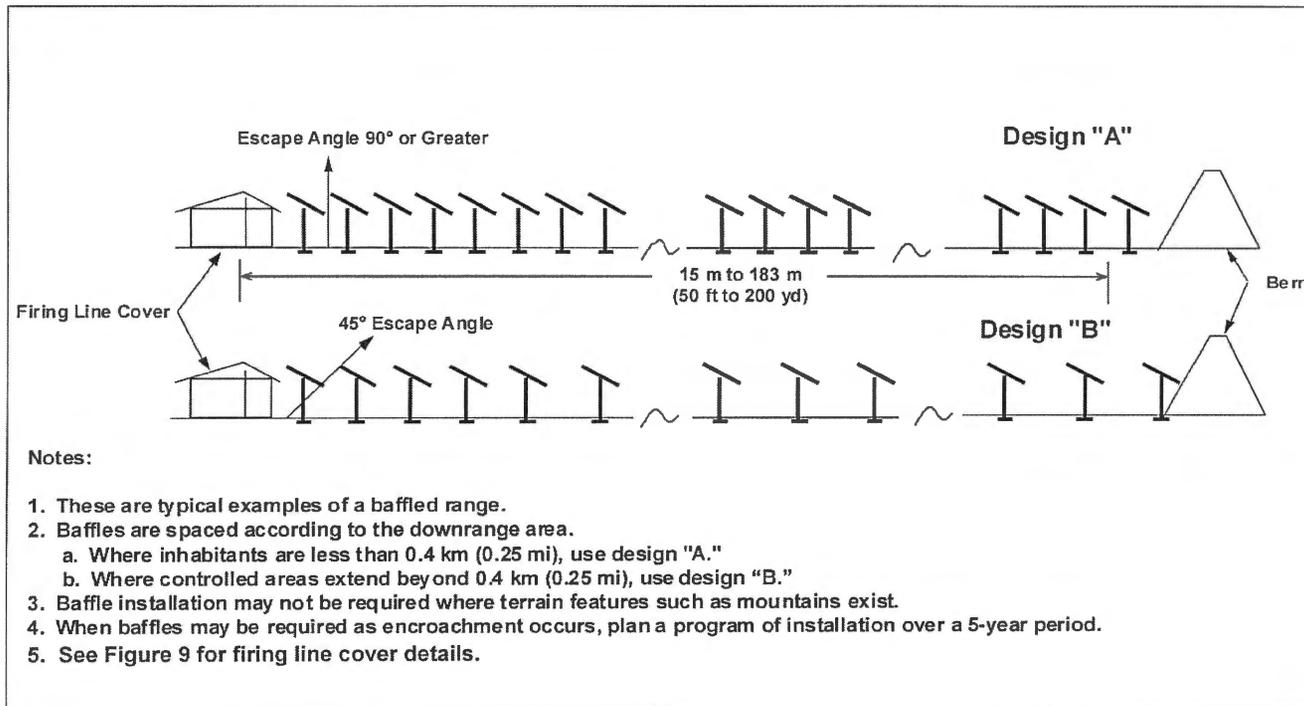


Figure 17
Baffle System Geometry

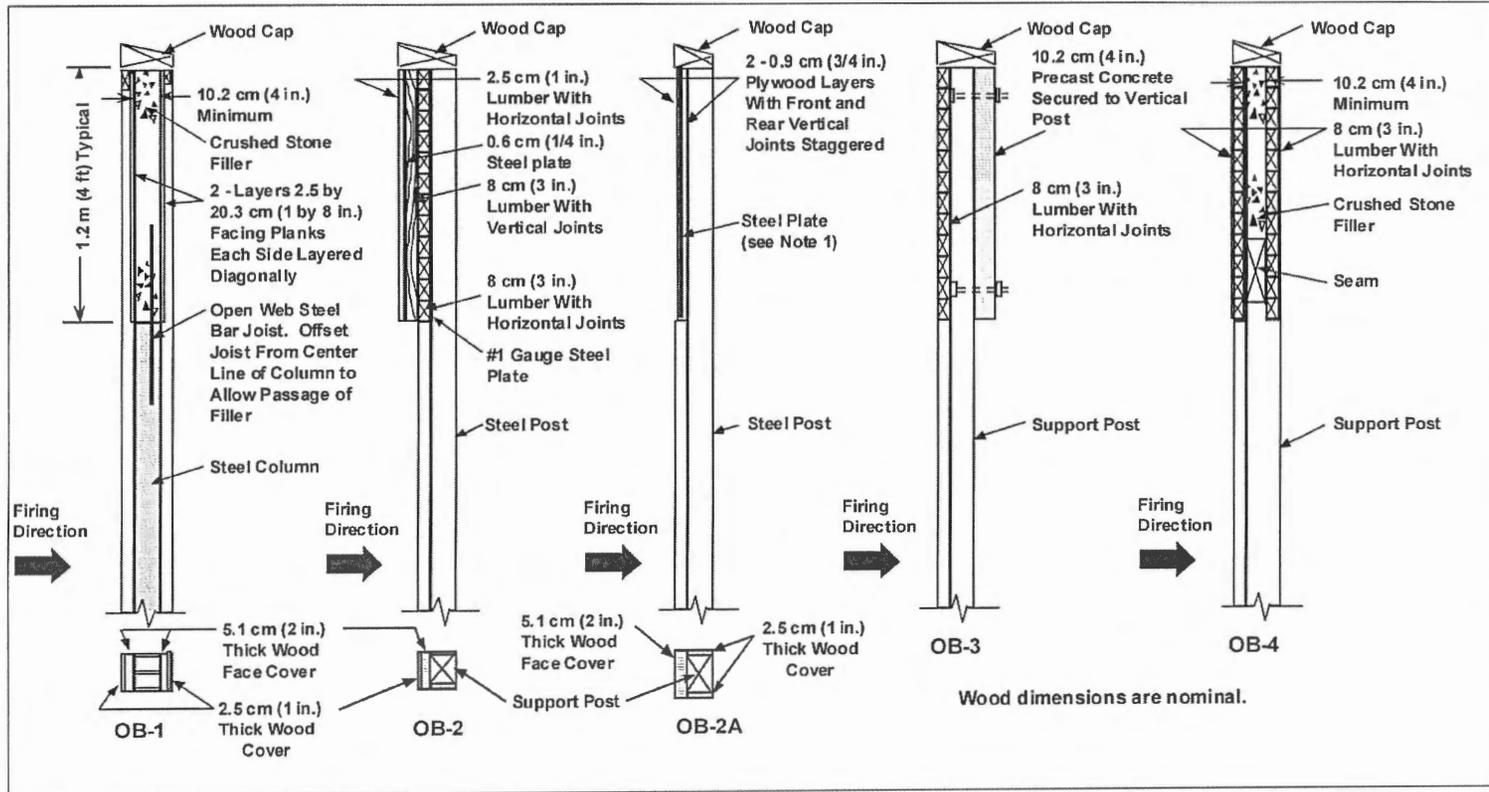


Figure 18
Overhead Baffle Ballistic Designs

Attachment 1
Attachment 1-20

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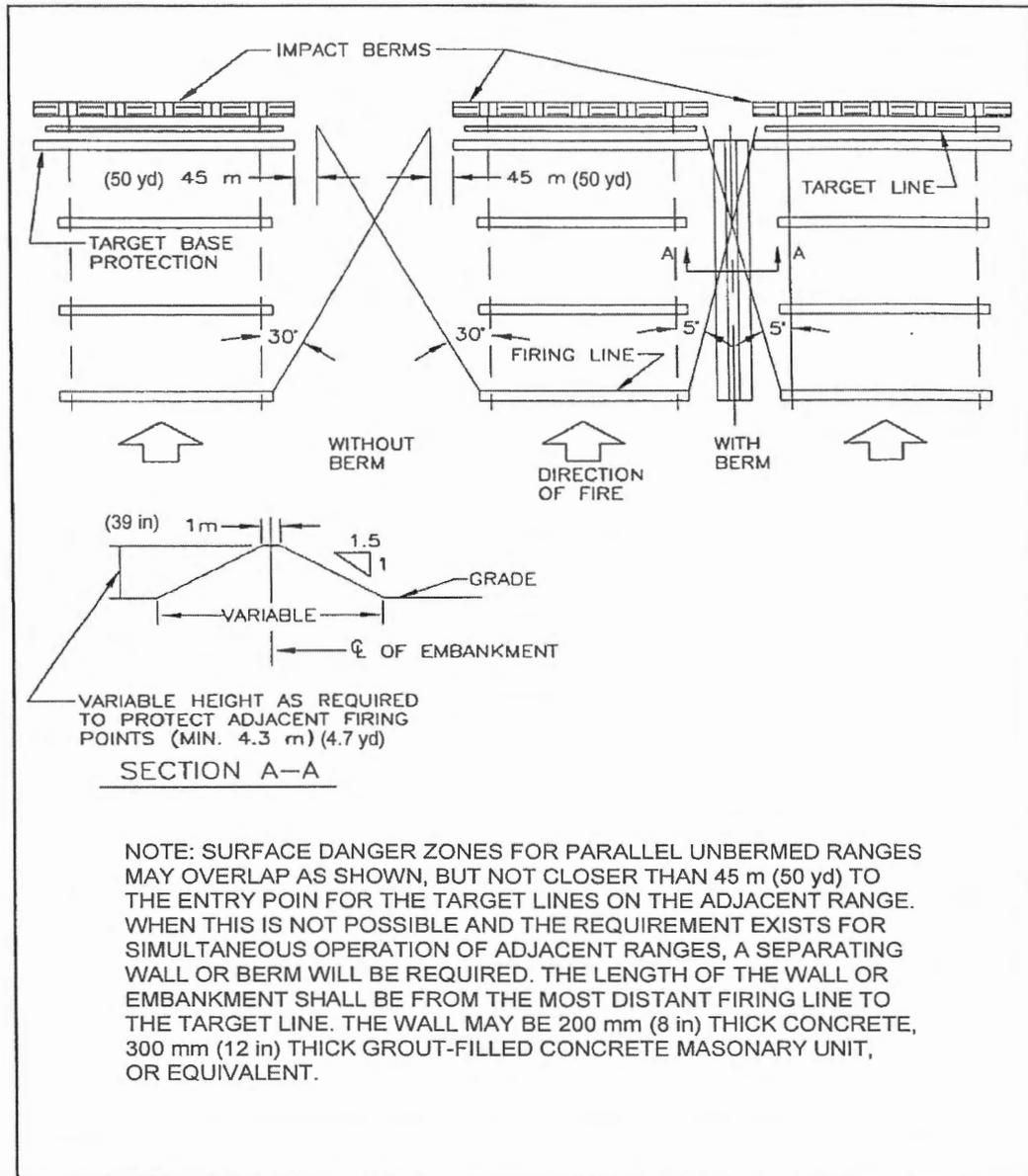
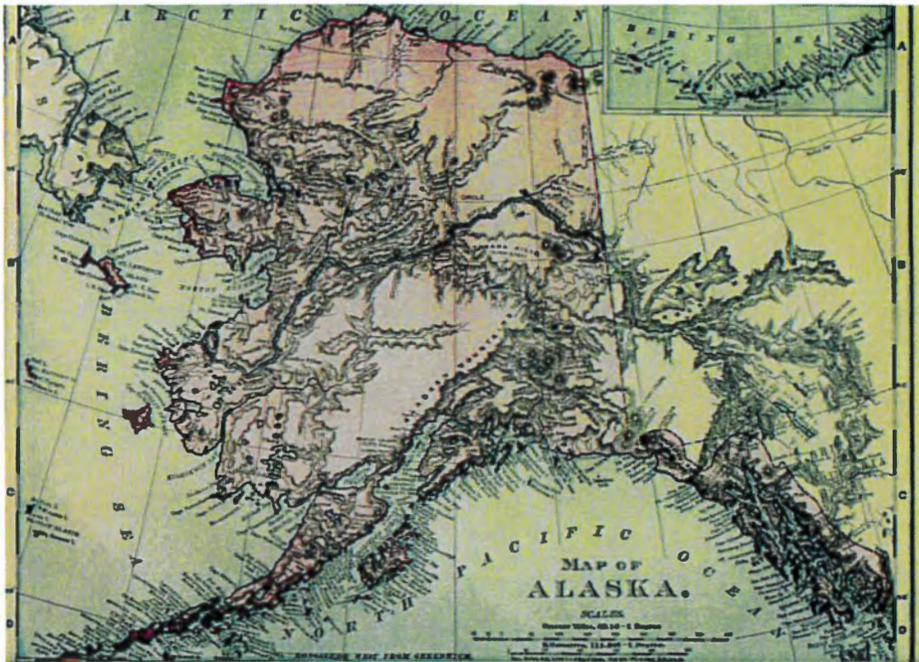


Figure 19
Parallel Ranges

COMMUNITY NOISE ENFORCEMENT



June 2012

RUTGERS

THE STATE UNIVERSITY
OF NEW JERSEY

NOISE TECHNICAL ASSISTANCE CENTER
DEPARTMENT OF ENVIRONMENTAL SCIENCES

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COMMUNITY NOISE ENFORCEMENT

A manual to accompany the certification course: "Community Noise Enforcement." The certification conferred by this course is recognized in jurisdictions throughout the United States and internationally

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State of Alaska
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6

Introduction

Unregulated sources of noise can have impacts far beyond the obvious transitory nuisance, and complainants may be enduring more than simple annoyance. Exposure to loud noise has been shown to result in uncontrollable stress which can result in alterations in mood as well as hormonal and nervous system changes in healthy subjects (Brier, 1987; Babish, 2003). A lack of control over noise results in a variety of neurobiological and behavioral alterations, a phenomenon known as "learned helplessness" (Brier, 1987). It has been demonstrated that blood pressure is reproducibly elevated in response to intermittent loud noise (Sawada, 1993). The noxious stimulus of noise has been used as a laboratory model for producing stress because it results in the same biological and physiological responses as other stressors (Suter, 1992). Noise has been clearly implicated in sleep disturbance (Lukas, 1977), resulting in a cascade of negative effects (WHO, 2009). The stress, tension and fatigue associated with long-term exposure to noise has destroyed marriages, cost people their jobs and forced other people to sell their houses at significant losses (RNTAC, 1991-2012).

In 1974, the United States Environmental Protection Agency estimated that nearly 100 million Americans lived in areas where the daily average noise levels exceeded its identified safe L_{dn} (Day Night Level) of 55 dB (EPA, 1974). In 1990, that estimate had risen to 138 million people (Eldred, 1990). In a 2003 study, 23% of the population of the Netherlands, a densely populated jurisdiction similar to the urban and suburban areas of Anchorage and Wasilla, described themselves as "highly disturbed by noise during sleep," as compared to five years earlier when that number was 19% (WHO, 2009).

While most enforcement officers may have no jurisdiction over noise sources such as aircraft, road noise and railroads, we can still improve the quality of life for complainants who are exposed to a whole range of noise sources. It is equally as important to educate the regulated community as to what their legal responsibilities are. Once it has been demonstrated that a noise source is not in compliance with the applicable ordinance, there exists significant leverage to gain compliance.

The course "Community Noise Enforcement," and this manual by the same name, have been designed to aid enforcement officers, the regulated community and noise consultants to gain a clear understanding of applicable noise ordinance, and the requirements for their proper enforcement. They are both geared towards real-world enforcement situations, and the possible tactics that might be used to challenge the validity of an enforcement action. Attention to detail is vital.

The certification conferred by this course is required of all enforcement officers in the State of New Jersey, and is also recognized in jurisdictions across the entire United States and beyond.

We sincerely appreciate this opportunity to assist you in bringing a better quality of life to the residents of the State of Alaska.

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Director, Rutgers Noise Technical Assistance Center

Babisch, W. 2003. Stress hormones in the research on cardiovascular effects of noise. *Noise & Health*, 5 (18):1-11

Breier, A., A. Margot, D. Pickar, et al. 1987. Controllable and Uncontrollable Stress in Humans: Alterations in Mood and Neuroendocrine and Psychophysiological Function. *Am. J. Psychiatry* 144:1419-1425.

Eldred, K. M. 1990. Noise at the Year 2000. In: Berglund, B. and Lindvall, T., eds. *Noise as a Public Health Problem*, Vol 5, Swedish Council for Building Research, Stockholm.

EPA, 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. EPA 550/9-74-004, U.S. EPA, Washington, D.C.

Lukas, J. 1977. Measures of Noise Level: Their Relative Accuracy in Predicting Objective and Subjective Responses to Noise During Sleep. USEPA Report No. 600/1-77-010. February 1977.

Rutgers Noise Technical Assistance Center (RNTAC) 1991-2012. Personal communications received between 1991-2007 at the Rutgers Noise Technical Assistance Center.

Sawada, Yukihiko. 1993. Reproducible increases in blood pressure during intermittent noise exposure: underlying haemodynamic mechanisms specific to passive coping. *Eur. J. Appl. Physiol.* 67:367-374.

Suter, A. 1992. Noise Sources and Effects. *Sound and Vibration*. V.26. Jan., 18-38.

World Health Organization. 2009. Night Noise Guidelines for Europe. Copenhagen, Denmark.

ASSORTED NOISE IMPACTS

**NOISE PRODUCES ELEVATED BLOOD PRESSURE, FASTER HEART RATES
AND INCREASED NEUROENDOCRINE HORMONE LEVELS**

**NOISE HAS BEEN USED BY THE PHARMACEUTICAL INDUSTRY
TO INDUCE STRESS FOR DRUG TRIALS**

**NOISE CAN CAUSE REGULAR AND PREDICTABLE STRESS
ON THE HUMAN BODY**

**PERCEIVED LACK OF CONTROL - THE "LEARNED HELPLESSNESS"
SYNDROME**

PEOPLE DO NOT GET USED TO NOISE - THE BODY CONTINUES TO REACT

NOISE EFFECTS THE QUANTITY AND QUALITY OF SLEEP

WHEN SLEEP IS DISTURBED, WORK EFFICIENCY AND HEALTH MAY SUFFER

NOISE MAY AGGRAVATE EXISTING DISEASE

THE SICK AND ELDERLY ARE MORE SENSITIVE TO DISRUPTIVE NOISE

THE FETUS IS NOT FULLY PROTECTED FROM NOISE

**NOISE DISRUPTS THE EDUCATIONAL PROCESS
& HINDERS LANGUAGE DEVELOPMENT**

NOISE CAN OBSCURE WARNING SIGNALS, CAUSING ACCIDENTS TO HAPPEN

NOISE INTERFERES WITH CONVERSATION AND SOCIAL INTERACTION

**NOISE DISRUPTS THE PEACEABLE ENJOYMENT
OF ONE'S PRIVATE PROPERTY**

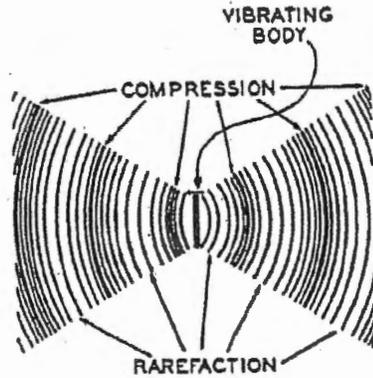
NOISE CAN CAUSE EXTREME EMOTIONS AND BEHAVIOR

**ANTI-SOCIAL BEHAVIOR CAUSED BY NOISE
MAY BE MORE PREVALENT THAN IS REALIZED**

***THERE ARE DOCUMENTED CASES OF NOISE-INDUCED
ARSON - ASSAULT - MURDER - SUICIDE***

SOUND

Sound waves are a series of compressions and rarefactions within a medium



Propagation of a sound wave due to a vibrating body

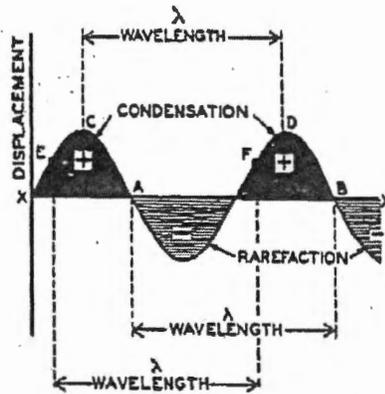
NOISE

Occurs when these sound waves reach a sensitized receptor

... noise is any unwanted sound



PROPERTIES OF SOUND



Displacement-time graph of a sound wave

INTENSITY

The bigger the compression,
the larger the amplitude,
the more the energy,
the 'louder' it is.

dB- Decibel

The unit of measure and reporting.

The decibel scale is logarithmic,
3 dB = a doubling of intensity.

However,

10 dB = a doubling of perceived loudness
(6 dB at the lowest frequencies).

$$\text{SPL (dB)} = 20 \log_{10} \frac{P_{\text{Measured}}}{P_{\text{Reference}}}$$

The average threshold of human perception
is 20 micropascals (μPa) or 0.0002 microbar
-this is set as the reference number-

Therefore,

0 (zero) decibels is the average threshold of human hearing,
not the absence of sound pressure.

0 dB threshold of hearing --- 130,140 dB threshold of pain

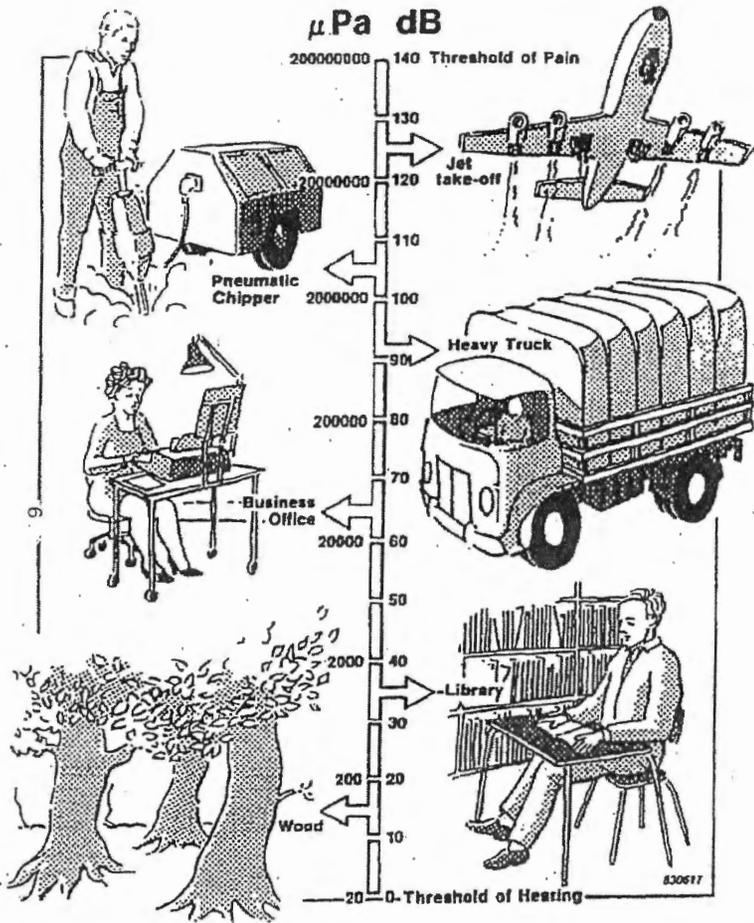


Fig. 5-3. Examples of some typical sound levels, expressed in micropascals on the left side of the scale and decibels on the right. (From Bruel & Kjaer, 1984, reproduced with permission.)

	DECIBELS	
JET TAKE-OFF ARTILLERY FIRE RIVETING	130	DEAFENING
SONIC BOOM ORCHESTRA MUSIC FORTISSIMO ROCK BAND	120	
TRUCK UNMUFFLED LOUD STREET NOISE POLICE WHISTLE	100	
NOISY OFFICE QUIET TYPEWRITER AVERAGE RADIO	70	LOUD
NOISY HOME AVERAGE CONVERSATION QUIET RADIO	50	
PRIVATE OFFICE QUIET HOME QUIET CONVERSATION	30	FAINT
RUSTLE OF LEAVES WHISPER HUMAN BREATHING	10	

Fig. 3.5 Sound pressure levels of representative sounds and noises.

PROPERTIES OF SOUND FREQUENCY (PITCH)

Unit of Measure
Hertz (Hz) – cycles per second

Range of Human Hearing – 20 Hz to 20,000 Hz

Humans are most sensitive to 1000 Hz to 4000 Hz

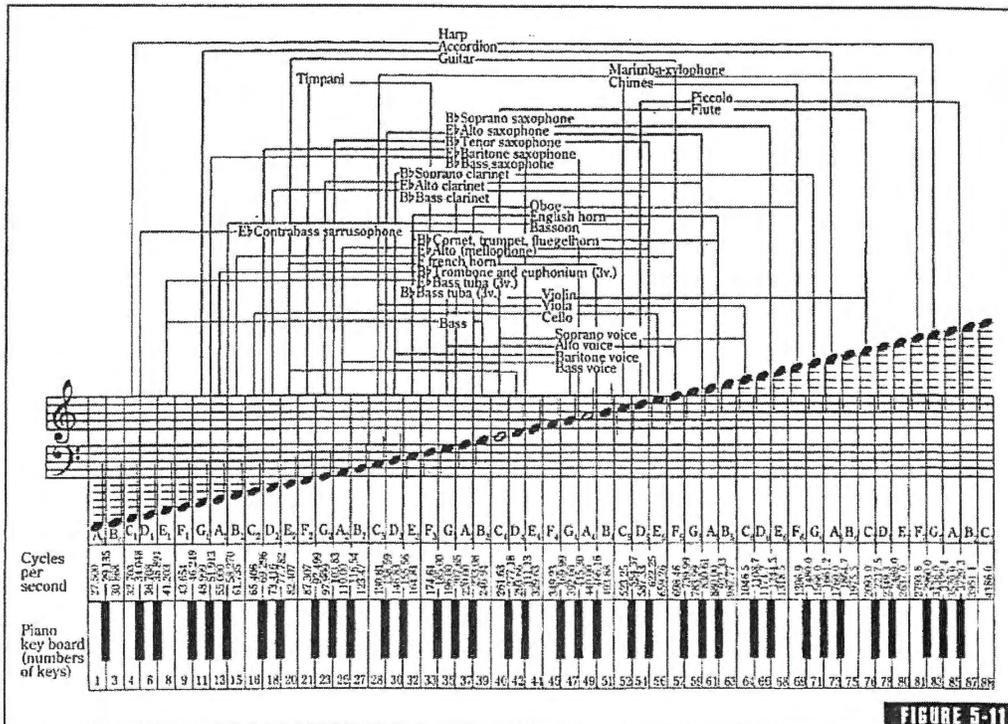
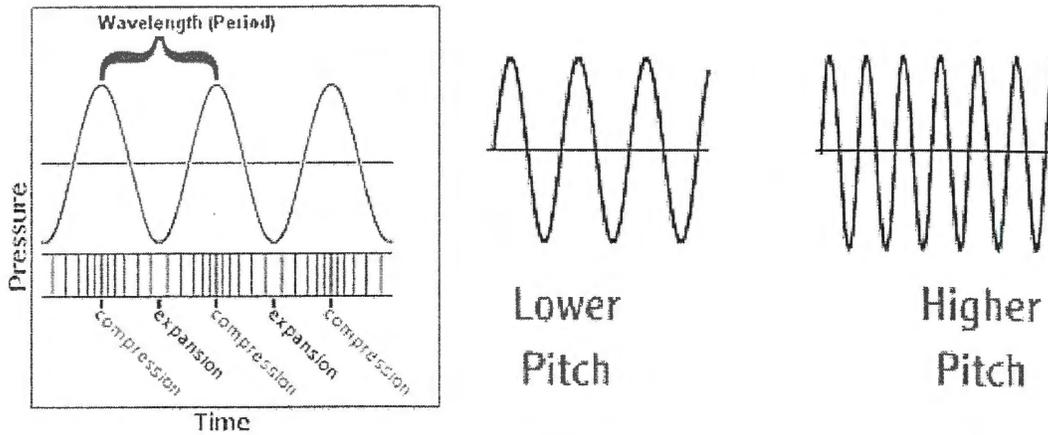
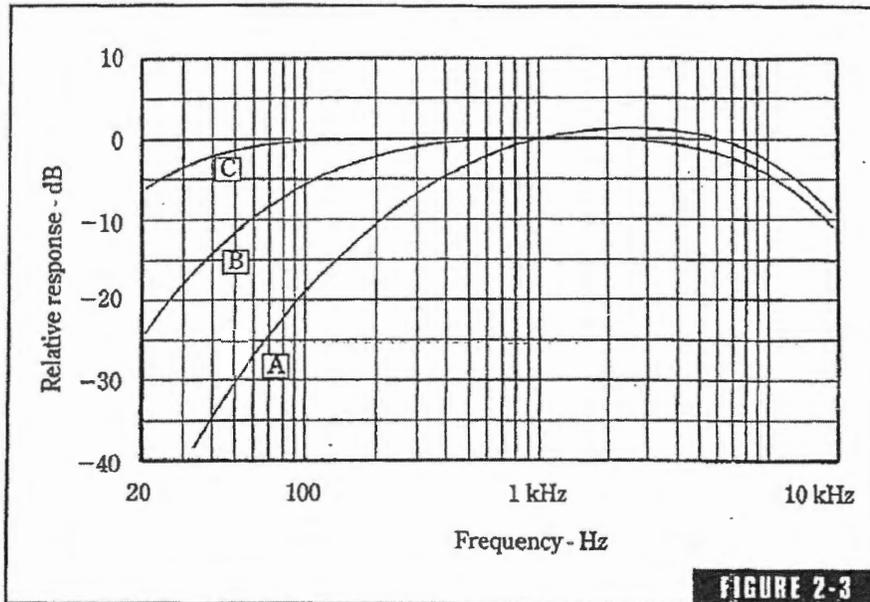


FIGURE 5-11

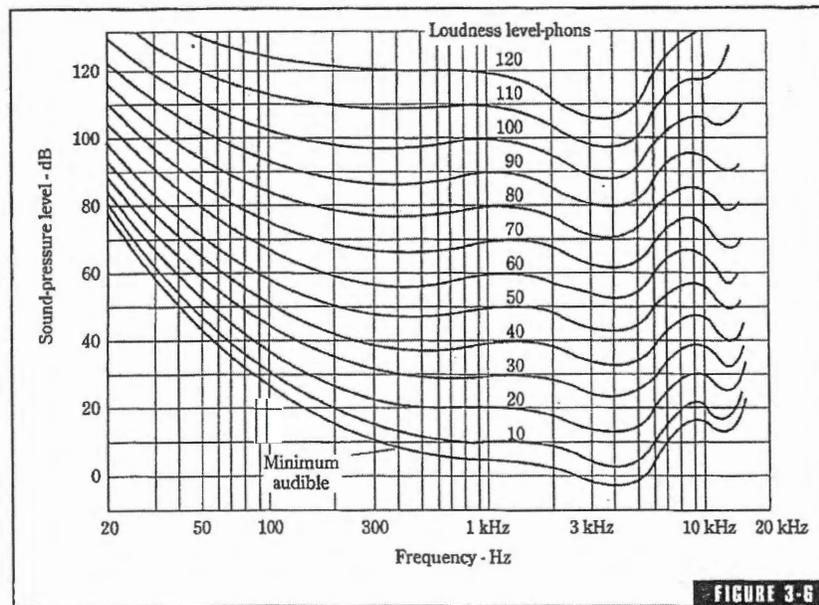
The audible frequency range of various musical instruments and voices. Only the fundamental tones are included; the partials go much higher. The very low piano and organ notes are perceived largely through their partials. Not shown are the many high-frequency incidental noises produced by the instruments. C. G. Conn, Ltd., Oak Brook, Illinois.

From: Master Handbook of Acoustics. F. A. Everest. McGraw Hill 2001.

FREQUENCIES, HUMAN RESPONSE AND WEIGHTING SCALES



A, B, and C weighting response characteristics for sound level meters. (ANSI S1 .4-1971.)



Equal-loudness contours of the human ear. These contours reveal the relative lack of sensitivity of the ear to bass tones, especially at lower sound levels. Inverting these curves give the frequency response of the ear in terms of loudness level. (After Robinson and Dadson.)

From: Master Handbook of Acoustics. F.A. Everest. McGraw-Hill. 2001.

The A-scale (dBA) is a weighting system which approximates human perception to sounds of moderate intensity. The A-scale discriminates against low frequencies. While humans are relatively insensitive to low frequency sound at low intensities, we are much more sensitive to those same low frequencies at higher intensities – when they are highly amplified.

Conversion of Sound Levels from Unweighted Sound Pressure (flat or Z-scale response)
to A- and C-scale Weighting

1/3 and 1/1 Octave Bands

Frequency (Hz)	A Weighting (dB)	C Weighting (dB)
10	-70.4	-14.3
12.5	-63.4	-11.2
16*	-56.7	-8.5
20	-50.5	-6.2
25	-44.7	-4.4
31.5	-39.4	-3.0
40	-34.6	-2.0
50	-30.2	-1.3
63	-26.2	-0.8
80	-22.5	-0.5
100	-19.1	-0.3
125	-16.1	-0.2
160	-13.4	-0.1
200	-10.9	0
250	-8.6	0
315	-6.6	0
400	-4.8	0
500	-3.2	0
630	-1.9	0
800	-0.8	0
1,000	0	0
1,250	+ 0.6	0
1,600	+ 1.0	-0.1
2,000	+ 1.2	-0.2
2,500	+ 1.3	-0.3
3,150	+ 1.2	-0.5
4,000	+ 1.0	-0.8
5,000	+ 0.5	-1.3
6,300	-0.1	-2.0
8,000	-1.1	-3.0
10,000	-2.5	-4.4
12,500	-4.3	-6.3
16,000	-6.6	-8.5
20,000	-9.3	-11.2

*Note: Center frequencies of 1/1 octave bands appear in bold.

After: The Science and Applications of Acoustics. Daniel R Raichel. Springer. 2000.

METER AND WEATHER REQUIREMENTS

A. General Instrumentation Requirements:

1. **Sound Level Meter**
 - Must meet the specifications of ANSI S1.4-1983 or its successor
 - Type II (General Purpose) or Type I (Precision)
2. **Sound Level Calibrator**
 - Must meet the recommendation of the sound level meter manufacturer
3. **Windscreen**
 - Must meet the recommendation of the sound level meter manufacturer
 - May be spherical or cylindrical
 - Made of foamed polyvinyl, open-celled polyurethane or silk covered grid.
 - Should not distort microphone frequency response by more than:
 - +/- 1.0 dBA Frequency: 20-4,000 Hz
 - +/- 1.5 dBA Frequency: 4,000-10,000 Hz
4. **Wind Speed Indicator**
 - Pressure tube or rotating vane anemometer
 - Manufacturer must provide accuracy rating in MPH or percent
 - There are relatively inexpensive handheld weather meters available (ex. "Kestrel 3000 Wind Meter," [no endorsement implied]) which can quickly determine wind speed, temperature and relative humidity in the field.

B. Weather Conditions:

1. **Wind**
 - Always use windscreen. A sound level meter can misread wind pressure as sound pressure and introduce significant error. A windscreen can also provide some protection to the microphone from dust and accidental impacts.
 - Windspeed must be measured at the time and place of sound level measurements.
 - Do not take sound level measurements when the windspeed exceeds the manufacturer's recommendations for the meter and the specific windscreen employed. Generally, the limit is 12 MPH. Some manufacturers offer windscreens that can be used up to 25 MPH.
2. **Temperature**
 - At high temperatures the sensitivity of the meter can be permanently altered.
 - Low temperatures affect batteries and other electrical components
 - The meter should be calibrated when its internal temperature is close to the ambient temperature at which it will be used.
 - The ANSI standard states that measurements may not be taken when the ambient temperature is below 14°F or above 122°F.

3. **Humidity**
 - Most sound level meters can be operated up to 90-95% relative humidity.
 - Condensation can cause arcing which results in false readings. The error is not subtle, and will be obvious.
4. **Precipitation**
 - Measurements should not be taken under any condition which allows the meter to become wet, such as rain, snow or condensation, unless specifically equipped to do so.
 - Even if your jurisdiction's code does not prohibit measurements during precipitation, do not use the meter beyond the parameters recommended by the manufacturer (fog, rain, snow). If these parameters are met, readings may be taken while protecting the meter and the microphone. All readings must be taken in a similar manner.
 - Instruments are not waterproof. Waterproof housings are available for some units from the manufacturer for the meter and the microphone.
 - The ambient sound levels are significantly higher when it's raining down on horizontal sheet metal surfaces such as automobiles and air conditioners.
 - Wet pavement can cause higher sound level readings (tires, etc.).
5. **Electromagnetic Fields**
 - Do not take readings immediately next to electrical transformers, radio or television transmission towers, or power lines, unless the manufacturer states that the meter is properly shielded. These may contribute to internal electrical noise of the sound level meter.

**KNOW YOUR METER.
READ YOUR MANUAL.**

ALWAYS ASSUME THAT COUNSEL FOR THE DEFENSE HAS.

1. **Is a warm-up period required for the meter and the calibrator?**
 - Older meters may require a warm-up period of up to 30 seconds.
 - Newer meters usually require at most a five second warm-up.
2. **What scale must you employ for calibration?**
 - Newer meters generally specify calibration on the A-scale.
3. **At what angle should you hold the microphone with relationship to the sound source?**
 - The angle is specific to the microphone, and some meters can be supplied with a range of microphones.
4. **What is the stated accuracy of your meter?**
 - ANSI S1.4-1983 specifies that a Type I meter should have an accuracy of +/- 1 dB or better, and a Type II meter should have an accuracy of +/-2 dB or better.
 - Newer meters often exceed ANSI standards.
 - Know that in court it may be assumed that the meter is reading high, at the maximum of the accuracy range. Take this into consideration when determining whether to proceed to prosecution.
5. **Octave Band Analysis**
 - Does your meter automatically reset to "linear, "flat," or "Z-scale" when you engage the octave filter? Some do not, and if you do not manually select unweighted measurements, you may be taking A-weighted octave band sound pressure level measurements. These measurements can not then be used for enforcement purposes, without correction.
 - Conversely, if necessary, make sure to reset your meter for A-weighting when returning to broadband measurements. Otherwise, you will be taking unweighted broadband measurements which will be unusable for enforcement purposes.

CALCULATING SOURCE SOUND LEVELS

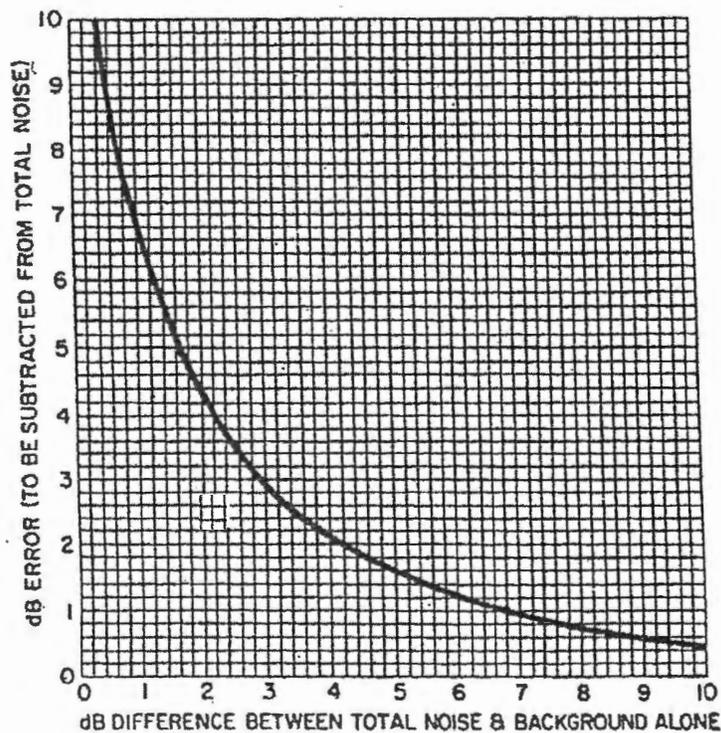
How do you subtract out the ambient (background) sound?

Table 1
Correction for Ambient Sound Levels (ASL) in Decibels
Determining the Corrected Source Level (CSL) to Report on Form

Difference Between Total Sound Level and Ambient Sound Level (in dB)	Correction Factor to Be Subtracted From Total Sound Level (TSL) to Calculate Corrected Source Level (CSL)	Action
0-2	Source < Ambient, therefore unenforceable	Write "UE"
3	3 (but source would equal ASL)	Write "UE"
4,5	2	Do math
6-9	1	Do Math
10 or more	0	Report TSL as CSL

Adapted from:

Handbook of Environmental Acoustics. James P. Cowan, 1994.
 Van Nostrand Reinhold, New York. ISBN 0-442-01644-1



From: Handbook of Noise Measurement. Arnold P.G. Peterson. 1980. GenRad, Concord, MA.

**CALCULATING SOURCE SOUND LEVELS
FROM BACKGROUND AND TOTAL MEASUREMENTS
-or -SUBTRACTION OF SOUND LEVELS**

When you're in the field, you take two types of measurements: *ambient* and *total*. From these measurements you have to *calculate* the source sound level. The potential violation is based solely on the level of noise being emitted from a specific activity; you can't fine someone because they're operating in a noisy neighborhood. Yet, you can't directly measure the sound level from the activity in question. That's why you have to subtract the ambient from the total to determine the source sound level.

Here's how it's done:

1. Subtract the ambient level from the total noise level. (total - background = "X").
2. Using Table I on the previous page, find "X" in the left hand column.
3. Match "X" to a number in the right hand column.
4. Subtract the number in the right hand column from the total noise level.
5. The number you now have is called the *CORRECTED (SOURCE) LEVEL*, and this is the number that you record on the Noise Report Form.

Example A

1. You have a total sound level of 69 dBA, and a ambient level of 63 dBA.
2. $69 \text{ dBA} - 63 \text{ dBA} = 6 \text{ dB}$. This is "X", the number you look for in Table I, left column.
3. 6 dB in the left column gives you 1 dB in the right column.
4. Subtract 1.0 dB from the TOTAL SOUND LEVEL to get the CORRECTED SOURCE SOUND LEVEL.

$$69 \text{ dBA} - 1 \text{ dB} = 68 \text{ dBA} \text{ **the CORRECTED SOURCE LEVEL **}$$

Example B

1. After measuring the ambient sound level decide which sample set or range you want to use as your ambient. A source-off measurement is always used if possible.

Example: 52 - 56 dBA
 51 - 55 dBA
 54 - 57 dBA CHOOSE THIS ONE

(Continued)

CALCULATING SOURCE SOUND LEVELS
(Continued)

Now, remember - you must use the higher number in an ambient set, so the number that you'll use for all further calculations is 57 dBA

AMBIENT = 57 dBA

2. You will have a series of total sound measurements taken while the sound source is on, at the point of the complaint. Let's say one set of readings gives you a total range of 61 - 64 dBA.

3. To determine the corrected source level, perform the subtraction: 64 dBA - 57 dBA = 7 dB. Look at Table I, and you'll see that 7 dBA in the left column gives you 1 dBA in the right column.
64 dBA - 1 dBA = 63 dBA THIS IS THE CORRECTED SOURCE LEVEL

This is what is reported on the Noise Measurement Report, and compared to the permissible limits.

Example C:

Ambient 62 dBA
64 You choose this Ambient, the highest, then apply it to ALL of the Totals below.
 63

Total		CORRECTED SOURCE SOUND LEVEL (dBA)
69 dBA	69-64 = 5	69 - 2 = 67
71	71-64 = 7	71 - 1 = 70
77	77-64 = 13	77
67	67-64 = 3	-- (Unenforceable)

IMPORTANT NOTES:

- 1) If "X" is 10 dB or greater, THEN NO CORRECTION IS NECESSARY. TOTAL = SOURCE.
- 2) If "X" is less than 3 dB, it means that the source sound level is at or below the background level. Many jurisdictions simply write "U.E." (unenforceable), or "--", or simply leave it blank.
- 3) *Do not include* your calculations to find "X" on your report form [it just clutters it up].. *Do include* any calculations, if necessary, for arriving at the corrected source.

SEE SAMPLE REPORT FORM

DETERMINATION OF AMBIENT SOUND LEVELS

There are two critical reasons you need to accurately determine the Ambient Sound Levels (ASL).

- Some provisions set the Permissible Sound Level Limit (PSL) relative to the ASL.
- You must determine the Source Sound Level of the source under investigation and almost every sound source you will investigate occurs within a complex acoustical environment.

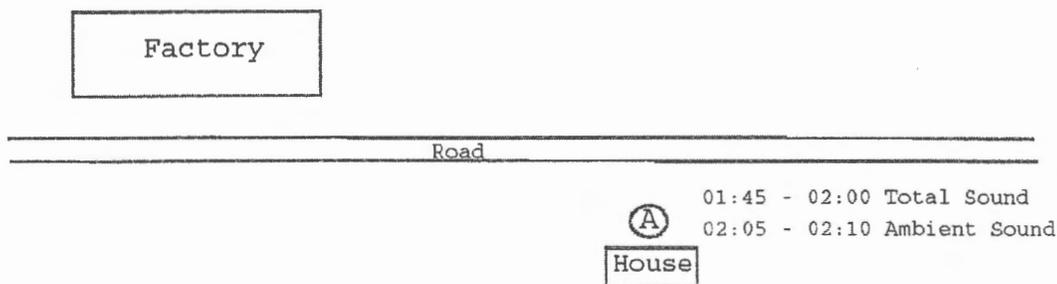
Your goal is to isolate and quantify the sound levels of that sound source, alone. In order to accomplish that, you must accurately assess and measure the ASL. The ASL is the sound level of all the sound sources that are relatively constant when observed from the location on the complainant's property from which the investigation will be conducted. These sound levels exclude sound from the source under investigation, as well as extraneous sounds which are relatively intense and of short duration (such as airplanes, unmuffled vehicles, etc.).

While taking your measurements, you have to note which sounds constitute the ASL, and which are to be classified as extraneous. Remember, the only ASL sounds that matter are those impacting on the precise location at which you are measuring the source sound level (Total Sound Levels) (TSL). It doesn't matter whether there's an active cement plant three blocks over if you can't hear it on the complainant's property.

OUTDOORS

Source-Off measurements are obviously the truest measure of the ASL. The approach is simple: you take a measurement of the sound levels when the sound source under investigation is not operating, at the same location on the complainant's property at which the TSL measurements were conducted.

If the hours of operation are known:

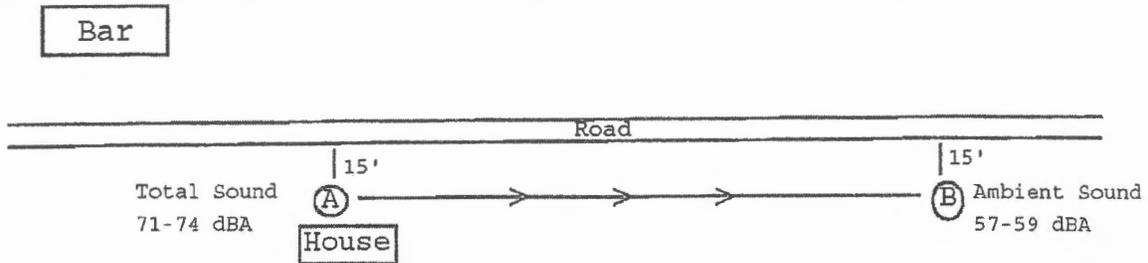


Source-off (SO) measurements are always preferable to any other method. Many strategies can be employed to collect such data:

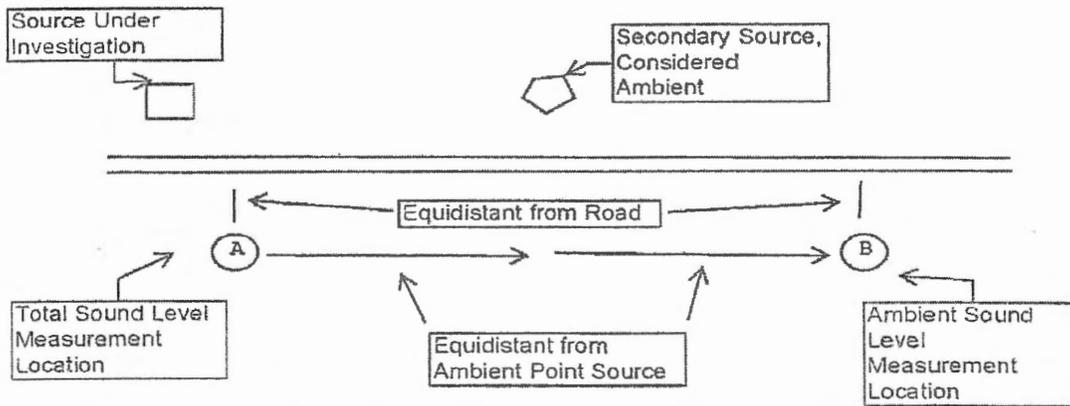
- Very simply, ask the source to terminate operations for a few minutes. If they can, they have to

- If you know the hours of operation of the source, schedule the measurements so that you can take SO measurements prior to operations or after they terminate for the day (see illustration, previous page).
- If you can discern a duty cycle for the equipment, then take ASL measurements during a low- or off-cycle period. Air compressors turn off after re-pressurizing the tank. HVAC and refrigeration equipment is often controlled by a thermostat. Once demand is satisfied, the unit throttles down or off, affording an opportunity to measure ASL. Some equipment is completely demand operated, such as a garage door opener. If possible, position yourself where you can observe the location from where the demand will arise (in this case, a view of the driveway), and be prepared to conduct your ASL and TSL measurements based upon your observations.
- If the duty cycle of a device is demand driven, it may be weather dependent, and thus more predictable. Any device that provides chilling or cooling may be forced to operate non-stop when the temperature and humidity are high, precluding the collection of SO data. Conversely, if the temperature and humidity are lower, the unit may occasionally cycle off providing an opportunity to collect SO data. If the investigation can wait, scheduling it based upon weather reports may well increase the possibility of SO measurements.
- A useful strategy is to ask the complainant to keep a log of their observations of the sound source and its emissions. Explain that the log will aid you, increasing the possibility of a fruitful investigation and that you need an opportunity to measure the source when it is operating at full load, and also the ambient levels when it is off. If the source is only intermittent in its operation, their records will increase the possibility that you will be there to measure it. Conversely, if the source tends to run relatively constantly, their log may allow you to predict a time when you will be able to collect SO measurements. Their records should include: their subjective evaluation of the relative sound level; day of the week; time of the day; weather conditions; and, any other conditions that they think may be relevant. These records may also assist in establishing a pattern for the purposes of prosecution.
- Sources which emit fluctuating sound levels, such as music, will usually offer short periods of time when the sound levels drop considerably. This may occur: between sets; when a song is winding down; or, a relatively quiet vocal passage in an otherwise loud instrumental piece. Remain aware and vigilant for such an opportunity and jump on it when it presents itself.
- Source sound levels may increase significantly when a door is opened regularly, or a thermostatically-controlled fan opens louvers. You may find this at facilities such as a distribution center, bar, workshop, or garage. Even if the sound source inside is audible or loud when the building is closed, the sound levels may increase by more than the permissible limit when the door opens. If, every time they open the door, the sound levels jump by 15 dBA, then it is essentially irrelevant what the 'true' ASL is; the facility is in violation. Note how often the door is opened and for how long the sound level remains elevated.

Walk Away measurements are one of the methods that can be used when the sound source under investigation can not be turned off. If the primary source of ambient sound is steady traffic on the immediately adjacent road, you simply walk along the sidewalk, away from the source under investigation, remaining equidistant to the road (see illustration). Walk away, noting the drop in the sound level as the influence of the source sound emissions wane. Record the meter reading when it levels off. If you walk towards a new sound source of significant intensity that was not present at the location of the TSL measurements, then these measurements should not be used.



What do you do when there's a point source of ambient sound, such as a second bar or a chiller on a nearby building? It is critical that the ASL measurement location is the same distance from that (cont'd)

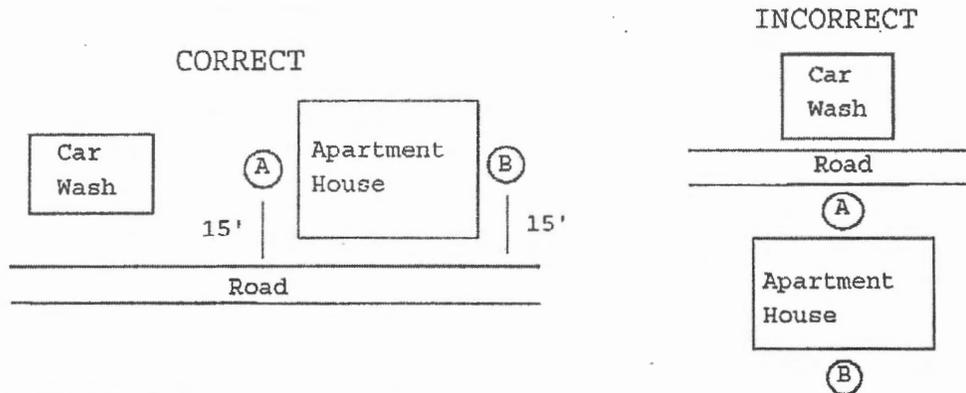


point source of ambient sound as was the location at which you conducted your TSL measurements. In the illustration above, the TSL measurements include the following sound sources: 1) the source under investigation; 2) the steady traffic on the roadway – an ambient source; and, 3) some point source of ambient sound, such as a nearby chiller. The ASL at this location consists of #2 and #3, and you must properly measure them. If you can't get a source-off measurement, then a walk-away can serve the purpose well. Walk away from the source under investigation, along the sidewalk, until you are perpendicular from the point source of ambient sound, and then walk the same distance beyond that source. Make sure that you are the same distance from the road, and this is the location from which the ASL measurements can be taken. Show the detail on your Report Form, and be prepared to articulate how this location for ASL measurement properly represented the ambient sounds impacting on the location at which you conducted your TSL measurements.

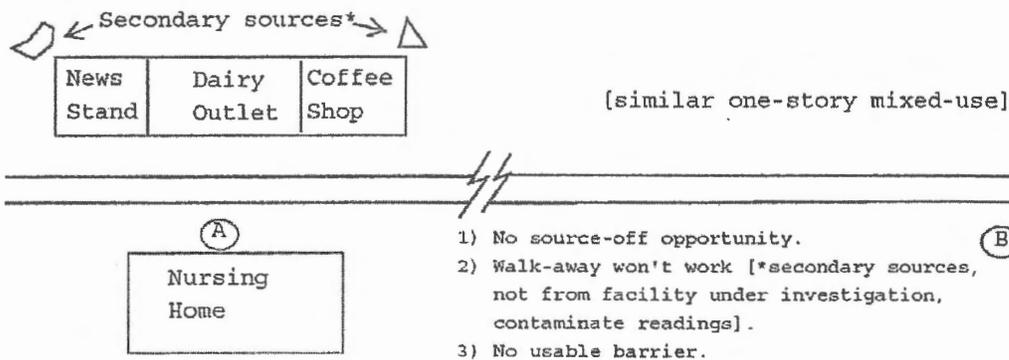
What if there's no road, only some point source of ambient sound? Simply take your ASL measurements on the 'other' side of the ambient point source; at the same distance you were when

you conducted your TSL measurements. Always think: "equidistance - - am I at the same distance from the ambient source?" Be prepared to articulate this in court.

Behind Barrier measurements work when the barrier blocks your line of sight to the source under investigation, but not to the primary source of ambient sound.



Similar Neighborhood measurements may be taken if all other methods are unsuccessful. You must make sure that you remain equidistant from the primary source of ambient sound (such as two blocks from a major road), and in an area where the makeup of the buildings is the same as in the location at the complainant's property.



INDOORS

The same basic requirements apply to ASL measurements conducted indoors as do to outdoor measurements.

- *Source-off measurements are always preferable to any other method.*
- The sound from the source under investigation should have as little influence as possible on measurements of ASL. That does not mean, however, that the source under investigation must be completely inaudible.
- The measurement of ASL must include all ambient sounds that were present when the measurements of Total Sound were conducted. For example, if the measurements of Total Sound included traffic outside or air handling inside, then the measurements of ASL must

contain these, as well. Thus, you can't use ASL measurements taken in a sheltered interior hallway if Total Sound measurements were taken in a bedroom whose single-pane windows overlook a busy street, filling the room with traffic noise.

- If a SO measurement is not possible, carefully consider what alternative location will yield acoustical conditions that are substantially the same as those at the location at which you measure the Total Sound Levels.

If forced to choose between two poor choices – ASL measurements in a location which is too sheltered, or, ASL measurements in a location which is somewhat contaminated with sound from the source – choose the latter. You must err to the benefit of the potential violator. A higher ASL is to their benefit. That said, don't 'give away the store'.

REMEMBER - accurate measurement of the Ambient Sound Level is absolutely critical to assessing the sound levels emanating from the sound source under investigation, and determining the Permissible Sound Level Limit.

**PROCEDURE
FOR THE COMPLETION OF
A NOISE MEASUREMENT REPORT**

Alaska¹

NOTE: The procedures outlined within this section should all be performed during an investigation, but they do not necessarily have to be performed in any given order. It is important for you to know what data must be collected for a valid investigation, and then gather that data in the order in which it presents itself during the flow of the investigation.

1. While not necessarily required to complete the field form, make sure you know what provision within your code applies to the source you're investigating. This is almost certain to influence your data collection in such critical areas such as: the measurement metric (dBA, dBC, Lmax, "plainly audible", etc.); the duration of the measurements; and, the location of regulatory compliance measurements.
2. Survey the site on foot to confirm that the suspected source is the actual source (a walk-around), and to determine the best locations from which to measure neighborhood residual and background sound levels. If the suspected source is proven to be the source, draw a map of the site on the back of the report form, including the path of the walk-around, the source and the exact points of measurement.
3. Record the name and address of the property from which the sound is being emitted, including street number if possible. If the source is not a fixed property, attempt to describe it with identifying characteristics, such as license plate number, and vehicle make and model.
4. Fill in day and date of measurement
5. Fill in your name and agency
6. List the name and title of any responsible party who has been notified of the investigation. Attempt to notify a representative of the management of the facility.
7. Describe the noise sources under investigation, including the location of the noise source, the operation of the facility or noise source, and if this measurement represents the normal operation of the noise source. Note whether the sound emissions are continuous or non-continuous, and whether they arise from an amplified source or not. If amplified, is the source commercial or non-commercial? Is the source an extended hours liquor establishment? Do the source and the receptor share a common wall? **These factors may influence the required measurement methods and permissible limits** (see your code).
8. Describe any ambient sounds which are fairly constant, including their location. Once you have categorized a specific sound as being background (or ambient) you must be careful to include it in all of your measurements.

¹ As this course is attended by two jurisdictions with distinctly different noise codes, it is not possible for these guidelines to be specific to any one code. Please make certain to follow the requirements of your code.

9. Describe any extraneous sound which are intermittent, intense and of short duration. These sounds are noted but are specifically excluded or ignored when taking either total or background sound level measurements.

10. Provide a description of the sound level measurement equipment being used including manufacturer, model number, serial number, and the date of last calibration.

11. Conduct and report the times of field calibration and battery checks, which must be before, after and at least as often as required by the jurisdiction's code. In general, it is best to calibrate every hour.

Such *field calibration checks are absolutely required for a valid noise measurement form.*

12. Report whether there was precipitation or if the ground is wet. Measure and report wind velocity, with the time.

13. Measure and report ambient sound levels. The ambient sound levels may be measured by one of the following methods:

- **Source off - the preferred method**
- Walk away
- Behind barrier
- Similar neighborhood

Ambient sound level is measured as follows:

Ambient sound level measurements shall be conducted while the source under investigation is not operating, at the same location at which source sound level measurements are made. If this is not possible, ambient sound level measurements may be taken at an alternative location which should be as close as feasible to the location where the source sound levels are measured, but so located that the sound from the source has as little effect on the background sound level measurements as possible. The primary source of ambient sound must be equidistant to the location of the source sound level measurements and any alternate location for ambient sound level measurements. Any ambient sound level measurements must be made prior to or following any set of source sound level measurements.

- Determine the appropriate settings for the meter:
 - measurement scale (dBA, dBC, etc.)
- Take a sound level measurement using one of the above methods.
- Note which ambient measurement method was used.
- Record the reading for the measurement (ex. 51.7 dBA Lmax).
- Note the location of the measurement and any relevant comments.
- Record finish time.
- Determine which ambient measurement is to be used for the purposes of correction based on the following criteria:
 - **Source off is always to be used, if it is available.** Use the highest source off, being careful to exclude measurements that may include extraneous sounds.
 - All other ambient measurement methods are equivalent, and the highest is used, again, excluding any that may contain extraneous sounds.
- Circle the ambient level used for correction purposes on the form.

14. Measure and report the Total Noise levels.

- Determine the appropriate settings for the meter:
 - measurement scale (dBA, dBC, etc.)
- Record starting time.
- **Make certain that you are measuring sound levels that represent the normal and usual operations of the source under investigation.** Do not include accidental impacts or the like. Be fair.
- Take several sound level measurements at the location that is appropriate for your specific investigation, as required by your code. Generally, this is at or within the property of a complainant.
- Record the specific location of the measurement (on the site map) and any relevant comments (on the form).
- Record the sound level for the measurement (ex. 71 dBC), and the specific times of the reading.
- Record finish time, and the duration of the measurement. Make sure the total duration of your measurements are sufficient to determine compliance with the specific provision of the code
- At each location, subtract (using the decibel subtraction technique) the maximum ambient level from the total noise level to obtain the corrected (source) level, as dictated by the provision you are enforcing.
 - You may only 'correct' A-scale total measurements with A-scale background measurements, and you may only 'correct' C-scale total measurements with C-scale background measurements.
- This calculated number is the source sound level and should be compared to the permissible limits in the ordinance being enforced, to determine if a violation exists.
- **IMPORTANT NOTE:** If the provision you are enforcing specifies a limit that sound source may not raise the Total Sound Level, or Ambient Sound Level, then you may not have to calculate the Corrected Source Level. You may only have to calculate the increase of sound levels between when the source is on and when it is off (i.e., simple subtraction). We will discuss this point extensively in the course.

15. Report your findings, specifically noting whether there was a violation of the code, and what provision was violated. Note whether the permissible limit was adjusted due to some characteristic of the sound such as duration.

A statement of impact may have value here, such as: "the sound was not only loud, the bass line of the music could be felt"; "the sound actually startled me when the unit kicked into operation"; "pedestrians crossed the street to avoid the noise"; "the sound level inside the bedroom exceeded the permissible limit, and not only could it have disrupted sleep, it even made conversation difficult" etc. Speak to the reasonableness of the noise, if you can

16. Sign form

17. Submit form for review and approval (if necessary), and enforcement action if appropriate.

**The better prepared you are to go to court, the less likely it is to happen.
A well executed and documented investigation can prove very
intimidating.**

NOISE MEASUREMENT REPORT

Name/Address of Sound Source
LAKEVIEW LOUNGE & MARINA
732 LAKE ST
WASILLA, AK

Date of Measurement 2/3/13 Day of Week SAT
 Investigator JIMMY DECKER
 Name and Title of Responsible Party if Advised of Complaint:
MR. LOUDEN O B MORKSHUS, OWNER

Description and Location of Sound Sources to be Measured. Including Operation of Facility, and if this Represents the Normal Operation of the Facility:
BAR WITH AMPLIFIED MUSIC ON OUTDOOR OPEN DECK. COMPLAINANT STATES RECORDED MUSIC STARTS AT 7:00PM, BANDS START AT 10:00PM. OPEN MUSIC CONTINUES UNTIL 2:30AM.

Description and Location of Neighborhood Residual Sounds. Fairly Constant in Nature (included in all measurements):
STEADY TRAFFIC ON PARKS HWY.

Description and Location of Extraneous Sounds. Intermittent in Nature. Not from Source Facility (excluded from all measurements):
UNMUFFLED VEHICLES ON PARKS HWY. ALL LOCAL TRAFFIC ON LAKE ST, S. WILLOW ST, PARK AVE, SUSITNA AVE. AIRCRAFT, BARKING DOG, TRAIN

Description of Instrumentation:
 Make, Model#, ANSI Type Serial # Last Certified
 Sound Level Meter AZME 247 TYPE II 3734 11/14/12
 Sound Level Calibrator AZMECAL 62 11596 11/14/12
 Wind Screen (yes/no) Y Wind Meter (y/n) Y Other -
 Time of Calibration/Battery Checks (Before, After, Every Hour) 01:16

Weather Conditions: Precipitation (y/n) N Ground Wet (y/n) N Temperature: 65° °F
 Wind Velocity, With Time Taken 1-4-2-3 MPH 01:17 2-4-3.6 MPH 01:48

Measurement of Ambient Sound:

Time	Level (dB) C	Type of Residual (source off, etc.)	Location of Measurement/Comments
01:21	60	SOURCE OFF	A BETWEEN SOURCES
01:25	59	" "	A " "
01:30	61	" "	A " "

Measurement of Total Sound:

Time	Level (dB) C	Corrected (Source) Level	Δ ABOVE AMBIENT	Location of Measurement /Comments
01:18	66	66-1=65	4	A
01:19	69	69-1=68	7	A
01:20	65	65-2=63	2	A
01:22	72	72	11	A LOUD PASSAGE
01:24	74	74	13	A " "
01:27	65	65-2=63	2	A QUIET SONG
01:28	64	-	-	A QUIET SONG

Findings MUSIC WAS IN VIOLATION OF 8-52.015(D). LIMIT IS 3dB(C) ABOVE AMBIENT AT THIS TIME OF NIGHT LEVELS OF AS MUCH AS 11,13 ABOVE AMBIENT WERE DOCUMENTED

Case Disposition _____

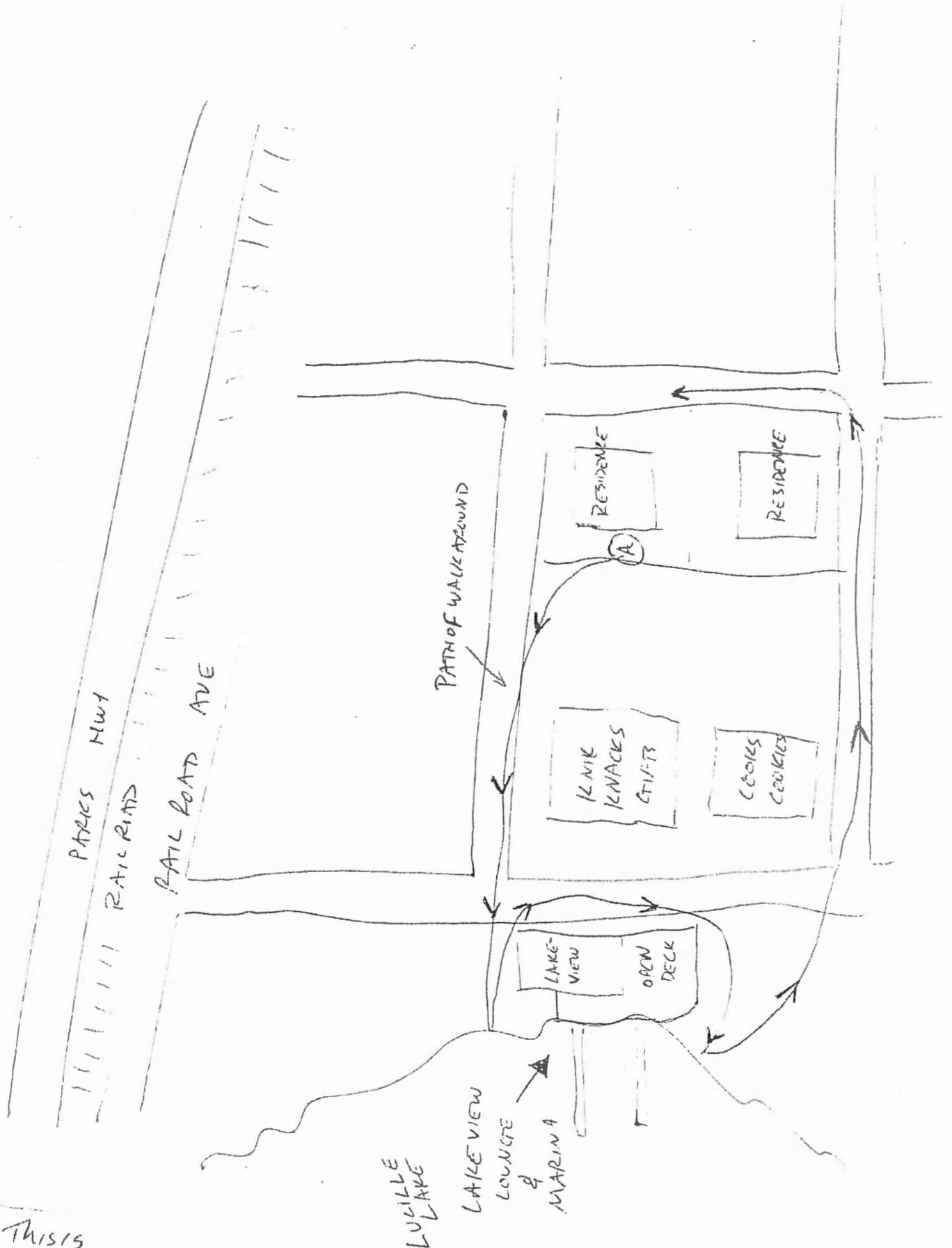
Sound Measured By:

Jimmy Decker

Report Reviewed and Approved By (If Necessary):

Bobby Bryson

INCLUDE SITE SKETCH ON REVERSE (with source, walk-around route, and exact measurement locations)



This is Completely Fictitious!

NOISE MEASUREMENT REPORT

Name/Address of Sound Source
WEST MEADOW
IDITA PARK
500 W. NELSON AVE
WASILLA

Date of Measurement 7/27/13 Day of Week SAT
 Investigator SALLY QUIET
 Name and Title of Responsible Party if Advised of Complaint:
ROBERT REDLINE, OWNER

Description and Location of Sound Sources to be Measured, Including Operation of Facility, and if this Represents the Normal Operation of the Facility:

RADIO CONTROLLED MODEL CAR RACING LAPS IN OPEN MEADOW
COMPLAINTS RECEIVED FROM PEOPLE AT WONDERLAND, CHILDRENS
STORY TELLING, AND AT THE POND NEXT TO WEBER DRIVE. MODEL CAR
IS LOUD AND WHIRRY, LIKE AN ANGRY WEED WACKER

Description and Location of Neighborhood Residual Sounds, Fairly Constant in Nature (included in all measurements):

GENERAL BUZZ OF PEOPLE TALKING LAUGHING, ETC. STEADY TRAFFIC
ON NELSON. LEAVES RUSTLING IN STEADY LIGHT WIND

Description and Location of Extraneous Sounds, Intermittent in Nature, Not from Source Facility (excluded from all measurements):

ESPECIALLY LOUD PEOPLE, UNMUFFLED VEHICLES ON NELSON, ALL TRAFFIC
ON WEBER. SEACHELLS

Description of Instrumentation:	Make	Model#	ANSI Type	Serial #	Last Certified
Sound Level Meter	NASH	1530	TYPE 1	737475	6/11/12
Sound Level Calibrator	NASH	CL		42751	6/11/12
Wind Screen (yes/no)	Y	Wind Meter (y/n)	Y	Other	
Time of Calibration/Battery Checks (Before, After, Every Hour)			1:32	PM	
Weather Conditions: Precipitation (y/n)		N	Ground Wet (y/n)		N
Temperature:		78	°F		
Wind Velocity, With Time Taken		4-7 MPH	1:33 PM		

Measurement of Ambient Sound:

Time	Level (dBA)	Type of Residual (source off, etc.)	Location of Measurement/Comments
1:45	57	SOURCE OFF	A STOPS RACING
1:52	55	SOURCE OFF	B FOR SOME REASON ↓
1:58	56	SOURCE OFF	C ↓

Measurement of Total Sound:

Time	Level (dBA)	Increase of Ambient Corrected (Source) Level	Location of Measurement /Comments
1:43	68	68-57= 11	A
1:44	71	71-57= 14	A
1:49	63	63-55= 8	B
1:50	65	65-55= 10	B
1:54	62	62-56= 6	C
1:55	64	64-56= 8	C

Findings MODEL CAR IN VIOLATION OF 5:52.015(E) LIMITING INCREASE
IN AMBIENT LEVELS OF 5 (dBA). EXCEEDANCES OF THIS LIMIT
FOUND AT ALL LOCATIONS MEASURED. PEOPLE IN PARK CAME UP TO ME
TO COMMENT & COMPLAIN ABOUT RC MODELS IN PARK

Case Disposition

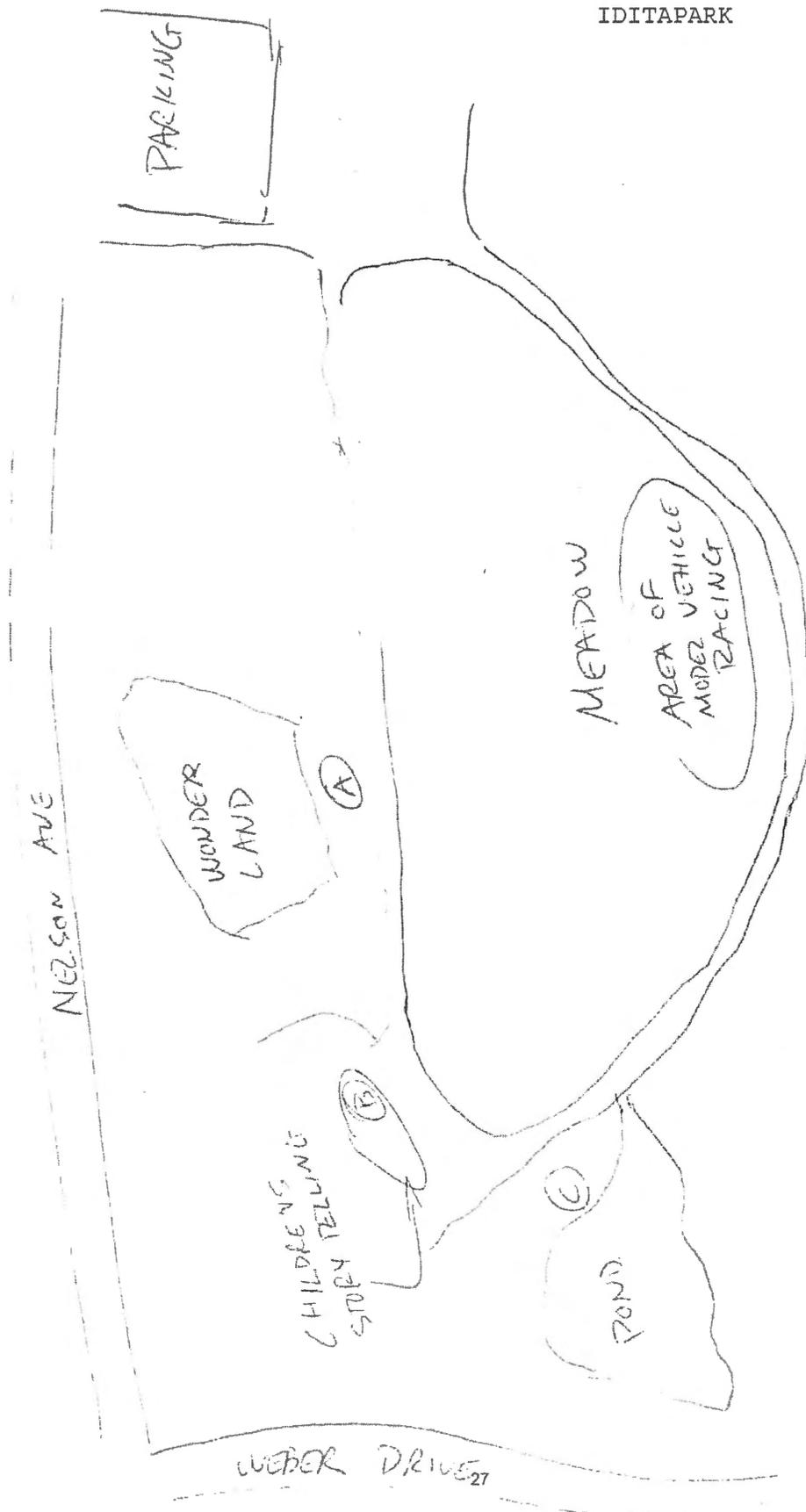
Sound Measured By:

Sally Quiet

Report Reviewed and Approved By (if Necessary):

Art Carney

INCLUDE SITE SKETCH ON REVERSE (with source, walk-around route, and exact measurement locations)



NOISE MEASUREMENT REPORT

Name/Address of Sound Source
MUDE ATS MOTOR WASH
1702 LAKE OTIS PKWY
ANCHORAGE

Date of Measurement 9/3/12 Day of Week WED
 Investigator ROBBI METERMAN
 Name and Title of Responsible Party if Advised of Complaint:
DOM DELOVISE MANAGER

Description and Location of Sound Sources to be Measured, Including Operation of Facility, and if this Represents the Normal Operation of the Facility:
CAR WASH WITH WATER JETS, FANS, BLOWERS AND SELF-SERVE
VACUUMS.

Description and Location of Neighborhood Residual Sounds, Fairly Constant in Nature (included in all measurements):
STEADY TRAFFIC ON LAKE OTIS PKWY AND C 36TH AVE IN DISTANCE. (CROWD)
NOISE FROM WATER POLO GAME ON LAKE OTIS. HVAC ON NORTHERN LIGHTS.

Description and Location of Extraneous Sounds, Intermittent in Nature. Not from Source Facility (excluded from all measurements):
UNMUFFLED VEHICLES ON LOCAL ROADS ALL TRAFFIC ON STANFORD DRIVE
CROWD YELLING AT SCORING IN POLO GAME ON LAKE OTIS. BARKING DOG

Description of Instrumentation:	Make	Model#	ANSI Type	Serial #	Last Certified
Sound Level Meter	ANDERSON LX		TYPE I	115995	3/2/12
Sound Level Calibrator	ANDERSON LX			74748	3/2/12
Wind Screen (yes/no)	Y	Wind Meter (y/n)	Y	Other	-
Time of Calibration: Battery Checks (Before, After, Every Hour)		2:45 AM	3:05 PM		
Weather Conditions: Precipitation (y/n)		N	Ground Wet (y/n)	N	Temperature: 57 °F
Wind Velocity, With Time Taken		<2 MPH 2:46 PM	<2 MPH 3:07 PM		

Measurement of Ambient Sound:

Time	Level (dB) A	Type of Residual (source off, etc.)	Location of Measurement/Comments
2:50	61	SOURCE OFF	A No ACTIVITY
2:51	62	" "	A " "
2:56	63	" "	A " "

Measurement of Total Sound:

Time	Level (dB) A	Corrected (Source) Level	Location of Measurement /Comments
2:46	68	68-2=66	A
2:47	69	69-1=68	A
2:48	67	67-2=65	A
2:52	74	74	SELF SERVE VACUUM
2:53	76	76	" " "
2:54	80	80	" " "
2:59	64	-	LOW LEVEL ACTIVITY
3:00	82	82	BLOWER

Findings CAR WASH IN VIOLATION OF 15.70.030(A). PERMISSIBLE LIMIT IS
65 dBA, COMMERCIAL SOURCE-RESIDENTIAL RECEPTOR

Case Disposition

Sound Measured By:

Robbi Meterman

Report Reviewed and Approved By (If Necessary):

James T. Kwik

INCLUDE SITE SKETCH ON REVERSE (with source, walk-around route, and exact measurement locations)

35

LAKE OTIS
ELEMENTARY
SCHOOL

LAKE OTIS PKWY

NORTHERN
LIGHTING

PATH OF WALKAROUND

MUDFLATS
MOTOR WASH

SEWARDS
SELECT
SAUSAGES

DUKE DRIVE

STANFORD DRIVE

A

RESIDENCE

RESIDENCE

This is completely
fictitious

NOISE MEASUREMENT REPORT

Name/Address of Sound Source
TUDOR CLEANERS
712 E. TUDOR RD
ANN ARBOR MI

Date of Measurement 8/17/12 Day of Week WED
 Investigator NANCY NOISESTOPPER
 Name and Title of Responsible Party if Advised of Complaint:
IMA RUCKUS OWNER

Description and Location of Sound Sources to be Measured, Including Operation of Facility, and if this Represents the Normal Operation of the Facility:

DRY CLEANER WITH EXHAUST DIRECTED AT APARTMENT COMPLEX.
SOUNDS LIKE STEAM ESCAPING WITH LOUD HISsing

Description and Location of Neighborhood Residual Sounds, Fairly Constant in Nature (included in all measurements):

STEADY TRAFFIC ON E. TUDOR RD. HUM OF ACTIVITY IN SACRAMENTO
SUPERMARKET PARKING LOT. TRUCK ON ROOF OF SACRAMENTO

Description and Location of Extraneous Sounds, Intermittent in Nature, Not from Source Facility (excluded from all measurements):

TRUCKS WITH ENGINE COMPRESSION BRAKES (JAKE BRAKES) CAR
DOORS SLAMMING IN APT PARKING LOT

Description of Instrumentation:	Make	Model#	ANSI Type	Serial #	Last Certified
Sound Level Meter	KOHAKU	1650	II	4278932A	6/10/12
Sound Level Calibrator	KOCEL	125		429315A	6/10/12
Wind Screen (yes/no)	Y	Wind Meter (y/n)	Y	Other	
Time of Calibration/Battery Checks (Before, After, Every Hour) <u>6:35 PM</u>					
Weather Conditions: Precipitation (y/n) <u>N</u> Ground Wet (y/n) <u>N</u> Temperature: <u>67</u> °F					
Wind Velocity, With Time Taken <u>6:43 PM 2-4 MPH</u>					

Measurement of Ambient Sound:

Time	Level (dB)	Type of Residual (source off, etc.)	Location of Measurement/Comments
6:54	64	BEHIND BARRIER	B
6:55	64	" "	B
7:01	(63)	SOURCE OFF	A CLEANER CLOSED AT 7:00 PM

Measurement of Total Sound:

Time	Level (dB)	Corrected (Source) Level	Location of Measurement /Comments
6:46	72	72-1 = 71	A
6:48	72	72-1 = 71	A
6:49	72	72-1 = 71	A
6:59	72	72-1 = 71	A

Findings CLEANER IN VIOLATION OF 15.70.030 (A). PERMISSIBLE
LIMIT IS 65.0 (dB) FOR RESIDENTIAL RECEPTOR FROM COMMERCIAL SOURCE.

Case Disposition

Sound Measured By:

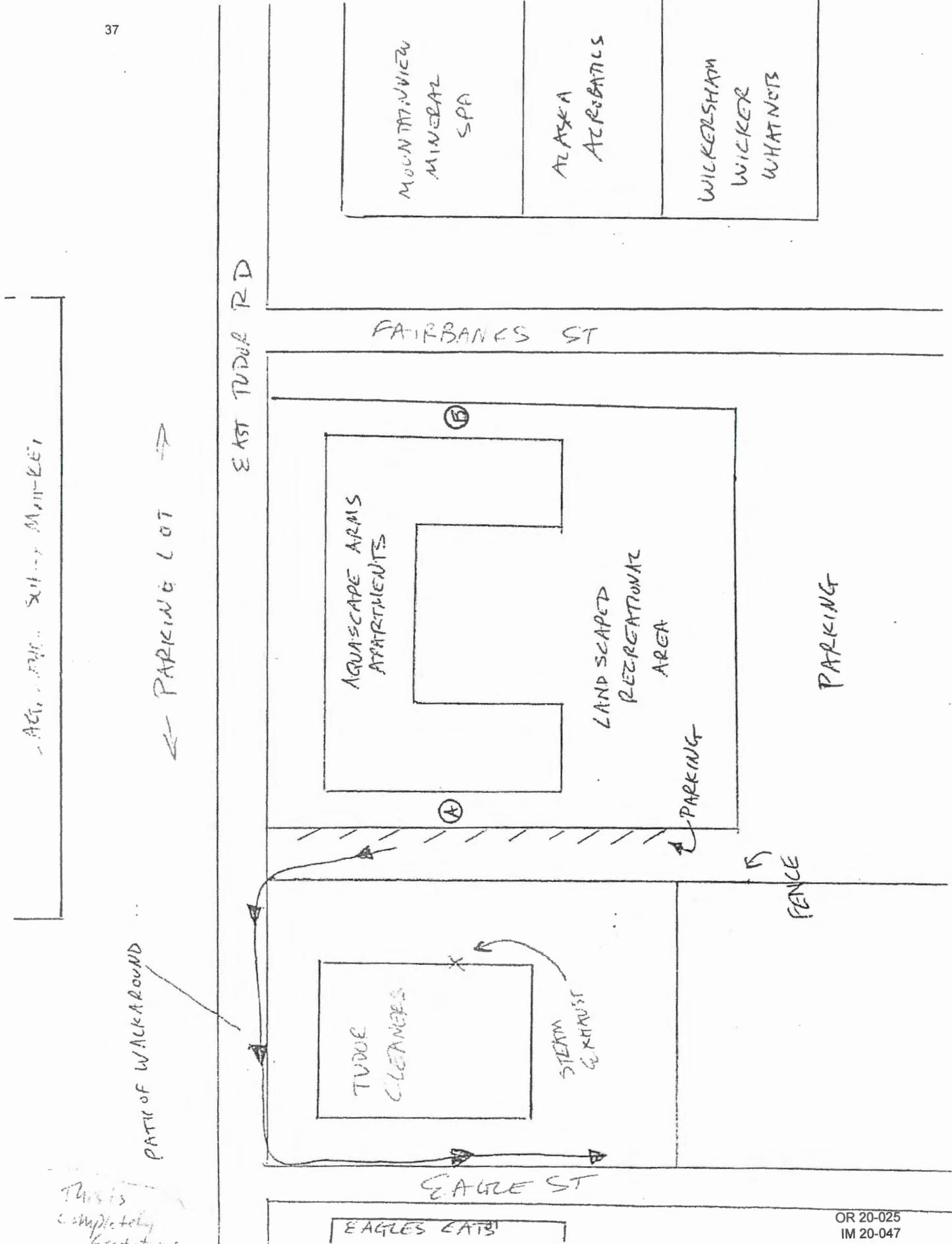
Nancy Noisestopper

Report Reviewed and Approved By (If Necessary):

J R Egan

INCLUDE SITE SKETCH ON REVERSE (with source, walk-around route, and exact measurement locations)

37



This is completely fraudulent

knowledge of the presence of a range, adjoining parcels have been rezoned for new housing developments, giving little, if any, forethought to future consequences.

3.03.1.2 One of the primary yet often overlooked considerations in developing a range project is the economic impact the facility will have on the community. How it affects the community should it locate nearby, or if it is forced to move to another site are critical issues. Local economies are important. Even though shooting is a recreational activity, the range becomes part of the local business community. Outside activities, such as tournaments, bring outside money into the economy thereby playing an important political role in the local community.

3.03.2 Existing Conditions

3.03.2.1 What are the existing conditions at the proposed or existing site? Study the environment to determine what impact is occurring. This is the reason an environmental analysis (EA) is necessary. Conducting an EA requires a thorough review to determine if there is any reason to implement a major and costly sound abatement program. It requires a complete description of what may or may not occur if the range is built. (See Section I, Chap. 3, paragraph 2.14 for guidance and procedures for conducting an environmental analysis.)

3.03.3 Future Conditions

3.03.3.1 As a general guide, the following categories were developed by the NRA based on field and text book work:

- (1) Unacceptable: If the sound level exceeds 90 dB(A) for 1 hour out of 24 or exceeds 85 dB(A) for 8 hours out of 24 and the receiver is less than 1/4 mile from the sound source.
- (2) Discretionary: Normally Acceptable, if the level exceeds 80 dB(A) for 8 hours out of 24 or if there are "loud" impulsive sounds (referring to sonic booms, artillery, etc.) on site and the distance from the property boundary and the receiver is one mile or more.
- (3) Discretionary: Normally acceptable if the level does not exceed 75 dB(A) at the property boundary more than 6 hours out of 24 hours and distance from the boundary line and the receiver is over 1/2 mile.
- (4) Acceptable: If the sound levels at the receiver do not exceed 65 dB(A) more than 8 hours out of 24 or activities do not extend into the nighttime hours of 10 p.m. through 7 a.m.

Active shooting is to take place during the daytime hours of 7 a.m. to 10 p.m., with curtailed, but not necessarily discontinued activities during evening hours of 7 p.m. to 10 p.m. Shooting activities should not continue into nighttime hours, between 10 p.m. and 7 a.m. unless needed for mandatory low light training by law enforcement personnel.

3.03.4 Regulatory Controls

3.03.4.1 Governmental planning organizations offer services to local agencies to assist them in developing goals and policies for community "noise" control. They also provide general land use, environmental protection and open space recommendations. In July 1981, the U.S. Environmental Protection Agency developed a Community Noise Assessment Program designed to assist communities to assess, control and improve their noise environment. Even though this document focuses on larger more densely populated areas, it does provide some valuable tips for the range planner.

3.03.4.2 A number of states have laws relating to noise. Most of these noise laws are concerned with motor vehicle, snowmobile, or boating sounds. A few, such as Connecticut, Illinois, and New

By Standard Number / 1910.95 - Occupational noise exposure.

- **Part Number:** 1910
- **Part Number Title:** Occupational Safety and Health Standards
- **Subpart:** 1910 Subpart G
- **Subpart Title:** Occupational Health and Environmental Control
- **Standard Number:** 1910.95
- **Title:** Occupational noise exposure.
- **Appendix:** A; B; C; D; E; F; G; H; I
- **GPO Source:** e-CFR

1910.95(a)

Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at slow response. When noise levels are determined by octave band analysis, the equivalent A-weighted sound level may be determined as follows:

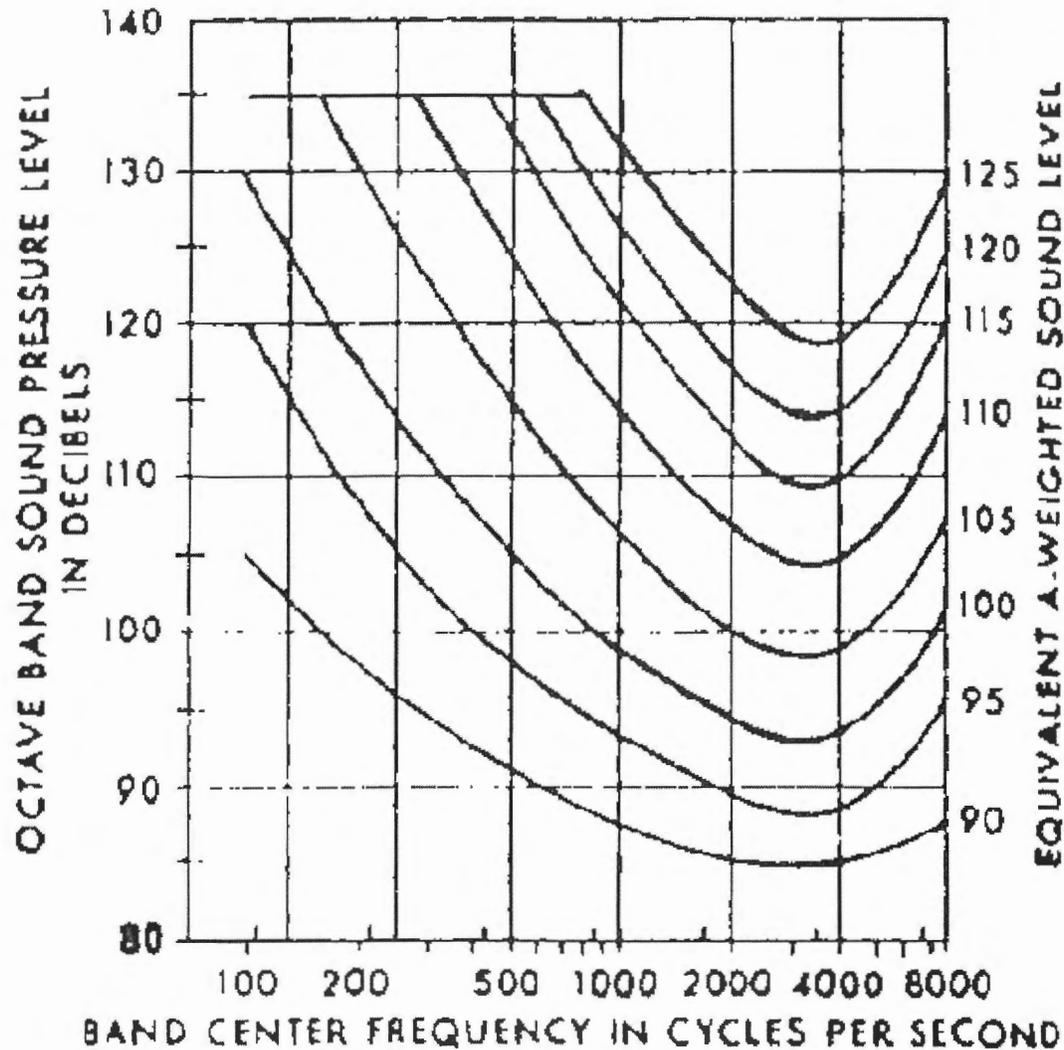


FIGURE G-9

Equivalent sound level contours. Octave band sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on this graph and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, is used to determine exposure limits from Table 1.G-16.

1910.95(b)(1)

When employees are subjected to sound exceeding those listed in Table G-16, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of Table G-16, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

1910.95(b)(2)

If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous.

TABLE G-16 - PERMISSIBLE NOISE EXPOSURES (1)

Duration per day, hours	Sound level dBA slow response
8.....	90
6.....	92
4.....	95
3.....	97
2.....	100
1 1/2	102
1.....	105
1/2	110
1/4 or less.....	115

Footnote(1) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C(1)/T(1) + C(2)/T(2) + \dots + C(n)/T(n)$ exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

1910.95(c)

"Hearing conservation program."

1910.95(c)(1)

The employer shall administer a continuing, effective hearing conservation program, as described in paragraphs (c) through (o) of this section, whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with appendix A and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment.

1910.95(c)(2)

For purposes of paragraphs (c) through (n) of this section, an 8-hour time-weighted average of 85 decibels or a dose of fifty percent shall also be referred to as the action level.

1910.95(d)

"Monitoring."

1910.95(d)(1)

When information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, the employer shall develop and implement a monitoring program.

1910.95(d)(1)(i)

The sampling strategy shall be designed to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.

1910.95(d)(1)(ii)

Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, the employer shall use representative personal sampling to comply with the monitoring requirements of this paragraph unless the employer can show that area sampling produces equivalent results.

1910.95(d)(2)(i)

All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels shall be integrated into the noise measurements.

1910.95(d)(2)(ii)

Instruments used to measure employee noise exposure shall be calibrated to ensure measurement accuracy.

1910.95(d)(3)

Monitoring shall be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:

1910.95(d)(3)(i)

Additional employees may be exposed at or above the action level; or

1910.95(d)(3)(ii)

The attenuation provided by hearing protectors being used by employees may be rendered inadequate to meet the requirements of paragraph (j) of this section.

1910.95(e)

"Employee notification." The employer shall notify each employee exposed at or above an 8-hour time-weighted average of 85 decibels of the results of the monitoring.

1910.95(f)

"Observation of monitoring." The employer shall provide affected employees or their representatives with an opportunity to observe any noise measurements conducted pursuant to this section.

1910.95(g)

"Audiometric testing program."

1910.95(g)(1)

The employer shall establish and maintain an audiometric testing program as provided in this paragraph by making audiometric testing available to all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels.

1910.95(g)(2)

The program shall be provided at no cost to employees.

1910.95(g)(3)

Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation, or who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be certified. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.

1910.95(g)(4)

All audiograms obtained pursuant to this section shall meet the requirements of Appendix C: "Audiometric Measuring Instruments."

1910.95(g)(5)

"Baseline audiogram."

1910.95(g)(5)(i)

Within 6 months of an employee's first exposure at or above the action level, the employer shall establish a valid baseline audiogram against which subsequent audiograms can be compared.

1910.95(g)(5)(ii)

"Mobile test van exception." Where mobile test vans are used to meet the audiometric testing obligation, the employer shall obtain a valid baseline audiogram within 1 year of an employee's first exposure at or above the action level. Where baseline audiograms are obtained more than 6 months after the employee's first exposure at or above the action level, employees shall wear hearing protectors for any period exceeding six months after first exposure until the baseline audiogram is obtained.

1910.95(g)(5)(iii)

Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.

1910.95(g)(5)(iv)

The employer shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.

1910.95(g)(6)

"Annual audiogram." At least annually after obtaining the baseline audiogram, the employer shall obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.

1910.95(g)(7)

"Evaluation of audiogram."

1910.95(g)(7)(i)

Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift as defined in paragraph (g)(10) of this section has occurred. This comparison may be done by a technician.

1910.95(g)(7)(ii)

If the annual audiogram shows that an employee has suffered a standard threshold shift, the employer may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.

1910.95(g)(7)(iii)

The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. The employer shall provide to the person performing this evaluation the following information:

1910.95(g)(7)(iii)(A)

A copy of the requirements for hearing conservation as set forth in paragraphs (c) through (n) of this section;

1910.95(g)(7)(iii)(B)

The baseline audiogram and most recent audiogram of the employee to be evaluated;

1910.95(g)(7)(iii)(C)

Measurements of background sound pressure levels in the audiometric test room as required in Appendix D: Audiometric Test Rooms.

1910.95(g)(7)(iii)(D)

Records of audiometer calibrations required by paragraph (h)(5) of this section.

1910.95(g)(8)

"Follow-up procedures."

1910.95(g)(8)(i)

If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift as defined in paragraph (g)(10) of this section has occurred, the employee shall be informed of this fact in writing, within 21 days of the determination.

1910.95(g)(8)(ii)

Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, the employer shall ensure that the following steps are taken when a standard threshold shift occurs:

1910.95(g)(8)(ii)(A)

Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.

1910.95(g)(8)(ii)(B)

Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.

1910.95(g)(8)(ii)(C)

The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

1910.95(g)(8)(ii)(D)

The employee is informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.

1910.95(g)(8)(iii)

If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels indicates that a standard threshold shift is not persistent, the employer:

1910.95(g)(8)(iii)(A)

Shall inform the employee of the new audiometric interpretation; and

1910.95(g)(8)(iii)(B)

May discontinue the required use of hearing protectors for that employee.

1910.95(g)(9)

"Revised baseline." An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram:

1910.95(g)(9)(i)

The standard threshold shift revealed by the audiogram is persistent; or

1910.95(g)(9)(ii)

The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

1910.95(g)(10)

"Standard threshold shift."

1910.95(g)(10)(i)

As used in this section, a standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

1910.95(g)(10)(ii)

In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in Appendix F: "Calculation and Application of Age Correction to Audiograms."

1910.95(h)

"Audiometric test requirements."

1910.95(h)(1)

Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency shall be taken

separately for each ear.

1910.95(h)(2)

Audiometric tests shall be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.6-1969, which is incorporated by reference as specified in Sec. 1910.6.

1910.95(h)(3)

Pulsed-tone and self-recording audiometers, if used, shall meet the requirements specified in Appendix C: "Audiometric Measuring Instruments."

1910.95(h)(4)

Audiometric examinations shall be administered in a room meeting the requirements listed in Appendix D: "Audiometric Test Rooms."

1910.95(h)(5)

"Audiometer calibration."

1910.95(h)(5)(i)

The functional operation of the audiometer shall be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.

1910.95(h)(5)(ii)

Audiometer calibration shall be checked acoustically at least annually in accordance with Appendix E: "Acoustic Calibration of Audiometers." Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check. Deviations of 15 decibels or greater require an exhaustive calibration.

1910.95(h)(5)(iii)

An exhaustive calibration shall be performed at least every two years in accordance with sections 4.1.2; 4.1.3.; 4.1.4.3; 4.2; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

1910.95(i)

"Hearing protectors."

1910.95(i)(1)

Employers shall make hearing protectors available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors shall be replaced as necessary.

1910.95(i)(2)

Employers shall ensure that hearing protectors are worn:

1910.95(i)(2)(i)

By an employee who is required by paragraph (b)(1) of this section to wear personal protective equipment; and

1910.95(i)(2)(ii)

By any employee who is exposed to an 8-hour time-weighted average of 85 decibels or greater, and who:

1910.95(i)(2)(ii)(A)

Has not yet had a baseline audiogram established pursuant to paragraph (g)(5)(ii); or

1910.95(i)(2)(ii)(B)

Has experienced a standard threshold shift.

1910.95(i)(3)

Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the employer.

1910.95(i)(4)

The employer shall provide training in the use and care of all hearing protectors provided to employees.

1910.95(i)(5)

The employer shall ensure proper initial fitting and supervise the correct use of all hearing protectors.

1910.95(j)

"Hearing protector attenuation."

1910.95(j)(1)

The employer shall evaluate hearing protector attenuation for the specific noise environments in which the protector will be used. The employer shall use one of the evaluation methods described in Appendix B: "Methods for Estimating the Adequacy of Hearing Protection Attenuation."

1910.95(j)(2)

Hearing protectors must attenuate employee exposure at least to an 8-hour time-weighted average of 90 decibels as required by paragraph (b) of this section.

1910.95(j)(3)

For employees who have experienced a standard threshold shift, hearing protectors must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.

1910.95(j)(4)

The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. The employer shall provide more effective hearing protectors where necessary.

1910.95(k)

"Training program."

1910.95(k)(1)

The employer shall train each employee who is exposed to noise at or above an 8-hour time weighted average of 85 decibels in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.

1910.95(k)(2)

The training program shall be repeated annually for each employee included in the hearing conservation program. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.

1910.95(k)(3)

The employer shall ensure that each employee is informed of the following:

1910.95(k)(3)(i)

The effects of noise on hearing;

1910.95(k)(3)(ii)

The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and

1910.95(k)(3)(iii)

The purpose of audiometric testing, and an explanation of the test procedures.

1910.95(l)

"Access to information and training materials."

1910.95(l)(1)

The employer shall make available to affected employees or their representatives copies of this standard and shall also post a copy in the workplace.

1910.95(l)(2)

The employer shall provide to affected employees any informational materials pertaining to the standard that are supplied to the employer by the Assistant Secretary.

1910.95(l)(3)

The employer shall provide, upon request, all materials related to the employer's training and education program pertaining to this standard to the Assistant Secretary and the Director.

1910.95(m)

"Recordkeeping" -

1910.95(m)(1)

"Exposure measurements." The employer shall maintain an accurate record of all employee exposure measurements required by paragraph (d) of this section.

1910.95(m)(2)

"Audiometric tests."

1910.95(m)(2)(i)

The employer shall retain all employee audiometric test records obtained pursuant to paragraph (g) of this section:

1910.95(m)(2)(ii)

This record shall include:

1910.95(m)(2)(ii)(A)

Name and job classification of the employee;

1910.95(m)(2)(ii)(B)

Date of the audiogram;

1910.95(m)(2)(ii)(C)

The examiner's name;

1910.95(m)(2)(ii)(D)

Date of the last acoustic or exhaustive calibration of the audiometer; and

1910.95(m)(2)(ii)(E)

Employee's most recent noise exposure assessment.

1910.95(m)(2)(ii)(F)

The employer shall maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.

1910.95(m)(3)

"Record retention." The employer shall retain records required in this paragraph (m) for at least the following periods.

1910.95(m)(3)(i)

Noise exposure measurement records shall be retained for two years.

1910.95(m)(3)(ii)

Audiometric test records shall be retained for the duration of the affected employee's employment.

1910.95(m)(4)

"Access to records." All records required by this section shall be provided upon request to employees, former employees, representatives designated by the individual employee, and the Assistant Secretary. The provisions of 29 CFR 1910.1020 (a)-(e) and (g)-(i) apply to access to records under this section.

1910.95(m)(5)

"Transfer of records." If the employer ceases to do business, the employer shall transfer to the successor employer all records required to be maintained by this section, and the successor employer shall retain them for the remainder of the period prescribed in paragraph (m)(3) of this section.

1910.95(n)

"Appendices."

1910.95(n)(1)

Appendices A, B, C, D, and E to this section are incorporated as part of this section and the contents of these appendices are mandatory.

1910.95(n)(2)

Appendices F and G to this section are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

1910.95(o)

"Exemptions." Paragraphs (c) through (n) of this section shall not apply to employers engaged in oil and gas well drilling and servicing operations.

[39 FR 23502, June 27, 1974, as amended at 46 FR 4161, Jan. 16, 1981; 46 FR 62845, Dec. 29, 1981; 48 FR 9776, Mar. 8, 1983; 48 FR 29687, June 28, 1983; 54 FR 24333, June 7, 1989; 61 FR 5507, Feb. 13, 1996; 61 FR 9227, March 7, 1996; 71 FR 16672, April, 3, 2006; 73 FR 75584, Dec. 12, 2008]

UNITED STATES DEPARTMENT OF LABOR

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Washington, DC 20210
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CODE ORDINANCE

Sponsored by:
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**MATANUSKA-SUSITNA BOROUGH
ORDINANCE SERIAL NO. 20-025**

AN ORDINANCE OF THE MATANUSKA-SUSITNA BOROUGH ASSEMBLY ADOPTING MSB 17.68 OUTDOOR SHOOTING FACILITIES IN ORDER TO ESTABLISH STANDARDS FOR COMMERCIAL, EDUCATIONAL, AND NONPROFIT OUTDOOR SHOOTING FACILITIES.

WHEREAS, the rationale and intent of this ordinance are found in IM NO. 20-047 which accompanies this ordinance.

BE IT ENACTED:

Section 1. Classification. This ordinance is of a general and permanent nature and shall become a part of the Borough Code.

Section 2. Adoption of Chapter. MSB 17.68 is hereby adopted as follows:

17.68 OUTDOOR SHOOTING FACILITIES

17.68.010 INTENT

17.68.020 DEFINITIONS

17.68.030 APPLICABILITY

17.68.040 APPLICATION PROCEDURES

17.68.050 GENERAL STANDARDS

17.68.060 OPERATING STANDARDS

17.68.070 APPEALS

17.68.080 TERMINATION OF PERMIT

17.68.090 TRANSFER OF PERMIT

17.68.100 NONCONFORMING USES

17.68.110 VIOLATIONS, ENFORCEMENTS, AND PENALTIES

17.68.010 INTENT

(A) It is the intent of this chapter to allow outdoor shooting facilities to operate within the Borough while minimizing the likelihood that people, domestic animals, or properties will be jeopardized.

17.68.020 DEFINITIONS

(A) For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

"Outdoor Shooting Facility" means real property used for commercial, educational, or non-profit shooting activities, typically involving rifles, shotguns, pistols, silhouettes, skeet, trap or black powder.

"Firing Position (Point)" means an area where firearms are discharged, having a specified width and depth that is occupied by a shooter, their equipment and, if appropriate, an instructor.

"Firing Lane" means the expected path of gunfire from the firing position to the target.

"Firing Line" means a line parallel to the targets behind which firearms are discharged.

"Surface Danger Zone (SDZ)" means a depiction of the mathematically predicted area a projectile will return to earth either by direct fire or by ricochet. The SDZ is the area extending from a firing point to a distance downrange based on the projectiles fired.

17.68.030 APPLICABILITY

(A) This chapter applies in all areas of the Borough including special land use districts and residential land use districts. Where this chapter is in conflict with the conditions of a special land use district or residential land use district, the most restrictive conditions shall apply.

(B) This chapter does not apply within the cities of Houston, Palmer, or Wasilla.

(C) This chapter applies to all outdoor shooting facilities except outdoor shooting facilities that are used exclusively for:

(a) archery or air guns;

(b) law enforcement or United States Military

purposes; or

(c) fully enclosed facilities designed to offer a completely controlled shooting environment.

(D) This chapter does not regulate the discharge of firearms on private property where the property is not open to the public on a commercial, education, nonprofit, or membership basis.

17.68.040 APPLICATION PROCEDURES

(A) An application for an outdoor shooting facility permit may be initiated by a property owner or the owner's authorized agent and shall be filed on a form provided by the Borough.

(1) The application for an outdoor shooting facility permit shall be accompanied by an appropriate filing fee as established by the assembly, payable to the Borough.

(2) The application shall include the following:

(a) a certified site plan drawn to scale showing a complete layout of the range including location of backstops, firing lanes, firing positions, firing lines, side berms, target areas, and baffles;

(b) identification of all buildings within 1,000 feet of the firing positions;

(c) dimensions and construction materials of all backstops, baffles, firing lanes, and side berms; and

(d) maximum caliber of firearm to be allowed at the range, if any.

(e) certification by a professional civil engineer or other qualified professional registered in the state of Alaska under AS 08.48 that the facility is designed to meet the requirements of 17.68.050(A)(2)-(3).

(f) A site-specific environmental stewardship plan for managing shooting-associated materials, in accordance with EPA Best Management Practices.

(g) Surface danger zones as determined by a professional engineer registered in the state of Alaska under AS 08.48.

(B) The director or designated staff shall determine whether an application for an outdoor shooting facility is complete. The director shall provide the

applicant with a written explanation of application deficiencies within 10 working days of the date the application is received.

(C) Notification for outdoor shooting facilities shall be in accordance with MSB 17.03, public notification, except that the notification area will be one-half mile.

(D) Within 45 calendar days of receipt of a complete application the director shall approve the permit upon determination that the standards of this chapter have been met.

17.68.050 GENERAL STANDARDS

(A) In granting a permit under this chapter, the director shall make findings that all of the following standards have been met:

(1) Firing positions are located at least one thousand feet from all habitable buildings which are not on the same parcel.

(a) This standard only applies to buildings which were in existence at the time that application was made for the outdoor shooting facility.

(2) There are no habitable buildings within the surface danger zone.

(3) The proposed backstops are a minimum of twenty feet in height and are constructed behind all targets. The backstops shall be:

(a) impenetrable to all calibers used at the facility;

(b) designed to contain all projectiles within the designated shooting area;

(c) constructed of material that does not cause unintended ricochet of projectiles; and

(d) connected to each side berm.

(4) The proposed side berms shall:

(a) be constructed parallel to firing lanes:

(b) extend the length of the firing lanes, from the backstop to the firing line;

(c) be a minimum of eight feet in height;

(d) be designed to contain all projectiles within the designated shooting area;

(e) be impenetrable to all calibers used at the facility;

(f) be constructed of material that does not cause unintended ricochet of projectiles.

(5) The director may waive the requirement for side berms if it is determined they are not necessary because of natural topographic features.

(6) Shotgun-only ranges are exempt from paragraphs (3) through (5) of this subsection.

(7) Outdoor shooting facilities may not be designed in a manner that directs projectiles into or over waterbodies or wetlands.

17.68.060 OPERATING STANDARDS

(A) Hours of operation shall not to exceed 8:00 AM - 9:00 PM.

(B) No sound resulting from the outdoor shooting facility is allowed to exceed 90 dB(a) as measured at or within the boundary of the property of the receiving land.

17.68.070 APPEALS

(A) Appeals from a decision of the director granting or denying a permit under this chapter shall be filed and conducted in accordance with MSB 15.39.

17.68.080 TERMINATION OF PERMIT

(A) Except as otherwise specified by code, a permit issued under this chapter will become null and void under the following conditions:

(1) notification of termination of the permit for failure to comply with an order to correct violations of a permit;

(2) failure to initiate the use for which the permit was issued within five years of the date of the permit issuance;

(3) cessation of the use for which the permit was issued for a period exceeding five consecutive years.

17.68.090 TRANSFER OF PERMIT

(A) Except as otherwise specified by code, the privileges and requirements of a permit issued under this chapter shall run with the land.

(B) Within 90 days of recording the transfer of ownership of the subject land, the new owner must provide written notification and a signed acknowledgment that the new owner assumes responsibility for compliance with the requirements of the permit.

17.68.100 NONCONFORMING USES

(A) Within the borough there may be outdoor shooting facilities that have commenced actual construction or are in existence as of the effective date of this chapter. Such facilities which were lawful before the effective date of this chapter, but which would otherwise be prohibited, regulated or restricted under this chapter, are allowed to continue but shall not be expanded except as provided in this chapter.

(B) No nonconforming use shall be constructed or operated except in accordance with these regulations, except to the extent it was in existence or under actual construction as of the effective date of the ordinance codified herein or amendment thereto.

17.68.110 VIOLATIONS, ENFORCEMENTS, AND PENALTIES

(A) Remedies, enforcement actions, and penalties shall be consistent with the terms and provisions of MSB

1.45.

(B) In addition to other applicable penalties, failure to correct the violation of code, after reasonable notice, may result in revocation of the permit.

(C) Complaints received by the Borough of violations of state or federal law will be forwarded to the appropriate agency for enforcement.

(D) Authorized representatives of the borough shall be allowed to inspect the site and related records at reasonable times for the purpose of monitoring compliance with all permit conditions.

(E) The permittee shall assist and cooperate with authorized inspections upon reasonable notice from the borough.

Section 3. Effective date. This ordinance shall take effect upon adoption.

ADOPTED by the Matanuska-Susitna Borough Assembly this - day of -, 2020.

VERN HALTER, Borough Mayor

ATTEST:

LONNIE R. McKECHNIE, CMC, Borough Clerk

(SEAL)

Public Comments

Mary Brodigan

From: Jason Ortiz <jason.ortiz.district2@gmail.com>
Sent: Monday, March 16, 2020 10:21 AM
To: Mary Brodigan
Subject: Fwd: Common sense gun range rules

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Mary,

I received this correspondence from an individual person. I let him know that I forwarded his correspondence to you so it would be included for the public to see. There was no other conversation.

Thank you,
Jason

----- Forwarded message -----

From: NORM STOUT <stoutnw@mtaonline.net>
Date: Fri, Mar 13, 2020 at 8:46 AM
Subject: Common sense gun range rules
To: <msbpcdl@gmail.com>, <Jason.Ortiz.District2@gmail.com>, <chesbro@mtaonline.net>, <cjvague@gmail.com>, <celder357@gmail.com>
Cc: <Vern.Halter@matsugov.us>, <TimHaleDistrict1@gmail.com>, <StephanieNowersDistrict2@gmail.com>, <george.mckee@matsugov.us>, <tedleonarddistrict4@gmail.com>, <dan.mayfield@matsugov.us>, <jessesumnerdistrict6@gmail.com>, <tamboevedistrict7@gmail.com>, <john.moosey@matsugov.us>

Planning Commission Members,

My name is Norm Stout. I have lived up off of Edgerton Parks Road for 30 years and enjoy the peace and quiet up there next to the Government Peak Recreation Area. As some of you might know, a commercial shooting range started to develop in our neighborhood a while ago and our neighborhood and community council membership soundly rejected the plan. To our dismay, there are no rules in the Borough regulating the development of shooting ranges. Our neighborhood was bombarded by rapid fire, large caliber semi-automatic gunfire from multiple guns fired simultaneously by patrons of a gun store that was allowing the testing of weapons they were selling. A business was making money at the expense of my neighborhood's peace and quiet and our loss of property values. Imagine living in your quiet community for 30 years, ready to retire and live out your life there and you wake up to daily non-stop shooting by a business that makes money doing it?! This happened to us, and it can happen to you. Neighborhoods need reasonable protections from this unbelievable intrusion. We regulate barking dogs and amplified music and how your driveway joins a borough road, but we have nothing to protect us from a much worse plague upon a neighborhood: incredibly loud and intrusive gun fire noise. Neighborhoods have the right to 'quiet enjoyment'. Gunfire noise does not stop at a property line, and therefore the activity from a range dramatically affects others property, others lives and others property values. Recognize that the silent majority here, literally, are the tens of thousands of homeowners who value their quiet enjoyment and property values and their safety far more than they value a gun range, which, even if they own guns and enjoy shooting, they may use only once a year.

Consider the following when planning for common sense gun range rules.

1. Given that there are no rules currently, there obviously would be far more ranges in the Borough if the demand for them was out there. The hype created by the opposition to gun range rules is from the gun store that makes money selling guns and was recently responsible for the unbelievable noise in my neighborhood.
2. Gun ranges should be at least 5 miles from any residential community unless they are indoors, or able to completely isolate the noise created. Large caliber gunfire noise travels more than 5 miles if no noise mitigation exists. As an example, the Grouse Range that was formerly operating on Tex Al Drive was a constant scourge of noise which I endured for years at a distance of more than 3 miles from my house. This, despite the extensive natural earth embankments that were supposed to mitigate the noise. In fact, the sound from that range was often worse in our neighborhood miles away than in the local area secondary to the guns (shot guns) being fired upward at flying clay targets which directed the noise at an angle towards the community on the hillside of Government Peak. The commercial gun range that suddenly arose in our neighborhood was situated on 40 acres, which the owner thought was more than adequate. Gun range noise travels more than 5 miles which would necessitate more than 40 square miles to naturally mitigate the noise if a range was centered on a parcel.
3. Neighborhoods and homeowners have a right to 'quiet enjoyment'. We all tolerate reasonable noise intrusions by one another because we all partake in one thing or another that is marginally impossible to limit to our own property. Take for instance mowing your lawn. Gun fire noise, especially that which emanates from a range which is a business making money is not something that benefits a neighborhood and therefore should absolutely be regulated.
4. Gun range safety concerns must be addressed. Bullets can travel great distances if not controlled in a way that is literally 'bullet proof'. Neighborhoods should not have to worry that a stray or ricocheted bullet will fly into their house or endanger their family. Safeguards must be required to assure no danger to any person can exist from a gun range bullet.
5. There should be a gunfire frequency limit on all shooting in the valley, even on private property and non-profit. We all might sight in our hunting rifle now and then which would necessitate maybe 6 or eight judiciously fired shots on private property. As neighbors in communities with large parcels, we tolerate this because the noise emanates from various spots, the noise is infrequent, it is done with discretion and consideration of neighbors, it is done infrequently; maybe once every other year, and no one person is making a profit from this activity which has downside and upside to neighborhoods that is balanced. When one individual does not use good discretion and has a disregard for his or her neighbors and opts to shoot regularly and or at times which are a nuisance to a neighborhood, there becomes a limit to reasonableness and there needs to be some common sense guidelines. For instance, a limit of 20 shots fired per day from a single property should be imposed to protect neighborhoods from those that rapid fire a semi-automatic weapon in a senseless manner.
6. There needs to be a consideration to the high concentrations of poisonous elements that may be found at gun ranges. Frequent gun fire depositing uncontrolled lead bullets into the ground may affect not only the said property, but also neighbors property and therefore should be controlled.

Thanks for listening,

Norm Stout

10130 N Waldo Reed Rd
Palmer, Ak 99645
907-863-6938

Mary Brodigan

From: Mary Anderson <msbpcd1@gmail.com>
Sent: Tuesday, March 17, 2020 12:37 PM
To: Mary Brodigan
Subject: Fwd: Regulation of Shooting Ranges

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]
Received email today. Did not read.

Mary

----- Forwarded message -----

From: LYNNE WOODS <aklynn@mtaonline.net>
Date: Tue, Mar 17, 2020 at 11:03 AM
Subject: Regulation of Shooting Ranges
To: <cjvague@gmail.com>, <msbpcd1@gmail.com>
CC: <Jason.Ortiz.District2@gmail.com>, <celder357@gmail.com>, <chesbro@mtaonline.net>, <sjg@shanhill.com>, <msbsassan@gmail.com>

The issue of shooting guns and other weapons in the Mat-Su Borough has become a major nuisance to many residents. I have lived my entire life in the Matanuska Valley and have never have had to hear so many gun shots as we now have to endure. I believe it is mandatory that we require the discharge of weapons to be done in properly constructed areas to mitigate noise, environmental hazards and refuse. Requiring CUPs is one way to accomplish this goal.

Local governments have the right to regulate the discharge of weapons. This is not about the second amendment. No one is trying to remove lawful guns from anyone by requiring their discharge to be in appropriate, established areas. For our safety and reasonable right for peace and quiet, the Planning Commission must take action. Residents who do not live in cities are subjected to a daily contact barrage of gunfire. When does a gun shot make anyone feel safe? To experience this nuisance constantly for days should not continue.

Reasonable actions are needed to address gunfire at all shooting ranges:

- Construction requirements to mitigate noise with strict limits on decibels
- Mandatory adherence to hours of operation as well as days of closure
- Protection of the soils and water to mitigate pollution
- Safe distancing from residential homes

These basic requirements, at the very least, should be a part of the permit. I personally wish they all had to have silencers!

Lynne Woods

Sutton, AK

--

Mary P. Anderson
MSB Planning Commissioner
District #1

Mary Brodigan

From: Alex Strawn
Sent: Thursday, March 19, 2020 4:01 PM
To: Mary Brodigan
Subject: FW: PC 20-12 , MSB 17.68 Outdoor shooting facilities

Alex Strawn
Development Services Manager
Matanuska-Susitna Borough
350 E. Dahlia
Palmer, AK 99645
(907) 861-7854

-----Original Message-----

From: Permit Center <Permit.Center@matsugov.us>
Sent: Friday, March 13, 2020 2:36 PM
To: Alex Strawn <Alex.Strawn@matsugov.us>; Adam Bradway <Adam.Bradway@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>
Subject: FW: PC 20-12 , MSB 17.68 Outdoor shooting facilities

-----Original Message-----

From: Mark Troutman <trout@mtaonline.net>
Sent: Wednesday, March 11, 2020 7:01 PM
To: Permit Center <Permit.Center@matsugov.us>
Subject: PC 20-12 , MSB 17.68 Outdoor shooting facilities

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

I am in favor of a CUP for outdoor shooting facilities. I oppose 17.68.100 as existing facilities may be unsafe for neighboring properties and cause unreasonable risks.

I would rather have 6 or 7 reasonable people making decisions on gun ranges than 1 person who may or may not be partisan.

Thank you for allowing the public process to continue.

I am a Gun Owner and support the 2nd Amendment. No where does the 2A give a person the right to discharge a firearm where and when they want.

The word Freedom is not in the Constitution and only appears in the First Amendment.

Thanks again

Mark Troutman
8470 N. Russet Rd.
Palmer, Ak. 99645
Sent from my iPad

Alex Strawn

From: Permit Center
Sent: Monday, March 2, 2020 1:17 PM
To: Alex Strawn; Adam Bradway; Mark Whisenhunt
Subject: FW: Outdoor Shooting Facilities CUP

From: Troy Henley <troychenley@yahoo.com>
Sent: Sunday, March 1, 2020 10:08 AM
To: Permit Center <Permit.Center@matsugov.us>; Dan Mayfield <Dan.Mayfield@matsugov.us>
Subject: Outdoor Shooting Facilities CUP

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

I wish to reiterate my opposition to this ordinance. Based on the article in the Frontiersman ([Outdoor shooting range ordinance passes Mat-Su Borough Assembly 4-3, referred to Planning Commission](#)) it is clear that what constitutes a commercial shooting range in the eyes of the Borough (testing guns on private property by Mr. Howard) is far from what I or others would consider a commercial shooting range. Also, I do not believe the Borough has the expertise to regulate or inspect any ranges. As a result, the normal response will most likely be to simply deny the permit. This will also impact current ranges by denying them the ability to expand. Overall, this is a piece of legislation that is contrary to my expectations of living in the Valley.

How exactly will the Borough inspect the ranges? Where will they get the expertise? What liability will the Borough assume if they do allow a range and there is an accident there?

Again, I reiterate I am opposed to this ordinance.

Troy Henley
 Big Lake, AK



Borough Assembly 4-3, ref...

Tim Rockey Frontiersman.com

PALMER — To the dismay of many in a massive agitated group of residents who had gathered at the Mat-Su Borough A...

Alex Strawn

From: Permit Center
Sent: Friday, February 21, 2020 2:07 PM
To: Alex Strawn; Adam Bradway; Mark Whisenhunt
Subject: FW: Outdoor Shooting Facility Ordinance

From: E H <aehuddleston@outlook.com>
Sent: Thursday, February 20, 2020 10:26 AM
To: Permit Center <Permit.Center@matsugov.us>
Subject: Outdoor Shooting Facility Ordinance

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

The Shooting Facility Ordinance will end future shooting ranges in the Mat Su Borough. It's already difficult to develop a shooting range without an Ordinance. The Youth Shooting group has been trying to find land since 2015, for a place to train for youth shooting sports. No one will develop a shooting range, knowing that the Mat-Su Borough has the power to pull the shooting facility permit at anytime. By implementing an Outdoor Shooting Facility Ordinance will only create more problems in the Mat Su Borough. Shooting Facilities provide a safe environment and education, please do not take this away by creating the Outdoor Shooting Facility Ordinance.

Sincerely yours,

Esther Huddleston
aehuddleston@outlook.com

Alex Strawn

From: Permit Center
Sent: Friday, March 13, 2020 2:36 PM
To: Alex Strawn; Adam Bradway; Mark Whisenhunt
Subject: FW: PC 20-12 , MSB 17.68 Outdoor shooting facilities

-----Original Message-----

From: Mark Troutman <trout@mtaonline.net>
Sent: Wednesday, March 11, 2020 7:01 PM
To: Permit Center <Permit.Center@matsugov.us>
Subject: PC 20-12 , MSB 17.68 Outdoor shooting facilities

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

I am in favor of a CUP for outdoor shooting facilities. I oppose 17.68.100 as existing facilities may be unsafe for neighboring properties and cause unreasonable risks.

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Thank you for allowing the public process to continue.

I am a Gun Owner and support the 2nd Amendment. No where does the 2A give a person the right to discharge a firearm where and when they want.

The word Freedom is not in the Constitution and only appears in the First Amendment.

Thanks again

Mark Troutman
8470 N. Russet Rd.
Palmer, Ak. 99645
Sent from my iPad

Alex Strawn

From: Adam Bradway
Sent: Friday, March 6, 2020 9:10 AM
To: Alex Strawn
Subject: FW: public input re Shooting Ranges

From: Ellen VV <evvisse@gmail.com>
Sent: Thursday, March 5, 2020 8:04 PM
To: Legislative Comments <Legislative.Comments@matsugov.us>
Cc: Kim Sollien <Kim.Sollien@matsugov.us>; Christopher Cole <Christopher.Cole@matsugov.us>; Theodore Eischeid <Ted.Eischeid@matsugov.us>; Karol Riese <Karol.Riese@matsugov.us>; Pam Graham <Pam.Graham@matsugov.us>; Adam Bradway <Adam.Bradway@matsugov.us>
Subject: public input re Shooting Ranges

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Date: March 4, 2020
To: Members of the Mat-Su Borough
From: Ellen Vande Visse, Mat-Su resident
Re: Shooting Ranges

Hard-working Assembly Members,
(and cc to Planning Commission),

I write to each of you regarding the public comments and consideration of shooting ranges.

This is a follow up to the evening public comment session on Feb 18, and I wish I could have written to you a bit sooner.

I am very sorry that you as assembly members and as individuals were treated with such brash disrespect. You work hard to study issues and do the best for us, and certainly intimidating attacks do not feel good. You show up to listen and consider. You think about the best for our diverse population. Thank you for being present through difficult and unappreciated situations!

If I were from Outer Space and not vested in any particular group or viewpoint, but just looking in at the emotional tone of that public meeting, I would see that

1. There was a small group of people, bunched together. They were very loud, disrespectful, highly opinionated, highly fearful people who did not come together to listen, reason, or consider what are the problems and possibilities. Rather, they came to out-shout, intimidate, and shut down discussion. When asked twice to behave respectfully and not cheer, clap, etc., they continued with rebellious disdain for decorum. Does rude, disruptive, uncivil behavior count as democratic public input?
2. There was another group of people, sprinkled around the room. They were quiet, respectful, had concerns to express, and were open to finding solutions. They did not use juvenile tactics of cheering, clapping, and intimidating.

I'm wondering which you listen to. I'm wondering which you think you have to accommodate. I'm wondering if this contentiousness makes you want to avoid and dismiss the issues. I'm wondering what you consider your responsibility for good leadership for the highest good of all. I'm praying that you are not caught in My Side-Your Side traps. I'm hoping you are wanting to find mature solutions to very real problems.

So I add my thoughts.

Yes, I understand that you referred a draft gun range ordinance to the Planning Commission for its input. Thank you. These comments are for you AND please pass my comments on to Planning Commission members as well.

CITIZEN CONCERNS

As a Mat-Su resident since 1985, I ask that you take it seriously when some 200+ Valley residents sign a petition. These folks are simply asking for some regulating of commercial gun ranges. Who wants their property values, peace & quiet ruined forever by seeing a shooting range plunk down next door, with no recourse for moderating noise, hours, safety, structures, and neighborhood disruption?

SAFETY

There are places, such as Sutton/Jonesville area, that are not safe. I do not dare venture in to enjoy our great outdoors when I live in dread of a stray bullet, and can't enjoy nature when it sounds like a war zone. The lands are badly degraded by shooters and torn up land from ORV's, , trash, junk vehicles, abused land.

So a gun range would help take the pressure off these shoot-em-up areas. A shooting range would help if built with public safety in mind.

GOV'T OVERREACH?

No, that is the reason why we have government. We come together to figure out the best for the most.

Thus you can drive an auto, but you need training and a license. You need to follow speed limits for the safety of all.

You can mine gravel, but not under homes, not at 2am, not harming our shared ecosystem.

You can do construction, but not in a way that leaves untrustworthy foundations & roofs. Not in a way that leaves owners unsafe.

This is the job of government, not "over-reach".

The days of complete selfishness "to do what I want & the heck with others" is over in a Borough that is now full of residents -- 110,000 of them and growing.

SECOND AMENDMENT RIGHTS

Since when is a RIGHT to shoot anywhere at any time and not be responsible for your bullets? That normally is called irresponsible use of a firearm. It could also be called murder, if your stray bullet hits a person.

A gun range, with reasonable rules of operation, is a freedom. It protects the public safety. It protects our investment in a home or business. This is about land use and property values.

Land use regulations have NOTHING TO DO with the right to bear arms.

No one is proposing taking away anybody's gun. Bear all the arms you want.

In this beautiful Borough that we share, I am looking for reasonable consideration of my rights to walk, hike, ski, without fear of being shot.

Thank you all for putting real heart and thoughtfulness into workable solutions for:

1. a safety dilemma of wanton shooting and
2. a property tax payer dilemma of losing resale value (financial) and sanity by unregulated gun range potentials.

Give us some basic protections.

Thank you,
concerned citizen E. VandeVisse

By: Alex Strawn
Introduced:
Public Hearing:
Action:

**MATANUSKA-SUSITNA BOROUGH
PLANNING COMMISSION RESOLUTION NO. PC 20-12**

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLANNING COMMISSION RECOMMENDING APPROVAL OF AN ORDINANCE ADOPTING MSB 17.68 OUTDOOR SHOOTING FACILITIES IN ORDER TO ESTABLISH STANDARDS FOR COMMERCIAL, EDUCATIONAL, AND NONPROFIT OUTDOOR SHOOTING FACILITIES.

WHEREAS, Alaska Statute 29.35.145 provides that the authority to regulate firearms and knives is reserved to the state, except as specifically provided by statute, and a municipality may not enact or enforce an ordinance regulating the possession, ownership, sale, transfer, use, carrying, transportation, licensing, taxation, or registration of firearms or knives; and

WHEREAS, Alaska Statute 29.35.145(b)(2) allows municipalities to enact and enforce ordinances restricting the discharge of firearms in any portion of their respective jurisdictions where there is a reasonable likelihood that people, domestic animals, or property will be jeopardized, not abridging the right of the individual guaranteed by Art. I, sec. 19 of the Alaska Constitution to bear arms in defense of self or others; and

WHEREAS, Alaska Statute 34.75.030 specifically allows municipalities to regulate the noise level produced by outdoor shooting facilities; and

WHEREAS, Alaska Statute 29.35.210(B)(4) specifically gives second class boroughs the authority to provide for water pollution control on an Areawide basis; and

WHEREAS, Alaska Statute 29.35.180 requires second class boroughs to provide for land use regulation; and

WHEREAS, commercial outdoor shooting ranges have the potential to generate stray bullets, lead contamination, and harmful levels of noise; and

WHEREAS, in September 2019 the Matanuska-Susitna Borough Assembly directed Borough staff to "develop a conditional use permit process for commercial, educational, and nonprofit outdoor shooting facilities to be reviewed by the Planning Commission and adopted by the Assembly"; and

WHEREAS, on July 20, 2020 the Planning Commission held a public hearing on this matter.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby recommends approval of Ordinance Serial N. 20-25.

ADOPTED by the Matanuska-Susitna Borough Planning Commission
this ___ day of ___, 2020.

COLLEEN VAGUE, Chair

ATTEST

KAROL RIESE, Planning Clerk

(SEAL)

YES:

NO:

DRAFT

COMMISSION BUSINESS
Upcoming PC Agenda Items

(Page 393-398)

COMMISSION BUSINESS

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MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
 350 East Dahlia Avenue • Palmer, AK 99645
 Phone (907) 861-7833 • Fax (907) 861-7876
 Email: planning@matsugov.us

MEMORANDUM

DATE: July 24, 2020
 TO: Planning Commissioners
 FROM: Eileen Probasco, Director of Planning and Land Use
 SUBJECT: Items tentatively scheduled for future PC Meetings or Administrative Actions and Updates on PC items sent to the Assembly

August 17, 2020 (*MSB Assembly Chambers*)

Introduction for Public Hearing Quasi-Judicial

- **Resolution 18-30**, a Conditional Use Permit (CUP) in accordance with MSB 17.60 – Conditional Uses; allowing the operation of a junkyard/refuse area, located at 743 West Sunrise Drive (Tax ID#: 640500L006); within Township 18 North, Range 2 West, Section 33, Seward Meridian. Alaska Superior Court has issued an order remanding this item back to the Planning Commission. Public Hearing: September 21, 2020 (*Applicant: Dewayne Creech for Creech’s Junkyard, Staff: Mark Whisenhunt*).

Introduction for Public Hearing Legislative

- **Resolution PC 20-22**, Recommending Assembly adoption of MSB 17.31 Wetlands Management. Public Hearing: September 21, 2020 (*Staff: Ted Eischeid*).

Agency/Staff Reports

- Metropolitan Planning Organization (MPO) and The Official Streets and Highways Plan (OSHP) Presentations (*Staff: Kim Sollien*).
- Wetlands Management Presentation (*if needed*) (*Staff: Ted Eischeid*)

Land Use Classifications

(None)

Public Hearing Quasi-Judicial

- **Resolution PC 20-27**, A conditional use permit in accordance with MSB 17.70 – Regulation of Alcoholic Beverages Uses, for the operation of an alcoholic beverage package store, located at 23471 S. Parks Hwy; Tax ID #7561000L001; within Township 26 North, Range 5 West, Section 29, Seward Meridian (*Applicant: Stephen Mierop, dba Three Bears Alaska, Inc. Staff: Mark Whisenhunt*).

- **Resolution PC 20-28**, A modification of an existing Conditional Use Permit in accordance with MSB 17.60 — Conditional Uses, for the expansion of an existing junkyard/refuse area operation, located at 572 S. Vine Road and 600 S. Vine Road (Tax ID # 6919000L002 & 6919000L001); within Township 17 North, Range 2 West, Section 10, Seward Meridian (*Applicant: Gerold Jacobsen, dba Alaska Car Crushing*).

Public Hearing Legislative

(None)

Unfinished Business

(None)

New Business

(None)

Commission Business

- Adjudicatory (*if needed*)
- Upcoming Planning Commission Agenda Items (*Staff: Alex Strawn*)

September 21, 2020 (MSB Assembly Chambers)**Introduction for Public Hearing Quasi-Judicial**

(None)

Introduction for Public Hearing Legislative

(None)

Agency/Staff Reports

- Borough-wide Comprehensive Plan Presentation. (*Staff: Kim Sollien*)

Land Use Classifications

(None)

Public Hearing Quasi-Judicial

- **Resolution 18-30**, a Conditional Use Permit (CUP) in accordance with MSB 17.60 – Conditional Uses; allowing the operation of a junkyard/refuse area, located at 743 West Sunrise Drive (Tax ID#: 640500L006); within Township 18 North, Range 2 West, Section 33, Seward Meridian. Alaska Superior Court has issued an order remanding this item back to the Planning Commission. (*Applicant: Dewayne Creech for Creech's Junkyard, Staff: Mark Whisenhunt*).

Public Hearing Legislative

- **Resolution PC 20-22**, Recommending Assembly adoption of MSB 17.31 Wetlands Management (*Staff: Ted Eischeid*)

Unfinished Business

(None)

(None)

Commission Business

- Adjudicatory (*if needed*)
- Upcoming Planning Commission Agenda Items (*Staff: Alex Strawn*)

Upcoming PC Actions

Quasi-Judicial

- D&S Alaskan Trail Rides, Inc. – Denali SpUD, 29N05W33D012 and 29N05W33D0028 (*Staff: Joe Metzger*).
- Nu Aspen LLC – Talkeetna SpUD, 5352B12L014A (*Staff: Joe Metzger*).
- Nu Aspen LLC – Regulation of Alcoholic Beverages, 5352B12L014A (*Staff: Joe Metzger*).
- Faded Moose Farms, LLC – Marijuana Cultivation Facility, 5902000L001 (*Staff: Mark Whisenhunt*).
- Northern Alliance – Marijuana Cultivation Facility, 17N04W25D005 (*Staff: Mark Whisenhunt*).
- Trichs, LLC – Marijuana Retail Facility, 1111B01L011 (*Staff: Joe Metzger*).
- Hatchers Grass – Marijuana Retail Facility, 6381000L001 (*Staff: Joe Metzger*).
- Midnight Sun Distributers – Marijuana Retail Facility, 1780B01L001 (*Staff: Joe Metzger*).
- Colaska, Inc. – MSB 17.30, 20N04W06 (*Staff: Joe Metzger*).
- Nixon – Variance MSB 17.65, 6070000L1067 (*Staff: Joe Metzger*).
- R1 Corporation – Regulation of Alcoholic Beverages, 9057000L002 (*Staff: Joe Metzger*).

Legislative

- Title 17 Consolidation (*Staff: Mark Whisenhunt*).
- **Resolution 20-23** a Resolution recommending Assembly approval of an ordinance amending MSB 15.24.030(C), The Matanuska-Susitna Borough Lake Management Plan, adopting MSB 17.59.063 Adoption and Amendment of Regulations on Lakes; and MSB 17.59.065 Regulations on Lakes; and repealing MSB 15.24.031 Initiating and Amending Lake Management Plans, MSB 17.58 Motorized Uses on Lakes and Waterways, and MSB 17.59.060 Limitation of Uses in their entirety (*Staff: Kim Sollien*).
- Marijuana Code Update (*Staff: Alex Strawn*)

Other Upcoming Administrative Actions (Not going to the PC)

- Aldeman – Multifamily Permit; 17N01W18B011 (*Staff: Joe Metzger*).
- Birdsell #1 – Nonconforming Structures, 6040B03L016 (*Staff: Joe Metzger*).
- Canit – Nonconforming Structures (amnesty) – 19N04W33D020 (*Staff: Mark Whisenhunt*).
- Hinderman - Nonconforming Structures, 6043B01L006 (*Staff: Joe Metzger*).

- Bridgeway Community – Multifamily Development Permit, 17N02W11B005 (Staff: Joe Metzger).
- Woodland Park – Nonconforming Structures (amnesty) – 3037B01L027 (Staff: Joe Metzger).
- Frontier Dream – Administrative Permit for Earth Materials Extraction, 5745000L002 (Staff: Mark Whisenhunt).
- Midnight Landing Lot 2 – Multifamily Permit, 7702000L002 (Staff: Mark Whisenhunt).
- Walten – Nonconforming Structures, 6177000L005 (Staff: Joe Metzger).
- VanGunten – Nonconforming Structures, 17W02E25B007 (Staff: Joe Metzger).

PC Decisions Currently Under Appeal

- **Resolution PC 19-17**, a Conditional Use Permit in Accordance with MSB 17.60 – Conditional Uses; allowing for the operation of a marijuana retail facility, located at 1204 N. Hyer Spur (Tax ID# 7775000L002); within Township 17 North, Range 1 East, Section 4, Seward Meridian. Appealed to the BOAA. Planning Commission decision upheld by BOAA on September 11, 2019. Appealed to Alaska Superior Court (Applicant: Teri Zell, on behalf of Higher By Bad Gramm3r, LLC; Staff: Joe Metzger).

Updates on PC items going to the Assembly (Pending)

(None)

Updates on PC items that went to the Assembly (Complete)

(None)