AGENDA

MATANUSKA-SUSITNA BOROUGH

350 East Dahlia Avenue, Palmer, Alaska 99645 – 907-861-7874

PLATTING OFFICER
Fred Wagner

PLATTING CLERK
Sloan Von Gunten

PLATTING TECHNICIANS
Cheryl Scott
Amy Otto-Buchanan
Kimberly McClure

PLATTING BOARD
Pio Cottini, District 1
LaMarr Anderson, District 2
John Shadrach, District 3
Dan Bush, District 4
Dennis Vau Dell, District 5
Wilfred Fernandez, District 6
Alan Leonard, District 7
Amanda Salmon, Alternate A
Barbara Doty Alternate B

PLATTING BOARD AGENDA

ASSEMBLY CHAMBERS
350 EAST DAHLIA AVENUE, PALMER

PLATTING BOARD REGULAR MEETING 1:00 P.M. WEDNESDAY, MAY 5, 2021

Ways you can participate in Platting Board meetings:

IN PERSON: Should you wish to attend in person, please adhere to the 6-foot distance between yourself and others.

- Starting May 1, 2021, it is optional to wear a mask to the Mat-Su Borough Platting Board Hearings.

IN WRITING: You can submit written comments by email to platting@matsugov.us or by mail to Matanuska-Susitna Borough, Platting Division, 350 E. Dahlia Avenue, Palmer, AK 99645

TELEPHONIC TESTIMONY: (Audio only)

Attention: For those using the telephonic system, please be advised that we have had technical difficulties. The preference for public participation is in-person or submission of written comments. Once public comments are closed, all public participation is also closed. To ensure your concerns are heard, it is best to present them in-person.

- Dial 1-855-225-1887; with Conference ID 8573#; You will hear "Joining conference" when you are admitted to the meeting. (If the system is down, you will need to attend the meeting in person to participate)
- 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 your mailing address, and provide your testimony.
- If you cannot access the telephonic system please call the Mat-Su Borough Platting's main phone line for directions. 907-861-7874

1. **CALL TO ORDER**
   A. Roll Call and Determination of Quorum (by Secretary)
   B. Pledge of Allegiance
   C. Approval of Agenda

2. **APPROVAL OF MINUTES**
   A. April 1, 2021

3. **AUDIENCE PARTICIPATION & PRESENTATIONS**
   A. **PERSONS TO BE HEARD** (Three minutes per person for Items not scheduled for public hearing)

4. **UNFINISHED BUSINESS**
   (There is no Unfinished Business)

5. **RECONSIDERATIONS/APPEALS**
   (There are no Reconsiderations/Appeals)

6. **PUBLIC HEARINGS**

- *Platting Board Chair to read the Ex-Parte & Interest Memo.*

A. **JM ASSETS, LP:** The request is to create 92 lots and three tracts, by a two-phase Master Plan, from the East ½ of Section 26 (Tax Parcel A1), to be known as **WILLOW CREEK AIRPARK MASTER PLAN,** containing 320.32 acres +/-. The plat is located west of W. Parks Highway, north of W. Gratiot Drive and west of W. Sharen Drive, (Tax ID # 220N05W26A001); within Section 26, Township 20 North, Range 05 West, Seward Meridian, Alaska. In the Willow Community Council and in Assembly District #7: Tam Boeve. Continued from the April 15, 2021 platting board hearing.

- *Platting Board Chair to read the Ex-Parte & Interest Memo.*

B. **BRUCE M. GREEN AND FRANCINE SCHILMOELLER LARSEN TRUST:** The request is to create three lots from Lots 1-1 and 1-2, Block 3; Lots 5 & 6, Block 4; Lots 8 & 9, Block 4; and Lots 4-7, Block 5, Texas Subdivision, Plat No. 63-15, to be known as **LARSEN ESTATES,** containing 3.62 acres +/-. The plat is located northwest of Stepan Lake, southeast of Big Beaver Lake, and east of S. Beaver Lake Road (Tax ID#s 56314B003L001-1/L001-2, 56314B04L005, L006, L008, L009, 56314B05L004-L007); within Section 09, Township 17 North, Range 03 West, Seward Meridian, Alaska. In the Big Lake Community Council and Assembly District #5: Mokie Tew. Petitioner proposes to vacate a section of W. Alamo Road and is applying for a variance from MSB 43.20.060(C) Legal access, as S. Melozzi Hot Springs Road is 30' wide.

7. **ITEMS OF BUSINESS & MISCELLANEOUS**

8. **PLATTING STAFF & OFFICER COMMENTS**
   A. Adjudicatory (*if needed*)
   - *Definition: Law. To hear and settle an issue or a question regarding code.*

B. Upcoming Platting Board Agenda Items (*Staff: Fred Wagner & Clerk: Sloan Von Gunten*)
- Introduction for Wednesday, May 19, 2021 Platting Board Hearing (*Informational Only – Subject to change)*
  - Nebesny Heights, Case 2021-045

9. BOARD COMMENTS

10. ADJOURNMENT

THE PLATTING BOARD WILL CONVENE AT ***1:00 P.M.*** on **May 5, 2021** in the **Assembly Chambers** of the **Dorothy Swanda Jones Building**, 350 E. Dahlia Avenue, Palmer, Alaska. To view the agenda or meeting packet please go to the following link: www.matsugov.us/boards/platting. **Starting May 1, 2021 it is optional to wear a mask in the Mat-Su Borough Hearings.**

MINUTES

MATANUSKA-SUSITNA BOROUGH **REGULAR MEETING**
PLATTING BOARD MINUTES **APRIL 1, 2021**

The regular meeting of the Matanuska-Susitna Borough Platting Board was held on April 1, 2021, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The Meeting was called to order at 1:00 p.m. by Chair LaMarr Anderson.

1. CALL TO ORDER

A. ROLL CALL AND DETERMINATION OF QUORUM (by Administrative Specialist)

Platting Board members present and establishing a quorum:

Mr. Pio Cottini, District Seat #1
Mr. LaMarr Anderson, District Seat #2, Chair
Mr. John Shadrach, District Seat #3
Mr. Dennis Vau Dell, District Seat #5
Mr. Wilfred Fernandez, District Seat #6, Vice Chair (Attended via Teams)
Mr. Alan Leonard, District Seat #7

Platting Board members absent and excused were:

Ms. Barbara Doty, Alternate
Mr. Dan Bush, District Seat #4
Vacant, Alternate

Staff in attendance:

Mr. Fred Wagner, Platting Officer
Ms. Sloan Von Gunten, Platting Administrative Specialist
Ms. Cheryl Scott, Platting Technician
Ms. Amy Otto-Buchanan, Platting Technician

B. THE PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Platting Board Member John Shadrach.

C. APPROVAL OF THE AGENDA

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

GENERAL CONSENT: The agenda was approved without objections.

2. APPROVAL OF MINUTES

Chair Anderson inquired if there were any changes to the minutes for March 4, 2021.

- Change wordage on page 6 on platting board comments.

GENERAL CONSENT: The minutes for March 4, 2021 were approved with changes, without objections.

3. AUDIENCE PARTICIPATION & PRESENTATIONS (*Three minutes per person, for items not scheduled for public hearing)*

A. Persons to Be Heard *(There are no persons to be heard)*

4. UNFINISHED BUSINESS: Quasi-Judicial Matters

(*There is no Unfinished Business)*

5. RECONSIDERATIONS/APPEALS

(There are no Reconsiderations/Appeals)

6. PUBLIC HEARINGS: Quasi-Judicial Matters

Platting Board 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. BLW: The request is to divide Lot 35, Hewitt-Whiskey Lakes Alaska, Plat #66-41 into four lots to be known as BLW, containing 43.34 acres +/-. Access to this property is by water. The property is located northwest of Willow (Tax ID #6140000L035); lying within the N ½ Section 18, Township 22 North, Range 11 West, Seward Meridian, Alaska. In the Skwentna (Inactive) Community Council and Assembly District #7: Tam Boeve. (*Owner/Petitioner: Robert Walden / Benjamin & Barbara Eaton; Surveyor: All Points North; Staff: Cheryl Scott)*

Chair Anderson:

- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record; there was no objection noted by the platting board.

Ms. Von Gunten provided the mailing report:

- Stating that 13 public hearing notices were mailed out on March 10, 2021.

Ms. Cheryl Scott:

- Gave an overview of the case, #2021-020.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

The Petitioner did not wish to give a brief overview.

Chair Anderson:

- Opened the public hearing for public testimony.
- There being no one to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

The petitioner and/or the petitioner's representative was not present at the hearing.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Shadrach moved to approve the preliminary plat for BLW, with 6 recommendations. The motion was seconded by Platting Member Vau Dell.

VOTE: The motion passed with all in favor by roll call. (Fernandez, Vau Dell, Cottini, Shadrach, Leonard, Anderson). There are 6 findings of fact.

TIME: 1:11 P.M.
CD: 0:11:19

B. STELLA RIDGE : The request is to create 50 lots and 1 utility tract with a 2-phase Master Plan from Parcel C8 (Parcel C, Waiver 2004-26-PWm) to be known as Stella Ridge, containing 60.0 acres +/-. The interior roads proposed to provide access to all the lots will now be public instead of private. The property is located approximately a ½ mile west of N. Wasilla-Fishhook Road and directly north of E. Pamela Drive (Tax ID #18N01E18C008); lying within the SW ¼ Section 18, Township 18 North, Range 1 East, Seward Meridian, Alaska. In the Fishhook Community Council and Assembly District #6: Jesse Sumner. (*Owner/Petitioner: Jerry Harman; Surveyor: Hanson Land Solutions; Staff: Cheryl Scott)*

Chair Anderson:

- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record; there was no objection noted by the platting board.

Ms. Von Gunten provided the mailing report:

- Stating that 45 public hearing notices were mailed out on March 10, 2021.

Ms. Cheryl Scott:

- Gave an overview of the case, #2020-098.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

The Petitioner did not wish to give a brief overview.

Chair Anderson:

- Opened the public hearing for public testimony.

The following person spoke regarding their objections to the proposal and their concerns on borough finances regarding emergency services and traffic safety from construction vehicles for the past month: Ms. Stephanie Haase.

The following person spoke regarding their concerns on flooding, economic resources and wildlife. Is concerned on the controlled fires being done by the owners as it is not being watched as the fire department was called multiple times. Is concerned about construction traffic affecting road safety: Mr. John Meising.

The following person spoke regarding their concerns on the property development, the economic impact and changes to their property: Ms. Amanda Meising.

The following person spoke regarding their concerns about the development on E. Wind Drive. Is concerned on the drainage and the impact to their property and the drainage on the lots: Ms. Avonlea Guthrie.

Chair Anderson:

- There being no one else to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

Mr. Craig Hanson, the petitioner's representative, and Mr. Simon Gilliland, the Engineer, addressed the water well questions and gave an explanation of the project development and access. Agrees with all the recommendations and answered questions from the platting board.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Cottini moved to approve the preliminary plat for Stella Ridge Master Plan, with 10 recommendations, modifying finding #10. The motion was seconded by Platting Member Shadrach.

Amended
MOTION: Platting Member Shadrach moved to amend the motion to add recommendation #11 and finding #11 for Stella Ridge. The motion was seconded by Platting Member Cottini.

TIME: 1:48 P.M.
CD: 0:47:22
Break
TIME: 1:55 P.M.
CD: 0:55:14

Discussion by the platting board on adding recommendation #11 and finding #11.

RECOMMENDATION:

- Add #11: Provide public access to US Government Lots 3 & 4.

FINDING:

- Modify #10: . . . "The public submitted eight objections and several concerns."
- Add #11: MSB 43.20.060(D) requires connecting right-of-way to adjacent unsubdivided properties.

Amended
VOTE: The amended motion passed with all in favor by general consent.

Discussion by the platting board regarding the main motion.

Main Motion
VOTE: The motion passed with all in favor by roll call vote (Cottini, Leonard, Fernandez, Anderson, Shadrach, Vau Dell). There are 11 findings of fact.

Fred Wagner, the Platting Officer, announced to those calling the telephonic number, that had trouble calling in during the meeting for public testimony, can speak at this time. No one from the public on the telephonic line wished to give testimony.

TIME: 2:03 P.M.
CD: 01:04:40

C. WOLF RIDGE: The request is to create 34 lots from Tax Parcel A29, to be known as Wolf Ridge, containing 40 acres +/-. The plat is located south of E. Tex-Al Drive and west of N. Engstrom Road (Tax ID # 118N01E16A029); within the SE ¼ NE ¼ Section 16, Township 18 North, Range 01 East, Seward Meridian, Alaska. In the Fishhook Community Council and Assembly District #6: Jesse Sumner. *(Owner/Petitioner: Axel Bodnar and Sarah Forss; Surveyor: Hanson Land Solutions; Staff: Amy Otto-Buchanan)*

Chair Anderson:
- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record;
- Mr. Cottini commented that he owns property next to the adjacent property. Does not have any interest and can be impartial for this action.
- There was no objection noted by the platting board for him to stay.

Ms. Von Gunten provided the mailing report:
- Stating that 64 public hearing notices were mailed out on March 10, 2021.

Ms. Amy Otto-Buchanan:
- Gave an overview of the case, #2021-021.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

The Petitioner did not wish to give a brief overview.

Chair Anderson:
- Opened the public hearing for public testimony.

The following person spoke regarding their objections to the connection between N. Engstrom Road and Tex-Al Drive. Is concerned on the traffic count and safety issues on the roadway: Mr. Mark Prieksat.

The following person spoke regarding their concerns on his lot, as it is right next to the development: Mr. Charles Teague.

The following person spoke regarding their concerns on the connection to E. Wolf Creek Road and the traffic flow. Mr. Paul East.

The following person spoke regarding their concerns on the roadway development of E. Wolf Creek Road and upgrades. Is concerned on the increase of traffic: Ms. Carol Halvorsond.

Chair Anderson:

- There being no one else to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

Mr. Craig Hanson, the petitioner's representative, and Mr. Simon Gilliland, the Engineer, gave an explanation on the access and roadways. Agrees with all the recommendations and answered questions from the platting board.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Cottini moved to approve the preliminary plat for Wolf Ridge, with 7 Recommendations. The motion was seconded by Platting Member Vau Dell.

Amended
MOTION: Platting Member Shadrach moved to amend the motion to add recommendation #3e. The motion was seconded by Platting Member Cottini.

Discussion by the platting board on N. Engstrom Road and E. Tex-Al Drive connection and road development.

Amended
VOTE: The amended motion to add recommendation #3e passed with 5 in favor (Fernandez, Shadrach, Vau Dell, Cottini, Leonard) and 1 against (Anderson).

RECOMMENDATIONS:

- Add #3e: Construct N. Engstrom Drive from E. Tex-Al Drive south to the intersection of E. Wolf Creek Road, and east in the right-of-way of E. Wolf Creek Road to the temporary cul-de-sac. Construct interior streets and cul-de-sacs to residential and residential subcollector standards.

Main Motion
VOTE: The motion passed with 4 in favor (Cottini, Fernandez, Shadrach, and Leonard) and 2 against (Anderson and Vau Dell). There are 9 findings of fact.

TIME: 3:06 P.M.
CD: 02:06:08
BREAK
TIME: 3:16 P.M.
CD: 02:15:47

D. FARM OVERLOOK: The request is to create eight lots from Tax Parcels C7, C9, C11 and remainder Tract D-1 of H. Adams Subdivision, Plat No. 71-37, to be known as Farm Overlook, containing 167.4 acres +/-. The plat is located south of E. Marsh Road and north of E. Scott Road (Tax ID #s 118N02E29C007, C009, C011 and 53001000T00D-1); within Sections 29 and 32, Township 18 North, Range 02 East, Seward Meridian, Alaska. In the Greater Palmer Community Council and Assembly District #1: Tim Hale. *(Owner/Petitioner: Tracy & Kathryn Moffitt; Surveyor: Keystone; Staff: Amy Otto-Buchanan)*

Chair Anderson:

- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record; there was no objection noted by the platting board.

Ms. Von Gunten provided the mailing report:

- Stating that 260 public hearing notices were mailed out on March 10, 2021.

Ms. Amy Otto-Buchanan:

- Gave an overview of the case, #2021-022.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

Mr. Gary LoRusso, the petitioner's representative, gave a brief overview.

Ms. Amy Pettit, representative for Farm Land Trust, gave a brief summary on the project.

Chair Anderson:

- Opened the public hearing for public testimony.

The following person spoke regarding the farming property and appreciate the actions being taken by the borough in keeping farm lands: Mr. Eric Anderson.

Chair Anderson:

- There being no one else to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

Mr. Gary LoRusso, the petitioner's representative, agrees with all the recommendations and answered questions from the platting board.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Fernandez moved to approve the preliminary plat for Farm Overlook, with 6 recommendations. The motion was seconded by Platting Member Vau Dell.

VOTE: The motion passed with all in favor by general consent. There are 8 findings of fact.

TIME: 3:32 P.M.
CD: 02:32:16

E. NORTHGATE ALASKA 2021 MASTER PLAN: The request is to create 49 lots and one tract from Lots 1 & 2, Northgate Alaska Subdivision, Plat No. 2020-92, to be known as Northgate Alaska 2021 Master Plan, containing 59 acres +/-. The plat is located south of E. Seldon Road, east of N. Tait Drive, north and west of E. Bogard Road (Tax ID #s 58047000L001/L002); within Section 31, Township 18 North, Range 01 East, Seward Meridian, Alaska. In the North Lakes Community Council and Assembly District #3: George McKee. *(Owner/Petitioner: Northgate Alaska; Surveyor: Keystone; Staff: Amy Otto-Buchanan)*

Chair Anderson:
- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record; there was no objection noted by the platting board.

Ms. Von Gunten provided the mailing report:
- Stating that 160 public hearing notices were mailed out on March 10, 2021.

Ms. Amy Otto-Buchanan:
- Gave an overview of the case, #2021-023.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

Mr. Gary LoRusso, the petitioner's representative, gave a brief overview.

Chair Anderson:
- Opened the public hearing for public testimony.

The following person spoke regarding their concerns on the connection of the lots as they raise cattle. Is concerned for public safety regarding Tract A19 on the property line and the fence: Mr. Russell Roetman.

The following person spoke regarding their concern on agriculture issues on raising cattle and the project development. Is concerned on the impact on the property value and safety. Traffic safety is a concern with the schools in the area and the industrial lots: Ms. Kristen Vernola.

The following person spoke regarding their concern on the fence line and the development property regarding public safety from the cattle on the southern property. Would like the developer to help with public safety on the fence line: Ms. Michelle Roetman.

Chair Anderson:

- There being no one else to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

Mr. Gary LoRusso, the petitioner's representative, agrees with all the recommendations and answered questions from the platting board.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Cottini moved to approve the preliminary plat for Northgate Alaska 2021 Master Plan, with 8 recommendations. The motion was seconded by Platting Member Shadrach.

Amended MOTION: Platting Member Vau Dell moved to approve the amended motion to add recommendation #9. The motion was seconded by Platting Member Leonard.

RECOMMENDATION:

- Add #9: Provide ADEC approval for the extension of the water line system. Provide final design of the water distribution line layout and service and make physical connection points to each property.

Amended VOTE: The amended motion passed with all in favor by general consent.

Main Motion VOTE: The main motion passed with all in favor by general consent. There are 7 findings of fact.

TIME: 4:08 P.M.
CD: 03:07:32

F. <u>CEDAR PARK MASTER PLAN</u>: The request is to create 83 lots and two open space tracts, by a five-phase Master Plan, from Tract J, Cedar Hills, Unit #2, Phase 1, Plat No. 2000-66 and Tracts 1, 2 & 3, Cedar Hills Unit #2, Phase 1, Plat No. 2017-15, to be known as Cedar Park Master Plan, containing 90.2 acres +/-. The plat is located north of E. Marsh Road, west of N. Glenn Highway and south of N. Palmer-Fishhook Road, (Tax ID #s 54991000T00J, 57618000T001/T002/T003); within Section 29, Township 18 North, Range 02 East, Seward Meridian, Alaska. Parcels are within the city limits of Palmer and Assembly District #2: Stephanie Nowers. *(Owner/Petitioner: Cedar Park Properties, LLC; Surveyor: Keystone; Staff: Amy Otto-Buchanan)*

Chair Anderson:

- Read the statement regarding Ex-Parte & Interest on quasi-judicial actions into the record; there was no objection noted by the platting board.

Ms. Von Gunten provided the mailing report:

- Stating that 183 public hearing notices were mailed out on March 10, 2021.

Ms. Amy Otto-Buchanan:

- Gave an overview of the case, #2021-025.
- Staff recommends approval of the case with findings of fact and conditions.

Chair Anderson invited the petitioner and/or the petitioner's representative to give a brief overview.

Mr. Gary LoRusso, the petitioner's representative, gave a brief overview.

Mr. Chad Stigin, the petitioner, gave a brief summary on the project.

Chair Anderson:

- Opened the public hearing for public testimony.

The following person spoke regarding their concern on the fire hazard on grassland in the area and the well water, sewer, and utilities on the property: Mr. Eric Anderson.

The following person spoke regarding their concern on the development and would like to see more parks in the area: Mr. Curt McClellan.

Chair Anderson:

- There being no one else to be heard, the chair closed the public hearing.
- Invited the petitioner or their representative to provide their comments.

Mr. Gary LoRusso, the petitioner's representative, has been working with the City of Palmer intensely on the master plan. Agrees with all the recommendations and answered questions from the platting board.

Chair Anderson moved to the Platting Board for a motion.

MOTION: Platting Member Shadrach moved to approve the preliminary plat for Cedar Park Master Plan, with 7 recommendations. The motion was seconded by Platting Member Leonard.

Discussion by the platting board on the water system.

VOTE: The motion passed with all in favor by general consent. There are 8 findings of fact.

TIME: 3:38 P.M.
CD: 03:38:23

7. ITEMS OF BUSINESS & MISCELLANEOUS

(There are no Items of Business & Miscellaneous)

8. PLATTING STAFF & OFFICER COMMENTS

A. Adjudicatory (*if needed*)
B. Upcoming Platting Board Agenda Items

Mr. Wagner provided a brief update on cases that will be coming before the Platting Board on April 15, 2021. We will continue session on Title 43 white board list on May 5, 2021. Ms. Kimberly McClure is our new Platting Technician and will be hiring a new platting assistant.

Ms. Von Gunten did not have any announcements.

9. BOARD COMMENTS

- Platting Member Leonard thanked staff for their work.
- Platting Member Cottini thanked staff for their work.
- Platting Member Fernandez hand no comments.
- Platting Member Shadrach thanked staff for their work.
- Platting Member Vau Dell thanked staff for their work.
- Platting Member Anderson thanked the board and staff for their work.

10. ADJOURNMENT

With no further business to come before the Platting Board, Chair Anderson adjourned the meeting at 4:43 p.m. (CD: 03:43:42)

_____
LAMARR ANDERSON,
Platting Board Chair

ATTEST:

_____
SLOAN VON GUNTEN,
Platting Board Clerk

Minutes approved: _____

DRAFT

6A

STAFF REVIEW AND RECOMMENDATIONS
PUBLIC HEARING
May 5, 2021

PRELIMINARY PLAT: **WILLOW CREEK AIRPARK MSP**

LEGAL DESCRIPTION: **SEC 26, T20N, R5W, S.M. AK**

PETITIONER: **JM ASSESTS, LP**

SURVEYOR/ENGINER: **EDGE SURVEY AND DESIGN, LLC**

ACRES: **320.32** PARCELS: **95**

REVIEWED BY: FRED WAGNER CASE: 2021-031

The request is to create 92 lots and three tracts, by a two-phase Master Plan, from the East ½ of Section 26 (Tax Parcel A1), to be known as **WILLOW CREEK AIRPARK MASTER PLAN,** containing 320.32 acres +/-. The plat is located west of W. Parks Highway, north of W. Gratiot Drive and west of W. Sharen Drive, within Section 26, Township 20 North, Range 05 West, Seward Meridian, Alaska. This will be a private subdivision with private roads and airstrip.

EXHIBITS

Vicinity Map and Aerial Photos	**EXHIBIT A** – 3 pgs
Engineering Report	**EXHIBIT B** – 153 pgs
Drainage Plan	**EXHIBIT C** – 8 pgs
Average Daily Traffic	**EXHIBIT D** – 3 pgs

COMMENTS

Department of Public Works Operations & Maintenance	**EXHIBIT E** – 6 pgs
U.S. Army Corps of Engineers	**EXHIBIT F** – 1 pg
Planning Division	**EXHIBIT G** – 1 pg
Land & Resource Management	**EXHIBIT H** – 1 pg
Pre-Design & Engineering	**EXHIBIT I** – 1 pg
Utilities	**EXHIBIT J** – 4 pgs
Daniel Thomas	**EXHIBIT K** – 1 pg
ADOT & PF	**EXHIBIT L** – 1 pg

DISCUSSION: The proposed subdivision is located west of W. Parks Highway, north and west of W. Gratiot Drive and west of N. Arctic Cat Street. The phase lines are shown on the preliminary plat. The proposed interior roads will be privately owned and maintained. Interior streets will be constructed to Borough residential subcollector standards and cul-de-sacs will be constructed to Borough residential street standards (see **Recommendation #8**). W. Gratiot Drive and that portion of W. Sharen Drive from the W. Parks Highway intersection easterly to the east intersection with N. Mae Loop will be upgraded to residential collector standards. The remainder

of W. Sharen Drive will be upgraded to residential subcollector standards (see **Recommendations #6 & #7**).

SOILS: Geotechnical report, submitted per MSB 43.20.281(A) at **Exhibit B**. Dan Steiner, PE, Steiner Design & Construction Services, LLC, notes the soils evaluation included logging 29 new testholes, review of topography information and observations on site. Testhole logs, location and topography map is attached. "The existing parcel is divided into two topographic areas. There is an upper area that is relatively flat. The change in topography from north to south and from east to west is approximately six feet. The second area is a lower portion of this parcel that is approximately 50 feet lower than the higher area. The two topographic areas are separated by a bluff. This bluff can be seen in the topographic as-built survey." Twenty-nine new testholes were dug to a depth of 12' or greater. Mr. Steiner states, "All these soil conditions are compatible with on-site septic systems. It should be noted there are three testholes where silt was encountered (2, 6, and 15). It was determined that percolation tests needed to be performed at these test hole locations. At the time of this report, the depth of snow and frozen ground prevented us from completing these percolation tests. Once these locations can be accessed, percolation tests will be completed, and the results submitted to the MSB" (see **Recommendation #5**).

Access: MSB 43.20.100(C) allows for gated subdivisions and private roads. It states that private roads shall be approved, provided they meet certain criteria. It requires internal roads conform to the Subdivision Construction Manual and Emergency Services be provided access to deliver services within the private subdivision (see **Recommendation #10**).

Another requirement for private roads is that the applicant submit a documented plan stating the following (see **Recommendation #11**):

a. What seasons road maintenance will be performed
b. Contact information for road maintenance
c. Length of the maintained roads in feet; and
d. Surface type.

Legal and physical access to the proposed lots are required pursuant to MSB 43.20.100 Access Required, MSB 43.20.120 Legal Access and MSB 43.20.140 Physical Access. Access requirements will be met once interior and exterior streets are constructed to Borough street standards. Pursuant to MSB 43.20.320 Frontage, each lot will have the required frontage.

Comments:

Department of Public Works Operations & Maintenance: (**Exhibit E**) Jamie Taylor, C.E.

1) Soils Report - It's hard to tell on the Test Pit Location Map where the test pits are located in relation to the proposed property lines. ML soils found in three test pits – was the extent of those soils determined or estimated and are those areas excluded from useable area? Otherwise need perc tests showing a percolation rate of 60 min/in or faster. SM soils found in at least five test pits (18, 20, 24, 32, 35) but sieves are only included for 24, 32, and 35. *Staff notes the petitioner's engineer has provided an updated soils report addressing these*

concerns. Percolation tests for testholes showing SM/GM soils are a condition of approval **(Recommendation #5)**

2) Need drainage plan for all road construction, including Sharen Drive and Gratiot Drive. *Petitioner has provided an updated Engineer's report with drainage plan* **(Exhibit C)**.
3) Hammerhead T-turnaround on B court requires DPW approval per A07.2. Why not a cul-de-sac? *Staff notes petitioner has redesigned the turnaround to a cul-de-sac.*
4) No 90-degree corners. Dedicate ROW for construction of a full intersection at A Street and B Street. *Staff notes petitioner has submitted a redesign to address this comment.*
5) Submit ADT calculations for intersections within the subdivision and at every intersection out to existing collector streets or higher classification (Gratiot & Parks and Sharen & Parks). *Staff notes that the petitioner has provided an ADT Analysis* **(Exhibit D)**.

U.S. Army Corps of Engineers: **(Exhibit F)** "Based on our review of the information you provided and available to our office, we have preliminarily determined the subject property area may contain waters of the U.S. and wetlands under the Corps of Engineers (Corps) regulatory jurisdiction.

Department of the Army authorization is required if Scott Jewell proposes to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S.

Planning Division: **(Exhibit G)** Wetlands: This parcel contains a complex of wetlands. If development is to occur across these wetlands, a permit to develop wetlands may be need to be obtained from the U.S Army Corps of Engineers. In addition, owners developing near wetlands should adhere to the Matanuska-Susitna Borough's *Best Management Practices for Development Around Water Bodies.*

Land & Resource Management: **(Exhibit H)** Comments:

- MSB land adjacent on the west boundary of subject parcel. Appears there is a walk-in access to MSB property planned within Phase One.
- Trails of any type within MSB property are not allowed without application and approved permit from Land & Resource Management
- No objection to proposed subdivision.

Pre-Design & Engineering Division: **(Exhibit I)** notes that if any fish streams or wetland fish habitats are crossed by the subdivision roads that they will need to make sure that culverts are the proper size and are installed correctly so there is enough water in the culverts for fish passage.

Utilities: **(Exhibit J)** MEA requests a plat note be added that notes that private road rights-of-way may be used for utilities. MTA has no comments. Enstar has no comments, recommendations or objections. GCI has no comments or objections.

Daniel Thomas – neighbor: **(Exhibit K)** Expressed concern, "I have a private airstrip that has been FAA registered (AK08 AKA Thomas Strip) since 1992 when I constructed it. This has been my permanent residence since and the airstrip has been used regularly. My airstrip is approx. 2000' due east from the Willow Creek Airpark. I assume we can coexist as long as due

consideration is given to my existing FAA approved traffic pattern in terms of avoiding direct air traffic comments."

At the time of staff report write-up, there were no responses to the Request for Comments from ADF&G; Willow Area Community Council; Fire Service Area #35 Willow; Road Service Area #15 Caswell; MSB Community Development, Assessments, or Development Services.

CONCLUSION: The preliminary plat of Willow Creek Airpark Master Plan is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plats. Petitioner is asking for private roads within the development and will construct, or upgrade exterior roads to provide access. There were no objections from any federal or state agencies or utilities. There were no objections and one concern to the plat received from the public in response to the Notice of Public Hearing. Legal and physical access will be provided to the proposed lots, consistent with MSB 43.20.100 Access Required, MSB 43.20.120 Legal Access and MSB 43.20.140 Physical Access. Frontage for the subdivision will exist, pursuant to MSB 43.20.320 Frontage. A soils report was submitted, pursuant to MSB 43.20.281(A).

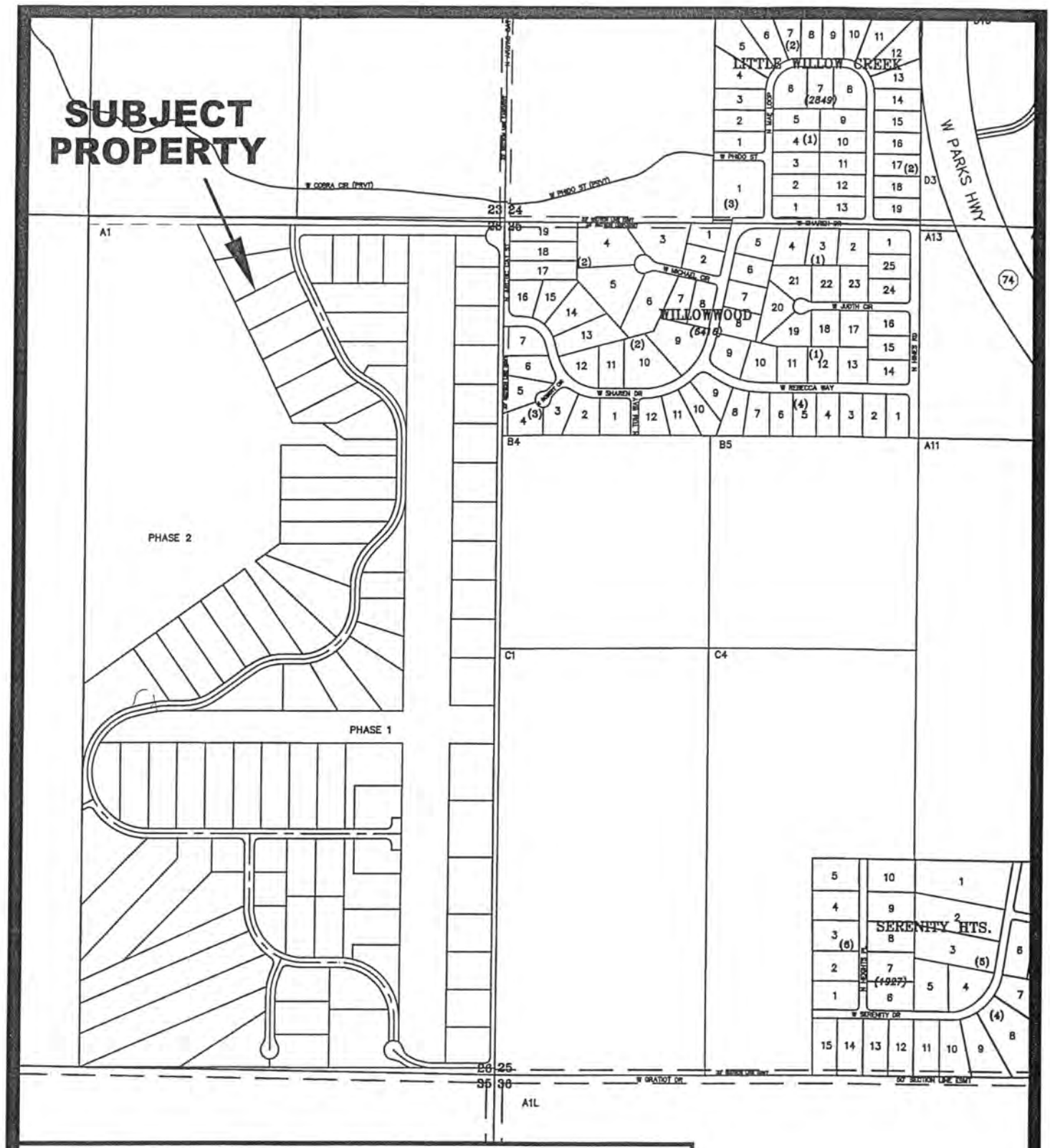
FINDINGS OF FACT

1. The plat of Willow Creek Airpark Master Plan is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plats.
2. A professional engineer stated useable area is available for wastewater disposal and building in compliance with MSB 43.20.281.
3. Lot sizes and block lengths are consistent MSB 43.20.300(A), *Lot and Block Design*.
4. Frontage for the subdivision will exist pursuant to MSB 43.20.320 Frontage.
5. MSB 43.20.100(C) Private roads shall be approved, provided there is no possibility or public necessity to provide for public through traffic because alternate legal access to adjoining properties is available and that access is constructible in accordance with the Subdivision Construction Manual standards. The surveyor provided reasons why there is no public necessity to provide for public through traffic.
6. Any gates for the private roads will be installed on private property, not within public rights-of-way.
7. Legal and physical access will be provided to the proposed lots, consistent with MSB 43.20.100 Access Required, MSB 43.20.120 Legal Access and MSB 43.20.140 Physical Access.
8. The Average Daily Traffic generated by this development requires construction and upgrading to W. Gratiot Drive and W. Sharen Drive.
9. At the time of staff report write-up, there were no responses to the Request for Comments from ADF&G; Willow Area Community Council; Fire Service Area #35 Willow; Road Service Area #15 Caswell; MSB Community Development, Assessments, or Development Services.
10. There were no objections from any federal or state agencies, or utilities.
11. There were no objections and one concern from the public in response to the Notice of Public Hearing.

RECOMMENDATIONS OF CONDITIONS OF APPROVAL

Suggested motion: I move to approve the preliminary plat of Willow Creek Airpark Master Plan, Section 26, Township 20 North, Range 05 West, Seward Meridian, Alaska, contingent on staff recommendations:

1) Taxes and special assessments must be paid in full for the year of recording, pursuant to MSB 43.15.053(F) and AS 40.15.020. For each phase plat, pay taxes and special assessments (LIDs), by CERTIFIED FUNDS OR CASH.
2) Provide updated Certificate to Plat executed within seven (7) days of recording of each phase plat and submit Beneficiary Affidavit for any holders of a beneficial interest.
3) Pay postage and advertising fees.
4) Show all easements of record on final phase plats.
5) Provide percolation tests for testholes showing SM/GM soils.
6) Construct W. Gratiot Drive to MSB Residential Collector standards ending in a dedicated turnaround.
7) Construct W. Sharen Drive to Residential Collector standards from the intersection with W. Parks Highway westerly to the eastern intersection with N. Mae Loop and construct the remaining portion to N. Arctic Cat Street to MSB Residential Subcollector standards.
8) Construct interior roads to MSB Residential Subcollector standards and cul-de-sacs to MSB Residential Standards.
9) Provide engineer's final inspection report along with verification from an RLS that the constructed roadways are located within the proposed right-of-way per MSB 43.20.140 and obtain Dept. of Public Works Engineer signoff for each phase.
10) Provide Emergency Services access through the gate(s) to the private roads
11) Submit a documented plan for road maintenance for the private roads, stating the following at a minimum:
    a) What seasons road maintenance will be performed;
    b) Contact information for road maintenance;
    c) Length of the maintained roads in feet; and
    a) Surface type
12) Along private roads acquire utility easements from a servicing utility company and then place the easement's recording information on the final plat.
13) Submit an affidavit from any holders of beneficial interest, if any, to be recorded with each phase plat.
14) Submit recording fees for each phase plat, payable to Department of Natural Resources (DNR).
15) Submit phase plats in full compliance with Title 43.

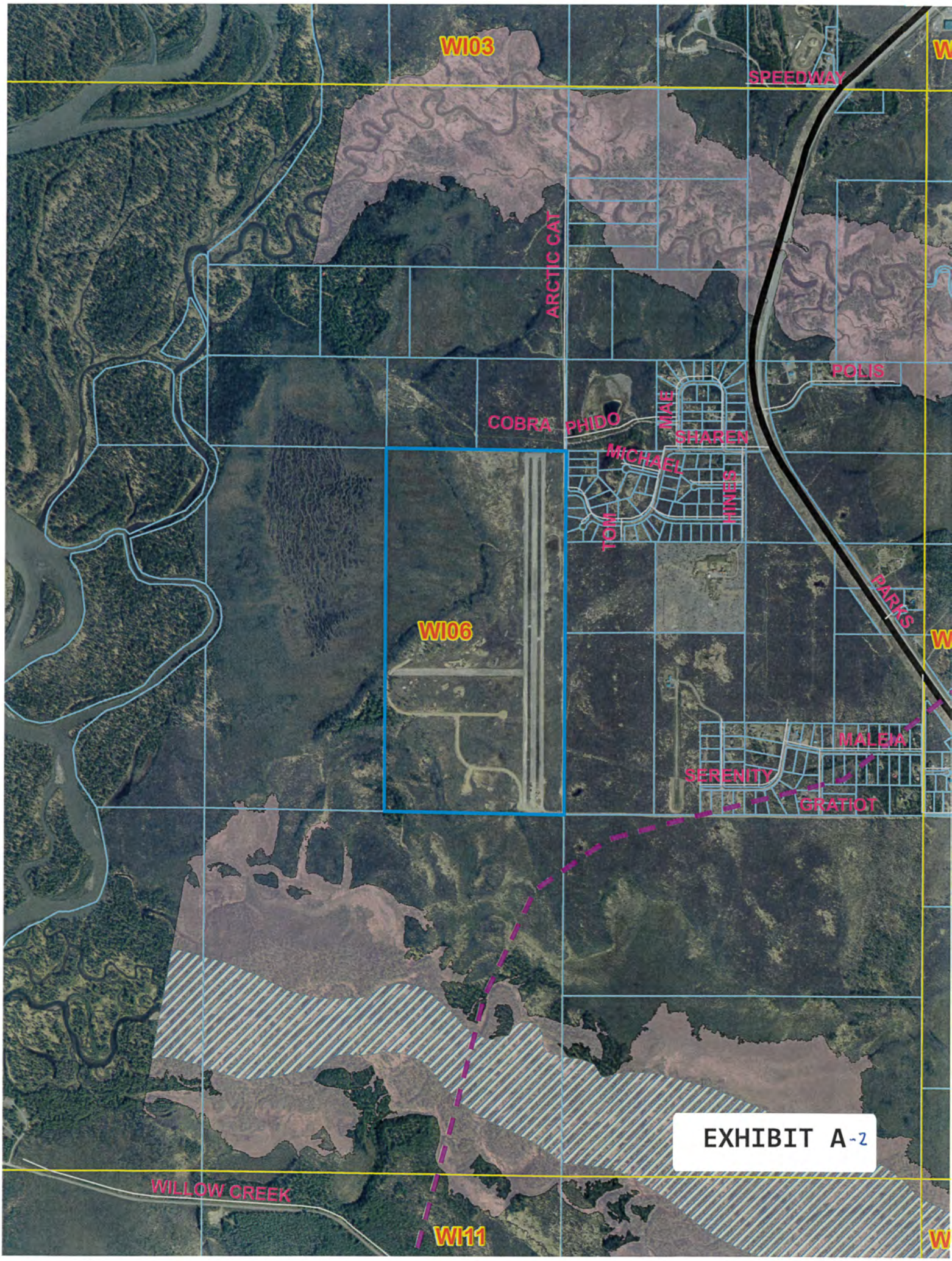


VICINITY MAP

FOR PROPOSED WILLOW CREEK AIRPARK MSP
LOCATED WITHIN
SECTION 26, T20N, R05W, SEWARD MERIDIAN
ALASKA

WILLOW 06 MAP

EXHIBIT A-1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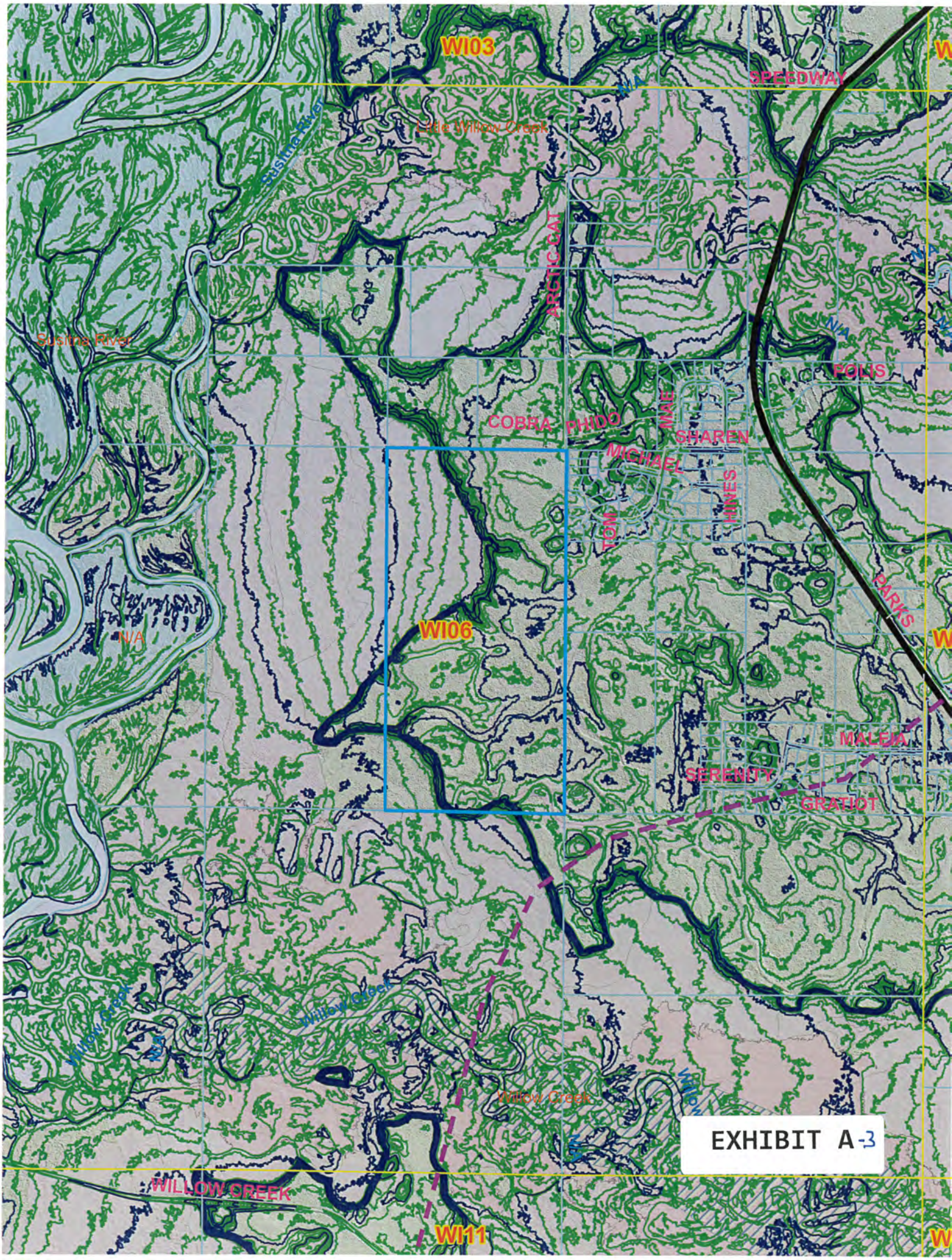
SPEEDWAY
ARCTIC CAT
POLIS
COBRA
PHIDO
MAE
SHAREN
MICHAEL
TOM
HINES
PARKS
WI06
MALEIA
SERENITY
GRATIOT
EXHIBIT A-2
WILLOW CREEK
WI11


WI03
SPEEDWAY
Little Willow Creek
Susitna River
ARCTIC CAT
Susitna River
POLIS
COBRA
PHIDO
MAE
SHAREN
MICHAEL
HINES
TOM
PARKS
WI06
MALEIA
SERENITY
GRATIOT
Willow Creek
Willow Creek
Willow Creek
WILLOW CREEK
WI11
EXHIBIT A-3

Engineer's Report

Willow Creek Airpark Subdivision
Willow, Alaska

Prepared for:

Scott Jewell
P.O. Box 1021
Willow, AK 99688

Prepared by:

Steiner Design & Construction Services, LLC
5900 W. Dewberry Dr.
Wasilla, AK 99623

April, 2021

STATE OF ALASKA
49TH
DAN E. STEINER
No. CE 9505
4/17/21
REGISTERED PROFESSIONAL ENGINEER

EXHIBIT B

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Appendix B ..... Drainage Study Figure and Calculations
Appendix C ..... ADT Calculations and Results

1.0 INTRODUCTION

This Engineer's Report is for the Willow Creek Airpark Subdivision. The platting action is to subdivide 320.32 acres into smaller lots and tracts. Associated with this platting action is a tract of land to be used to construct two runways. One runway will be paved and the other will be a grass runway. The design of this subdivision is being completed following the Matanuska-Susitna Borough (MSB) Subdivision Construction Manual 2020.

All the lots will need an on-site septic system and water system. As a result, all lots will have a minimum size of 40,000 square feet. Figures 1 and 2 show the location of the proposed subdivision. Figure 3 shows the layout. Figures are in the "Figures" Section at the end of the report.

As part of this development, two roads that lead to the subdivision will be constructed and/or improved. These roads are Sharen Drive, near the northeast corner of the project, and Gratiot Drive, on the southeast corner. See Figures 1 and 2.

2.0 TOPOGRAPHY

This existing parcel is divided into two topographic areas. There is an upper area that is relatively flat. The change in topography from north to south and from east to west is approximately six feet. The second area is a lower portion of this parcel that is approximately 50' lower than the higher area. The two topographic areas are separated by a bluff. This bluff can be seen in the survey's topographic as-built survey. The lower area is an existing wetland.

This subdivision has been designed with consideration for the topographic areas and the existing bluff. The current layout of this subdivision provides each lot with a minimum of 10,000 sq.ft. of buildable area.

3.0 SOILS INVESTIGATION

Soil information is needed to determine if existing soil conditions are suitable for onsite wastewater disposal systems. This includes soils capable of supporting a soil absorption system that meets all ADEC offset requirements from groundwater and bedrock.

A soils investigation was performed by Mark Hansen Engineering. Several test holes were excavated to determine soil characteristics. A map of the test hole locations and logs of the test holes are included with this report.

Some of the test holes were excavated within the runways of this subdivision. This data was needed for the runway design. These test holes are excluded from this report since they are not withing the building lot area of the subdivision (test pits 18-25). The soils across this proposed subdivision are very consistent. There is a layer of topsoil with underlying soils being a sand, silty sand, sandy silt, or silt.

All these soil conditions are compatible with on-site septic systems. It should be noted that there are three test holes where silt was encountered (2, 6, and 15). It was determined that percolation tests needed to be performed at these test hole locations. At the time of this report, the depth of snow and frozen ground prevented us from completing these percolation tests. Once these locations can be accessed, percolation tests will be completed, and the results submitted to the MSB.

My experience has shown that the soil encountered in these locations (2, 6, and 15) will have acceptable percolation tests. This will be confirmed when the area is accessible, but I am confident in making the following statement: Based on the soils data and existing topography, there is a minimum of 10,000 square feet of contiguous usable septic area within each of the proposed lots.

4.0 DRAINAGE STUDY

One of the most significant changes to the Subdivision Construction Manual is the requirement to conduct a drainage study of the proposed development. Appendix B includes figures and calculations that are associated with this drainage study.

This site, as discussed in the "Topography" section is very flat. To conduct runoff to appropriate locations, a combination of improvements will be used. These include culverts, roadside ditches, drainage swales, and infiltration basins.

4.1 Drainage Calculations

This site has been divided into 26 drainage basins. Figures 1, 2A, and 2B in Appendix B show the layout of the drainage basins. The Rational Method has been used to calculate the peak runoff from each drainage basin. The design storm used for these calculations is the 10-year, 24-hour storm. The rational method requires data from rainfall Intensity-Duration-Frequency (IDF) Curves. The MSB Subdivision Construction Manual includes IDF curves for Palmer. SDCS determined that the 10-year, 24-hour rain event for Palmer is 1.89 inches of rain. The 10-year, 24-hour rain event for Willow is 2.84 inches of rain. SDCS used the Palmer IDF curves to calculate the peak flow and then multiplied that result by (2.84/1.89) 1.50. The 1.50 multiplier is shown in the calculations.

With this information it can be determined if the culverts have the capacity to pass the peak flow and if the infiltration basis can percolate the volume of runoff. Not all drainage basins have infiltration basins. These drainage basins direct runoff from their area to the existing wetlands. The calculations for each drainage basin are included in Appendix B. The calculations for each drainage basin indicate two things: (1) the peak runoff from the site and (2) if culverts are used, the capacity of the culvert and percentage of the capacity needed to pass the peak runoff OR the volume of water that will need to be absorbed and the capacity of the infiltration basin(s) in that drainage basin.

It should be noted that there is an area where, due to topography, runoff cannot leave the area. This runoff will be absorbed into the ground at low spots. The North-South runway has also

been designed for runoff to be absorbed in the infield areas. Figures 2A and 2B show the areas where runoff will not leave the site.

Per the MSB Subdivision Construction Manual, the runoff calculations are for a full build out of the subdivision. Since no building permits are required, the location and size of impervious areas area can only be estimated. It was estimated to be 2,000 square feet for a building footprint and 3,000 square feet for a driveway/ paved area for each lot.

Regarding the roads that are outside of the subdivision development area, a calculation was performed to determine the maximum spacing of infiltration basis along Sharen Drive and Gratiot Drive. As stated previously, this area is very flat. This calculation assumes that the right-of-way and 50' of the adjacent lots will drain to the right of way. It has been calculated that the maximum spacing for infiltration basins is 2,000 feet. Drainage basins are shown at a maximum of 2,000 feet in the drainage improvement sheets. The final locations will be determined during construction and additional basins will be added based along these roads based on the finish grade.

4.2 Drainage Improvements

In appendix B are the drainage improvement sheets. These sheets show where the culverts and infiltration basins are located.

5.0 SUBDIVISION ACCESS / ROAD CONSTRUCTION

SDCS will be conducting all construction observation and will be the certifying the roadway construction. Hansen Engineering will be conducting all material testing for the roadway construction.

5.1 Subdivision Access / ADT

The proposed subdivision site currently has legal and physical access by Gratiot Drive at the site southeast corner. However, with the number of existing and proposed lots, the calculated volume of traffic will exceed the daily traffic of 1000 vehicles per day (ADT) and will

require a second access. A second legal access is currently available from Sharen Drive near the northeast corner of the subdivision. As part of this subdivision, the road prism for Gratiot Drive will be reconstructed to MSB standards for a Residential Collector road. The road prism for Sharen Drive, from the Parks Highway to the east intersection of Mae Loop will be reconstructed to MSB standards for a Residential Collector road. The remainder of the road will be constructed as a Residential Subcollector road. It is planned to eventually pave Gratiot Drive from the Parks Highway to this subdivision. Sharen Drive will remain a gravel surface.

Average Daily Traffic (ADT) has been determined based on the MSB Subdivision Construction Manual, A15, for 10 ADT/lot. It is anticipated that most of the people who access this new subdivision will do so from Gratiot Drive. Gratiot Drive will be a more attractive access point with its paved surface.

ADT has been calculated along Gratiot Drive, along Sharen Drive, and within the proposed subdivision. Figures showing the area included in the analysis and the intersections with the calculated ADT is included in Appendix C.

5.2 Road Construction

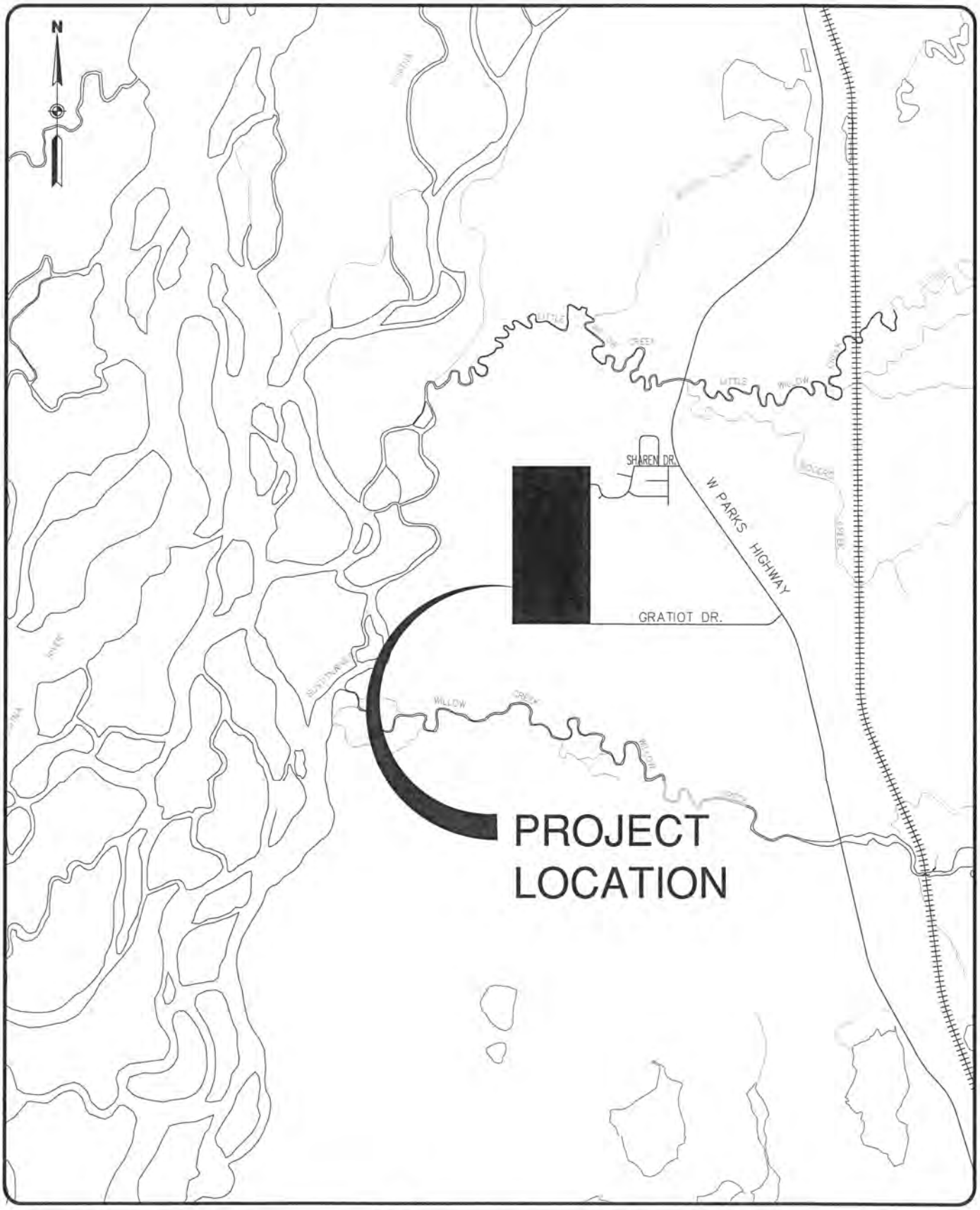
All the roads in the new subdivision will be constructed to MSB standards for Residential Subcollector roads, except for two. There are two cul-du-sac roads, B Court and D Court (see figure 1), that will be constructed to MSB standards for Residential roads.

6.0 SUMMARY

- This subdivision is being designed and constructed per the MSB Subdivision Construction Manual 2020.
- Based on topography and soil conditions, each lot has a minimum of 10,000 square feet of buildable area and a minimum of 10,000 square feet of contiguous usable septic area.

- Drainage facilities have been provided to direct runoff to either exiting wetlands or infiltration basins.
- Two access points will be provided to the proposed subdivision site as needed so as not to exceed MSB ADT standards on either road.
- All new roads will be constructed to MSB standards and certified by SDCS.

Figures



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STEINER DESIGN & CONSTRUCTION SERVICES, LLC
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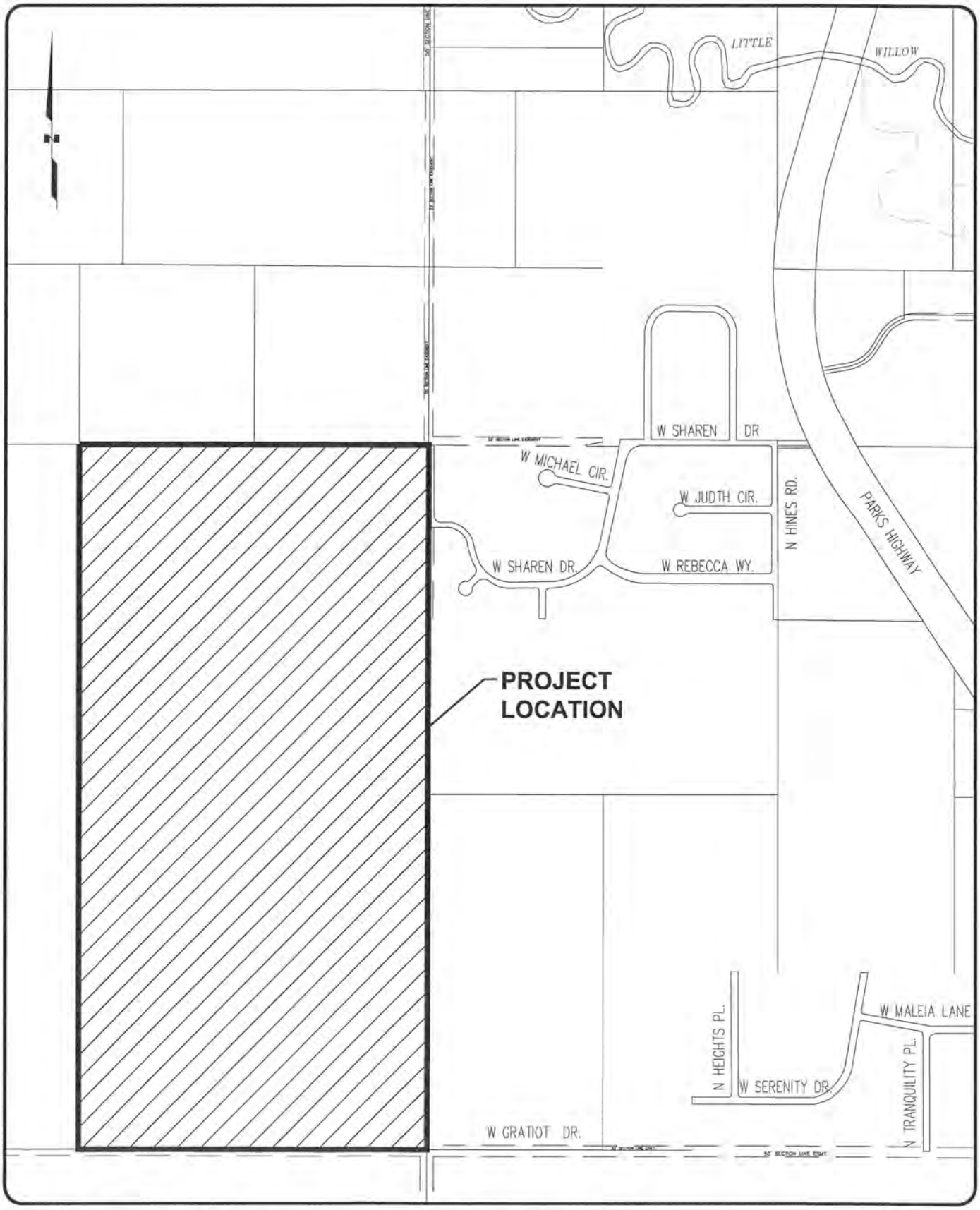
WASILLA, AK 99623 FAX: (907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

VICINITY MAP

FIGURE
1



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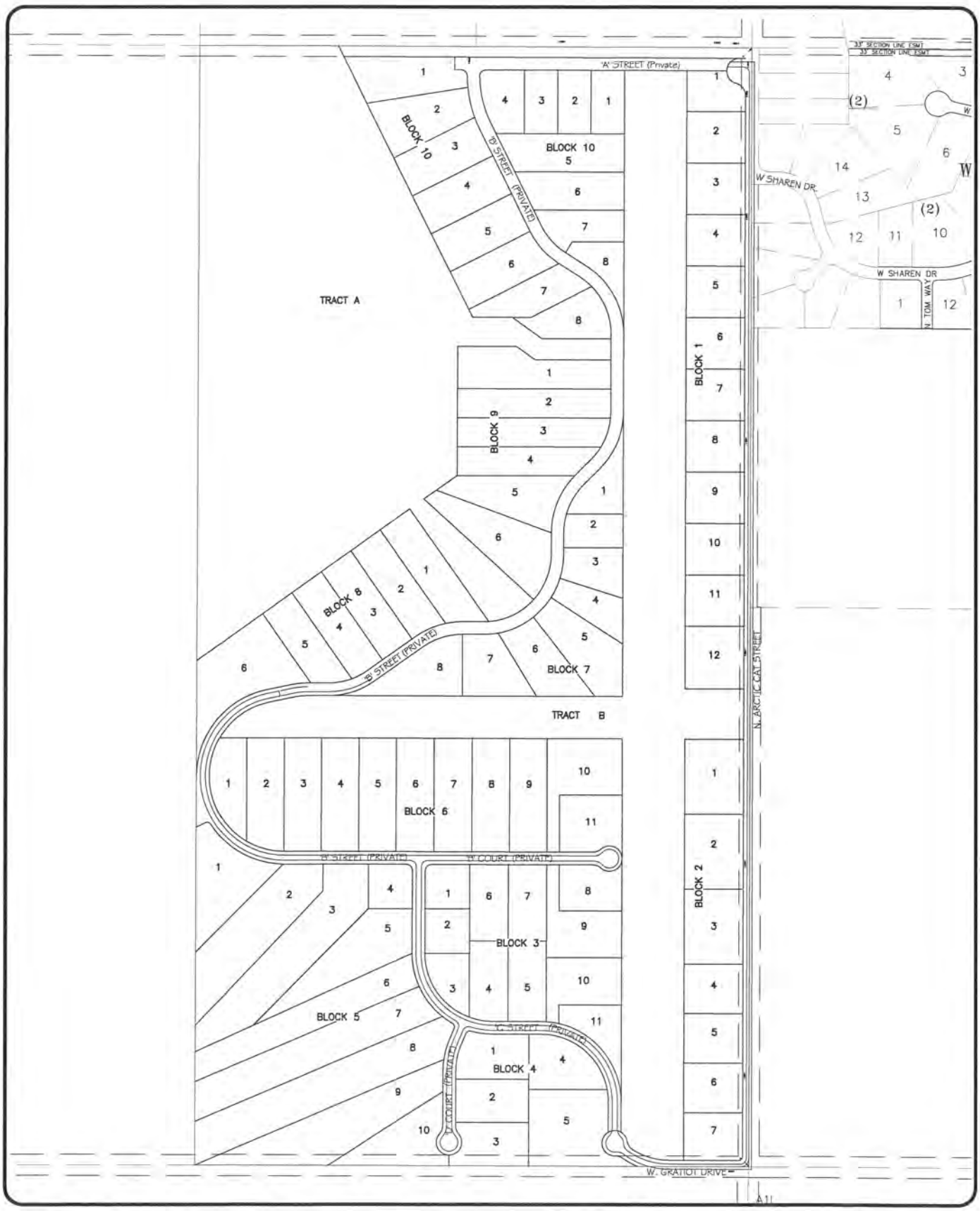
WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

LOCATION MAP

FIGURE 2



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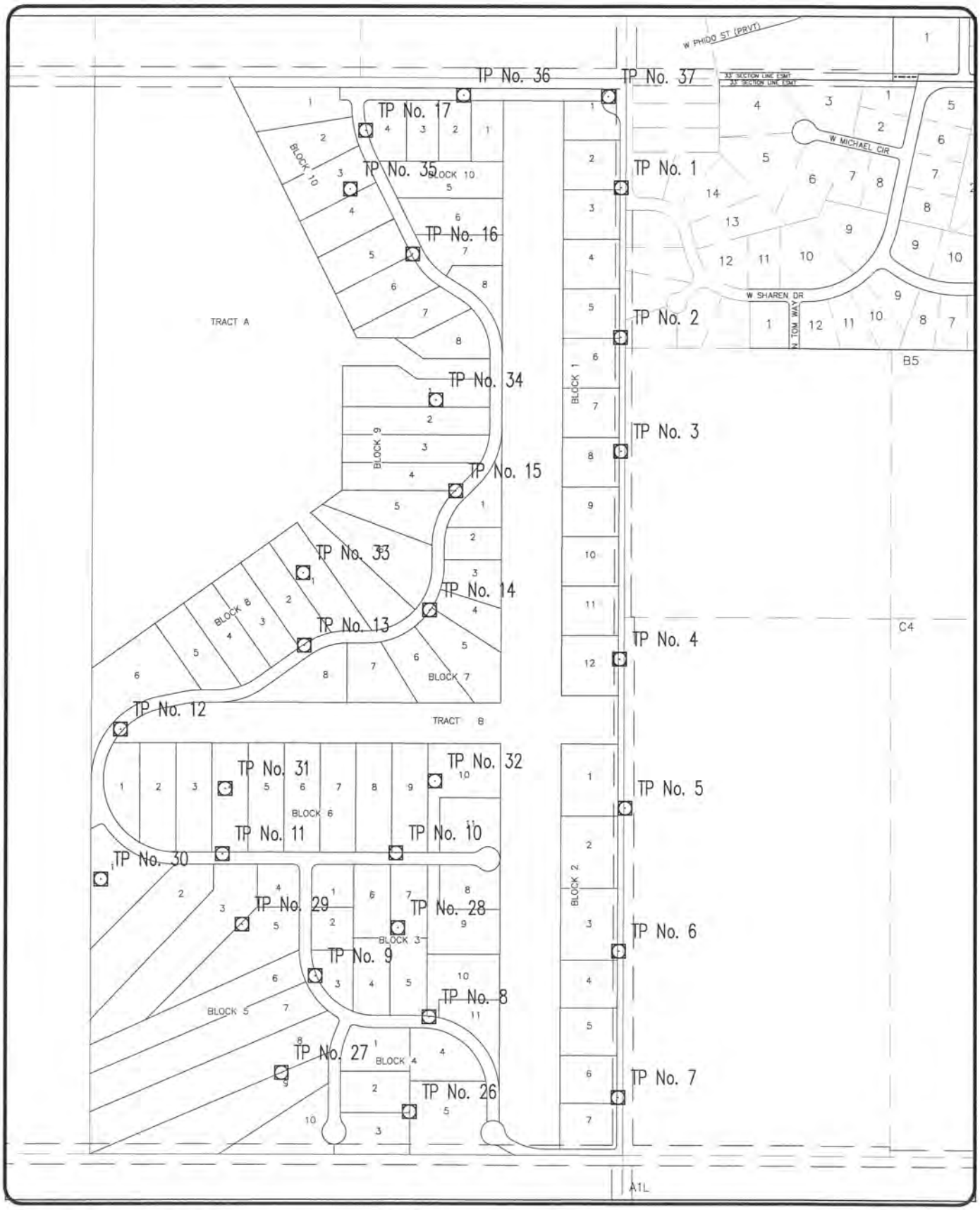
WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

SUBDIVISION LAYOUT

FIGURE 3

Appendix A:
Soil Data



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WILLOW CREEK AIRPARK SUBDIVISION
SOIL REPORT

TEST PIT LOCATION MAP

FIGURE 1

Log of Test Pit 1

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML) with roots	
2				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

MARK HANSEN P.E.
CONSULTING ENGINEERS TESTING LABORATORY
2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone:(907)745-4721
e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

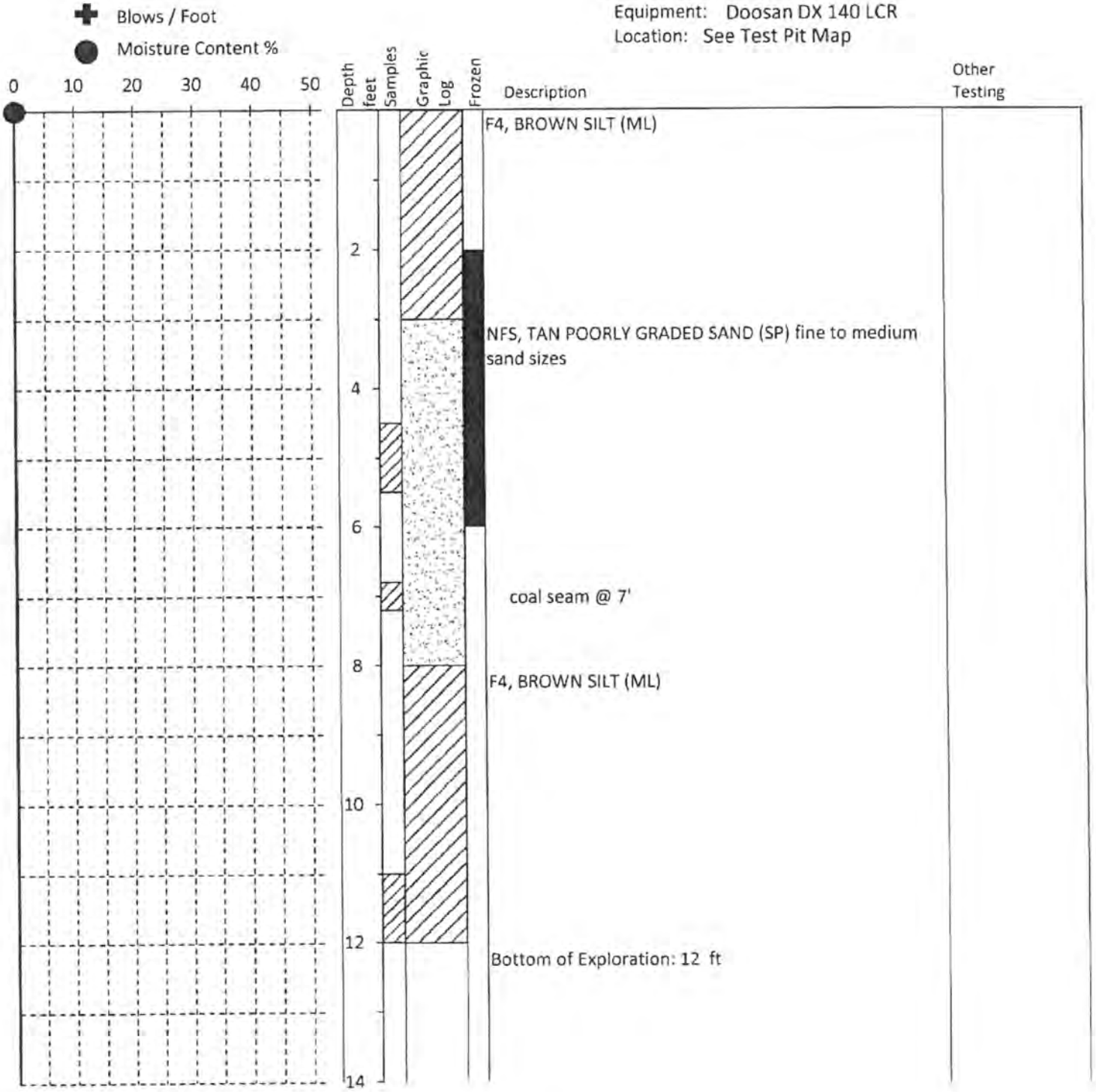
Log of Test Pit 1

Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 1

Log of Test Pit 2

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map



Blows / Foot
Moisture Content %
Bulk Sample
Grab Sample

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e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

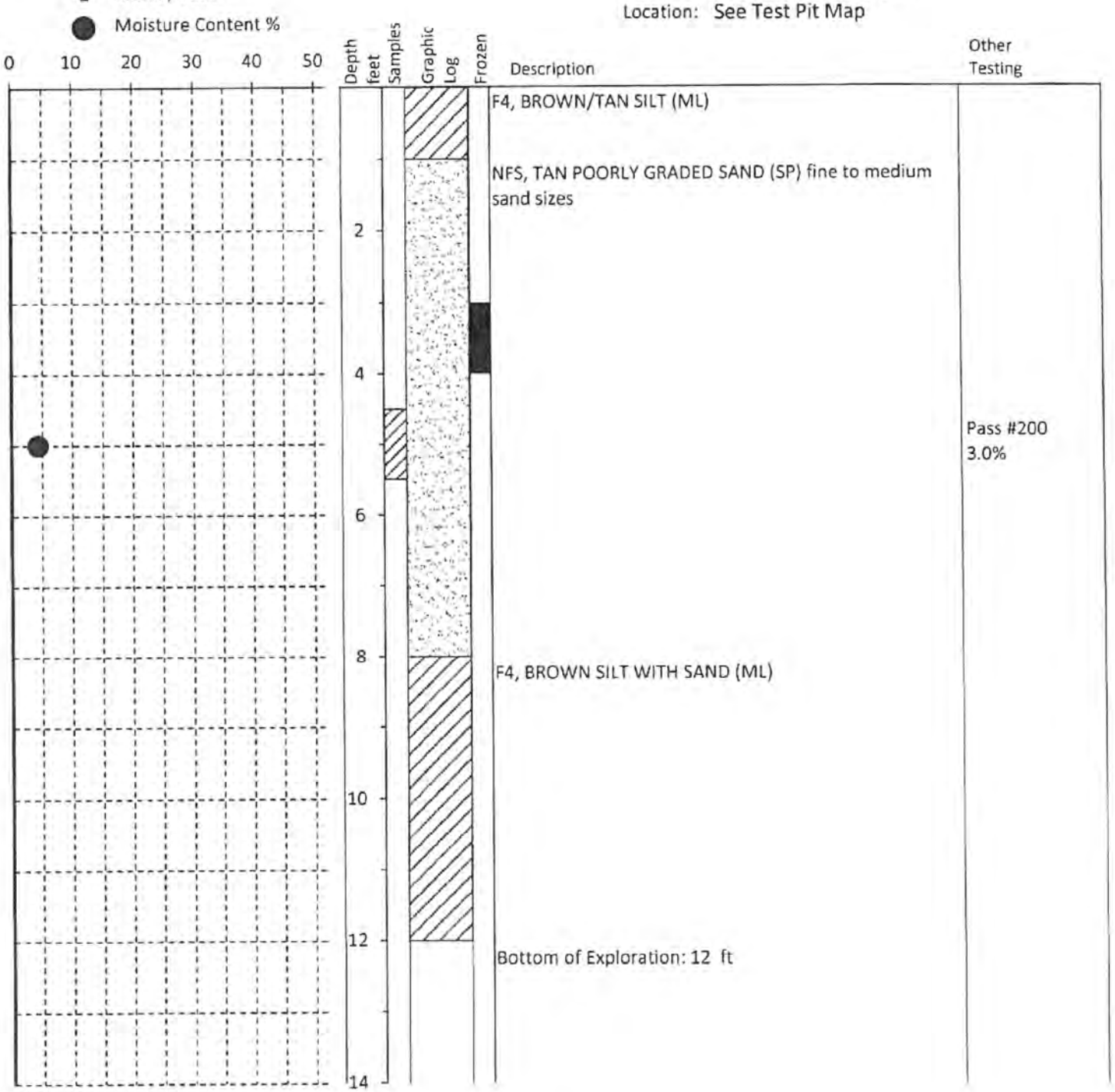
Log of Test Pit 2
Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 2

Log of Test Pit 3

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

MARK HANSEN P.E.
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e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

Log of Test Pit 3

Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 3

Log of Test Pit 4

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML)	
				NFS, TAN POORLY GRADED SAND (SP) fine sand sizes	
2				NFS, GRAY POORLY GRADED SAND (SP) fine to medium sand sizes	
4					
6					
8					
10					
12					
				Bottom of Exploration: 13 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

MARK HANSEN P.E.
CONSULTING ENGINEERS TESTING LABORATORY
2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone:(907)745-4721
e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

Log of Test Pit 4

Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 4

Log of Test Pit 5

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, TAN/BROWN SILT (ML) with roots	
				NFS, TAN POORLY GRADED SAND (SP) fine to medium sand sizes	
2					
				NFS, GRAY POORLY GRADED SAND (SP) medium to coarse sand sizes	
4					
6				NFS, TAN-GRAY POORLY GRADED SAND (SP) fine to medium sand sizes, banded tan and gray sand	
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

MARK HANSEN P.E.
CONSULTING ENGINEERS TESTING LABORATORY
2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone:(907)745-4721
e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

Log of Test Pit 5

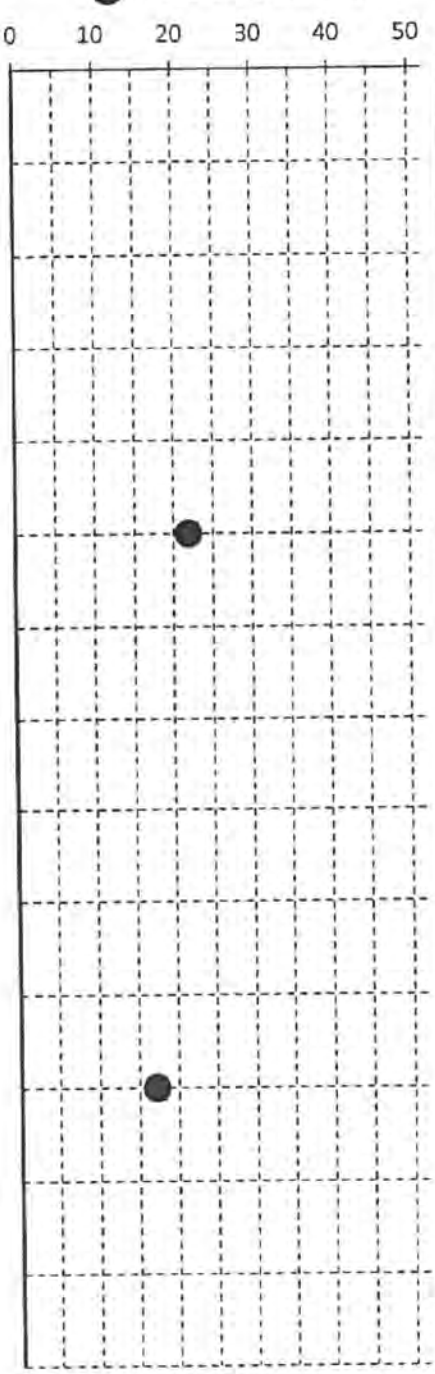
Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 5

Log of Test Pit 6

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BROWN PEAT, plants and muck	
				F4, BROWN, TAN, GRAY SILT WITH SAND (ML) non plastic, fine sand	
2					
4					
6				NFS, BROWN/TAN POORLY GRADED SAND (SP) medium to fine sand	
				F4, TAN/GRAY SANDY SILT (ML) fine sand	
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 6

Jewell Subdivision
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Plate 6

Log of Test Pit 7

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML)	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP) banded layers of medium and fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 7

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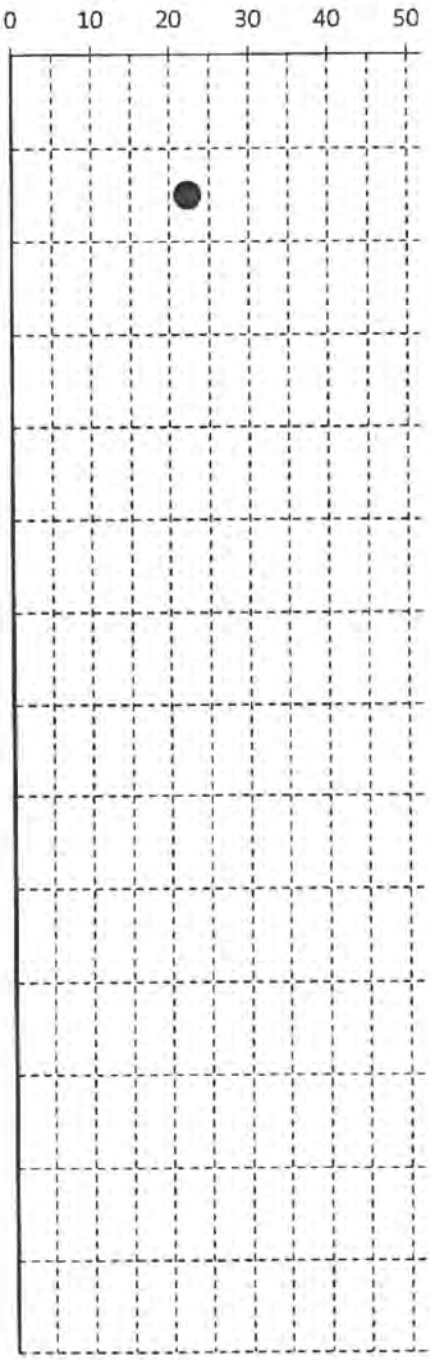
Plate 7

Log of Test Pit 8

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BROWN PEAT with moss, plants, and roots	
				F4, TAN, GRAY SILT WITH SAND (ML) low plasticity, fine sand	
2					
				NFS, TAN/BROWN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 8
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Plate 8

Log of Test Pit 9

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/TAN SILT (ML) some roots in top 1'	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
4				coal seam at 4'	
				coal seam at 5'	
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 9

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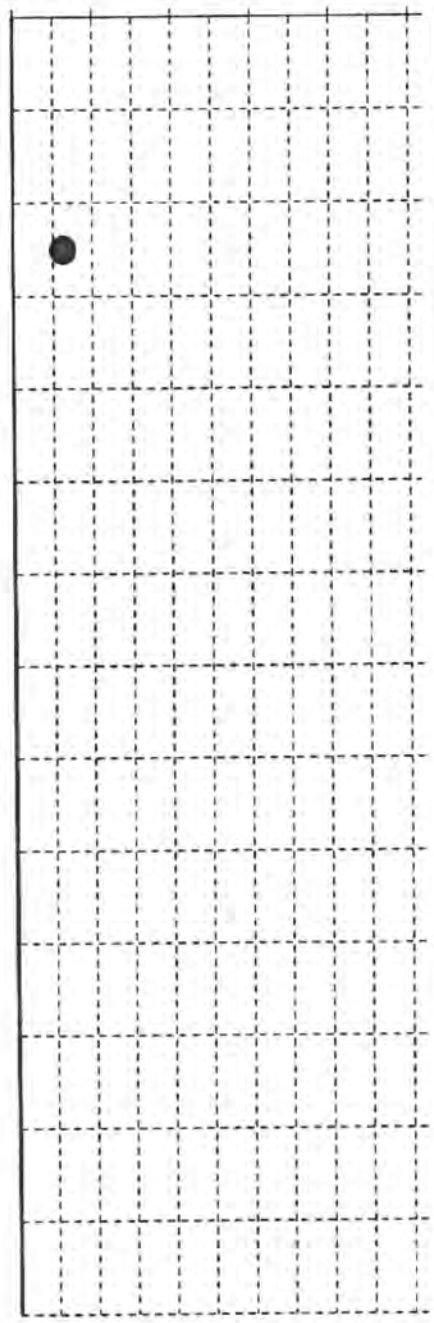
Plate 9

Log of Test Pit 10

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK/BROWN PEAT with moss and roots	
				F4, BROWN SILT (ML)	
2				F2, TAN SILTY SAND (SM) fine sand, non plastic	
				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 10

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Plate 10

Log of Test Pit 11

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/TAN SILT (ML) with roots	
				NFS, TAN/BROWN POORLY GRADED SAND (SP) medium to fine sand	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP)	
4				NFS, TAN/GRAY POORLY GRADED SAND WITH GRAVEL (SP)	
				NFS, TAN/GRAY POORLY GRADED SAND (SP)	
6					
8					
10					
12					
				Bottom of Exploration: 12.5 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 11

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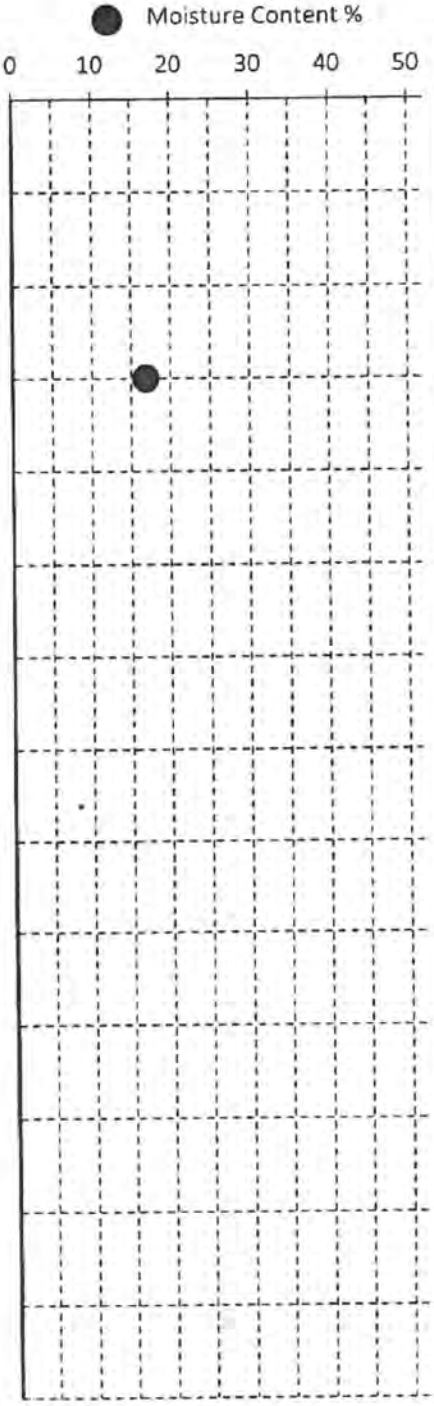
Plate 11

Log of Test Pit 12

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BROWN PEAT	
				F4, BROWN SILT (ML)	
2				F4, TAN SANDY SILT (ML) non plastic, fine sand	
4				NFS, TAN/BROWN POORLY GRADED SAND (SP)	
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 12

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Wasilla, AK 99654

Plate
12

Log of Test Pit 13

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BROWN PEAT with moss and roots	
				F4, BROWN/TAN SILT (ML)	
2					
				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 13

Jewell Subdivision
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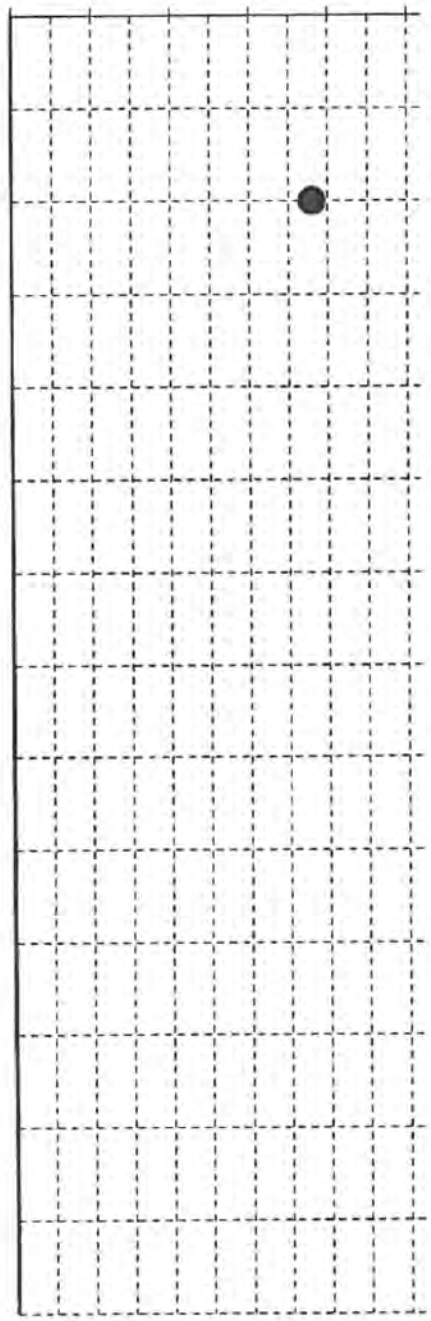
Wasilla, AK 99654

Plate 13

Log of Test Pit 14

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK PEAT with moss and roots	
				F4, TAN SANDY SILT (ML) low plasticity, fine sand	
2					
				NFS, TAN/BROWN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 14
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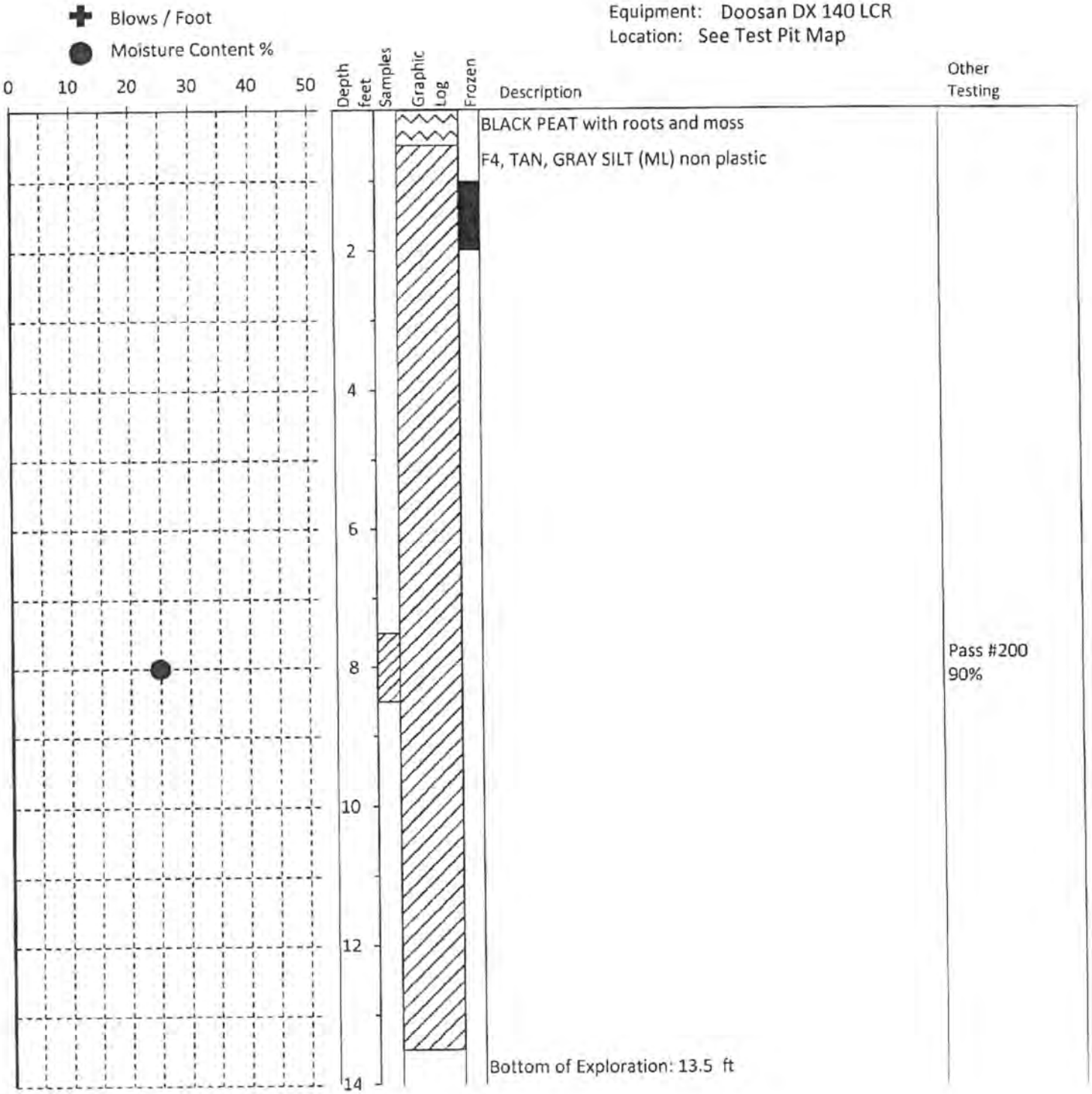
Plate 14

Log of Test Pit 15

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map



Blows / Foot
Moisture Content %
Bulk Sample
Grab Sample

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Log of Test Pit 15

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Plate 15

Log of Test Pit 16

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK PEAT	
				F4, BROWN SILT (ML)	
				NFS, TAN POORLY GRADED SAND (SP)	
2					
4					
6					
8					
10					
12					
				Bottom of Exploration: 12.5 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 16

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Plate 16

Log of Test Pit 17

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/BLACK/TAN SILT (ML) with roots	
				NFS, TAN POORLY GRADED SAND (SP) all sand sizes	
2					
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 17
Jewell Subdivision
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Wasilla, AK 99654

Plate 17

Log of Test Pit 26

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/TAN SILT (ML) some roots in top 1'	
2					
4				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand, occasional silt lenses	
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 26
Jewell Subdivision
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Wasilla, AK 99654

Plate 26

Log of Test Pit 27

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML)	
				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
2					
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 27

Jewell Subdivision
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5900 W. Dewberry DR
Wasilla, AK 99654

Plate 27

Log of Test Pit 28

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML) roots in top 6"	
				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand	
2					
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 28

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Plate 28

Log of Test Pit 29

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/TAN SILT (ML)	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 29

Jewell Subdivision
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Plate 29

Log of Test Pit 30

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK/BROWN PEAT	
				F4, TAN/BROWN SILT (ML)	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Log of Test Pit 30
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Wasilla, AK 99654

Plate 30

Log of Test Pit 31

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML)	
				F3, TAN/BROWN SILTY SAND (SM)	
2				NFS, TAN/GRAY POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12					
				Bottom of Exploration: 12.5 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

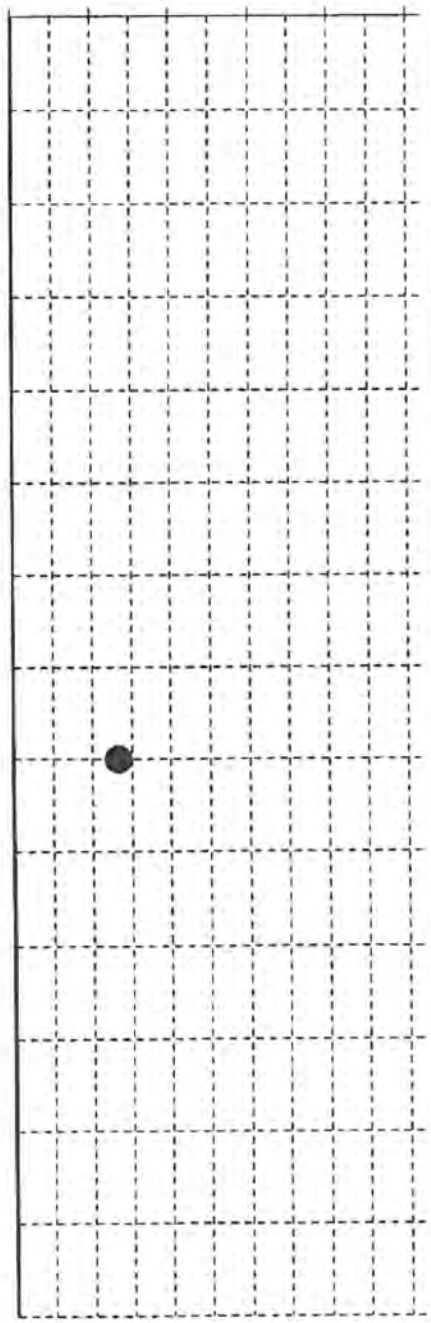
Log of Test Pit 31
Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 31

Log of Test Pit 32

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %



Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK/BROWN PEAT with moss and roots	
				F4, BROWN/TAN SILT (ML)	
2					
4					
6				F4, TAN SILTY SAND (SM) fine sand, with silt lenses	
8					Pass #200 35%
10					
12					
				Bottom of Exploration: 13 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 32
Jewell Subdivision
SDCS, LLC
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Wasilla, AK 99654

Plate 32

Log of Test Pit 33

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML) moss and roots at surface	
2				NFS, TAN/BROWN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 33
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Wasilla, AK 99654

Plate 33

Log of Test Pit 34

Exploration: May 12, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN/TAN SILT (ML)	
2				F4, TAN SILTY SAND (SM) fine sand	
4				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand, occasional silt lenses	
6					
8					
10					
12				Bottom of Exploration: 12.5 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 34

Jewell Subdivision
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Wasilla, AK 99654

Plate 34

Log of Test Pit 35

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				F4, BROWN SILT (ML)	
				NFS, TAN POORLY GRADED SAND (SP)	
2					
4					
				F2, TAN/GRAY SILTY SAND (SM) fine sand	
6					Pass #200 25%
8				NFS, TAN POORLY GRADED SAND (SP)	
10					
12					
				Bottom of Exploration: 12.5 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 35

Jewell Subdivision
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Wasilla, AK 99654

Plate 35

Log of Test Pit 36

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BLACK PEAT with plants and roots	
				F4, BROWN/TAN SILT (ML)	
2				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand	
4					
6					
8				F4, TAN, GRAY, BROWN SILT (ML) layered	
				NFS, TAN POORLY GRADED SAND (SP) medium to fine sand	
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

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Job No.: 17034 Date: May 2017

Log of Test Pit 36
Jewell Subdivision
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Wasilla, AK 99654

Plate 36

Log of Test Pit 37

Exploration: May 11, 2017
Equipment: Doosan DX 140 LCR
Location: See Test Pit Map

✚ Blows / Foot
● Moisture Content %

0 10 20 30 40 50

Depth feet	Samples	Graphic Log	Frozen	Description	Other Testing
				BROWN/BLACK PEAT, plant and root remains	
				F4, TAN/BROWN SILT (ML)	
2				NFS, TAN POORLY GRADED SAND (SP) fine to medium sand sizes, occasional silt lenses.	
4					
6					
8					
10					
12				Bottom of Exploration: 12 ft	
14					

✚ Blows / Foot
● Moisture Content %

Bulk Sample
Grab Sample

MARK HANSEN P.E.
Consulting Engineers Testing Laboratory
2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone:(907)745-4721
e-mail: mhpe@mtaonline.net

Job No.: 17034 Date: May 2017

Log of Test Pit 37

Jewell Subdivision
SDCS, LLC
5900 W. Dewberry DR
Wasilla, AK 99654

Plate 37

MARK HANSEN P.E.
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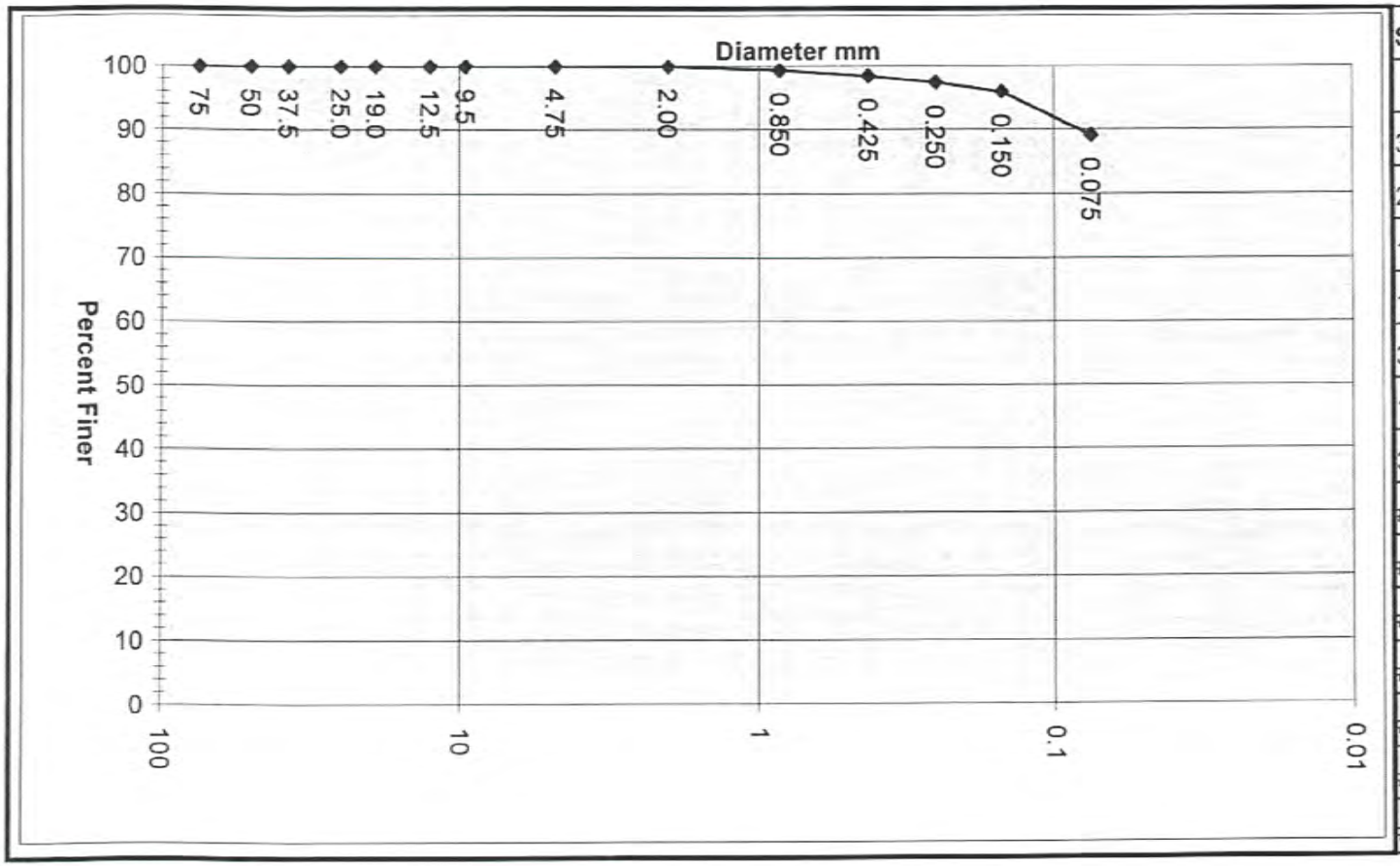
e-mail: mhpe@mtaonline.net



Sieve	Diameter	Percent
	mm	Finer
3"	75	100
2"	50	100
1.5"	37.5	100
1"	25.0	100
3/4"	19.0	100
1/2"	12.5	100
3/8"	9.5	100
#4	4.75	100
#10	2.00	100
#20	0.850	99
#40	0.425	98
#60	0.250	97
#100	0.150	96
#200	0.075	89.1

Client: **SDCS**

Soil Description: Silt

Project Jewell Subdivision

Unified Classificatio ML

Date 5/24/2017

Sample Location: TH #24 @ 3'

Sample Date: 5/11/2017

Proj. no: 17034

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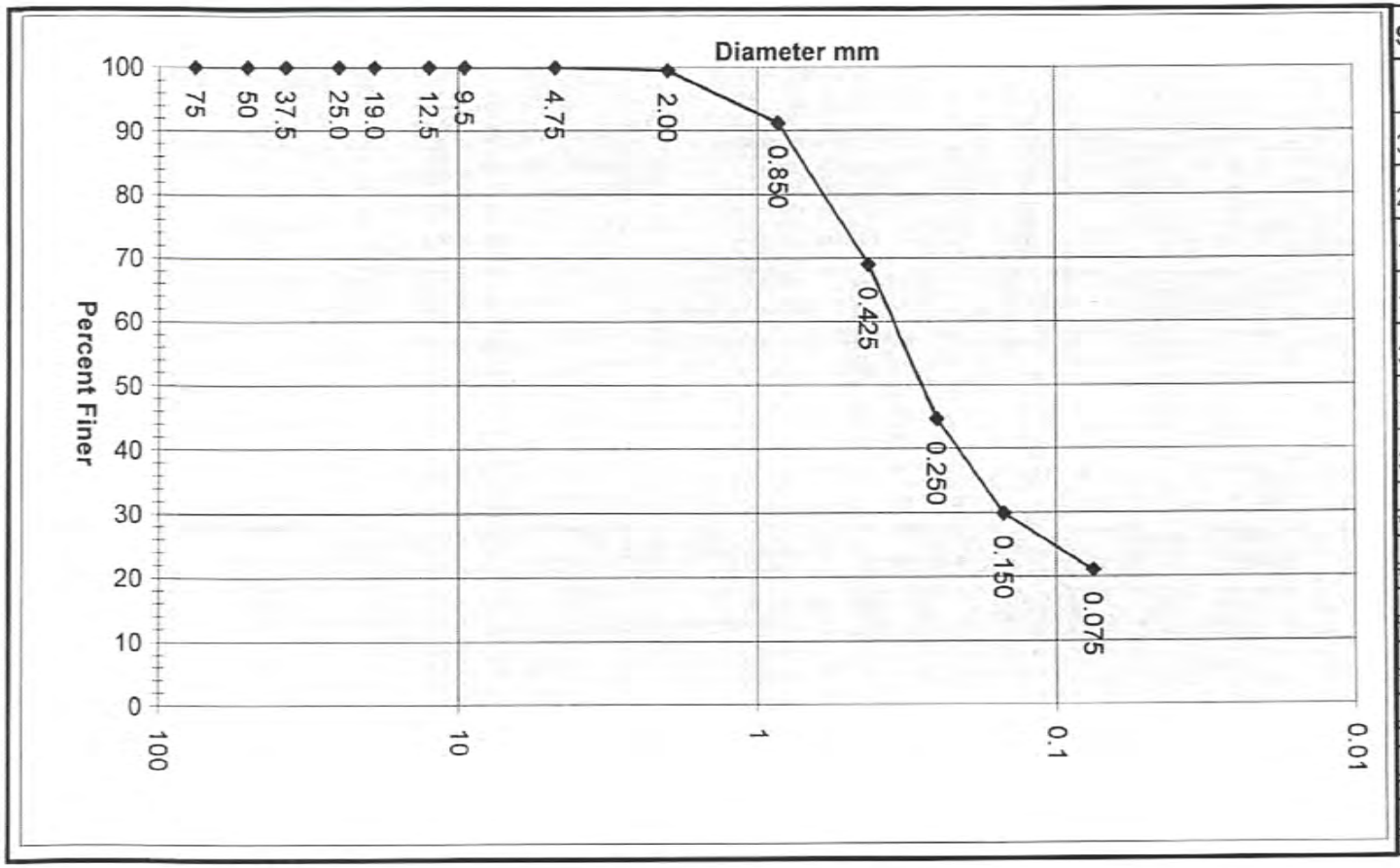

Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	100
1.5"	37.5	100
1"	25.0	100
3/4"	19.0	100
1/2"	12.5	100
3/8"	9.5	100
#4	4.75	100
#10	2.00	99
#20	0.850	91
#40	0.425	69
#60	0.250	45
#100	0.150	30
#200	0.075	21.0

Client: **SDCS**

Soil Description: Silty Sand

Project Jewell Subdivision

Unified Classificatio SM

Date 5/24/2017

Sample Location: TH #24 @ 10'

Sample Date: 5/11/2017

Proj. no: 17034

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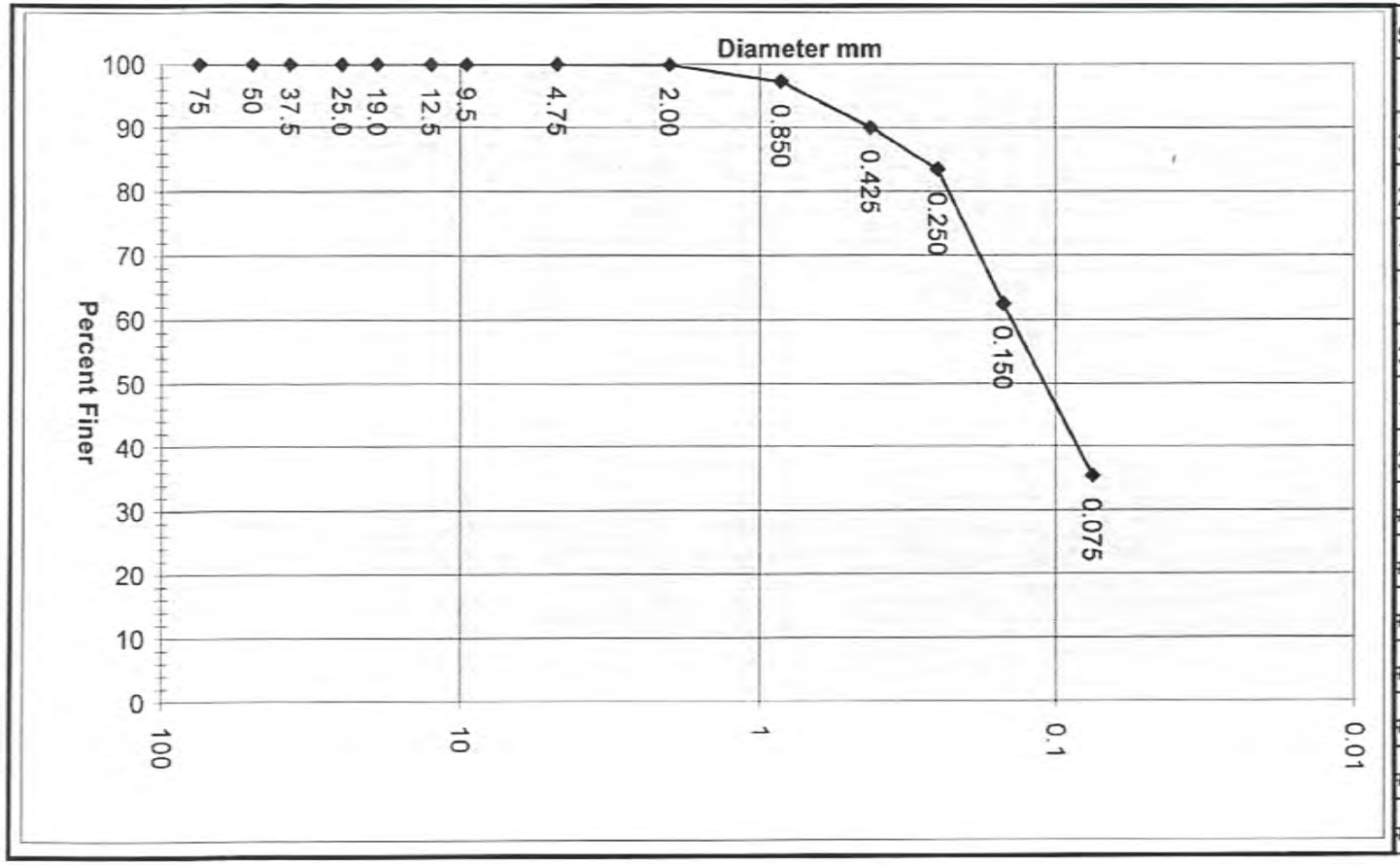

Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	100
1.5"	37.5	100
1"	25.0	100
3/4"	19.0	100
1/2"	12.5	100
3/8"	9.5	100
#4	4.75	100
#10	2.00	100
#20	0.850	97
#40	0.425	90
#60	0.250	83
#100	0.150	62
#200	0.075	35.4

Client: **SDCS**

Soil Description: Silty Sand

Project Jewell Subdivision

Unified Classificatio SM

Date 5/24/2017

Sample Location: TH #32 @ 8'

Sample Date: 5/12/2017

Proj. no: 17034

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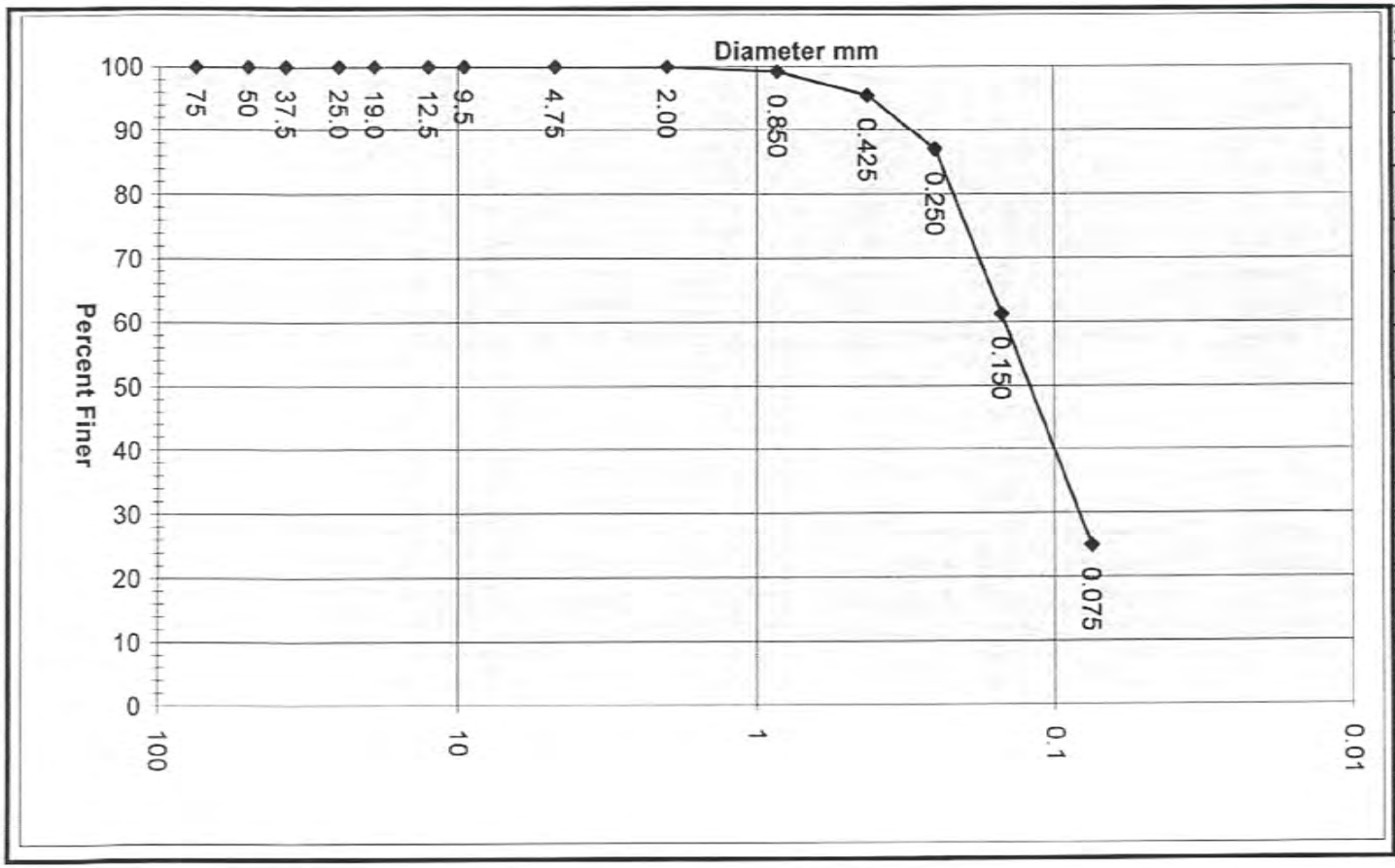

Sieve	Diameter	Percent
	mm	Finer
3"	75	100
2"	50	100
1.5"	37.5	100
1"	25.0	100
3/4"	19.0	100
1/2"	12.5	100
3/8"	9.5	100
#4	4.75	100
#10	2.00	100
#20	0.850	99
#40	0.425	95
#60	0.250	87
#100	0.150	61
#200	0.075	25.0

Client: **SDCS**

Soil Description: Silty Sand

Project Jewell Subdivision

Unified Classificatio SM

Date 5/24/2017

Sample Location: TH #35 @ 6'

Sample Date: 5/11/2017

Proj. no: 17034

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e-mail: mhpe@mtaonline.net

~~8/12/20~~
17034

Dan Steiner
SDCS, LLC
5900 W Dewberry Dr
Wasilla, AK 99654

Subject: Jewell Subdivision

Dan,

As requested, we have reviewed the original logs and lab worksheets for selected test pits in this subdivision. Three test pits are of concern because they contain soils with significant amounts passing the #200 sieve. Mat-Su Borough platting is now requiring classification tests to differentiate between silty and clayey fines, although they were not requiring this in May 2017 when the exploration was conducted.

The specific locations are Test Pits #24, #32 and #35.

No Atterburg limits were run on samples from any of these test pits but at least one sieve analysis was run on a sample from each of these test pits.

Test Pit #24 showed a five-foot layer of silt at the surface. Most of this layer is shallower than minimum cover over septic systems, so this layer will not affect useable area for septic systems. The layer from 5' to 12' was originally classified as fine and medium "Poorly graded sand, (SP)" by our field engineer, indicating an absence of cohesion in the sample. Since the sample contained an abundance of particles near the #200 sieve size, the sample was sieved to check the visual classification. The sieve analysis shows 21% passing the #200 sieve, but the original sample appeared non-cohesive. Liquid and plastic limits cannot be tested in non-cohesive soil.

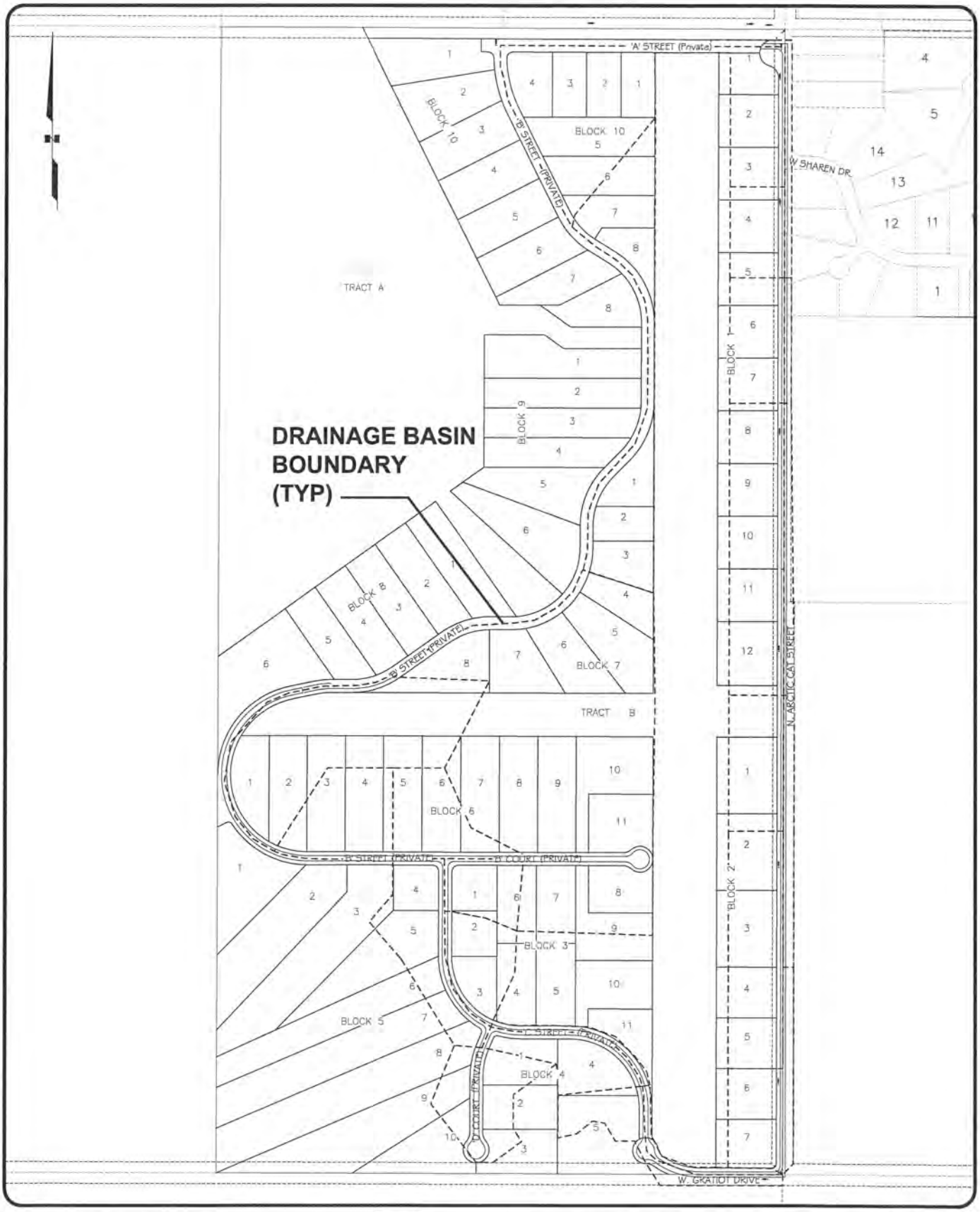
Test Pit #32 had organics and silt down to six feet. The layer from 6' to 13' was originally logged as "Sand layered with silt lenses, (SP-SM) with fine and medium sand". The layering was lost due to mixing when the sample from the test pit was recovered, so the sieve analysis does not reflect the layering which is present in the undisturbed soil. We do not believe the silt lenses have any plasticity and even if they do, the sand will have sufficient permeability to make the soil useable for septic.

Test Pit #35 has a profile that is predominantly sand. The soil from 5' to 8' was originally logged as "Silt layers with sand layers". The gradation does not reflect the layering which is present in the undisturbed soil. In the laboratory our technician noted on the visual classification worksheet that the silt is nonplastic.

Sincerely,

Mark Hansen

Appendix B: Drainage Study Figures and Calculations



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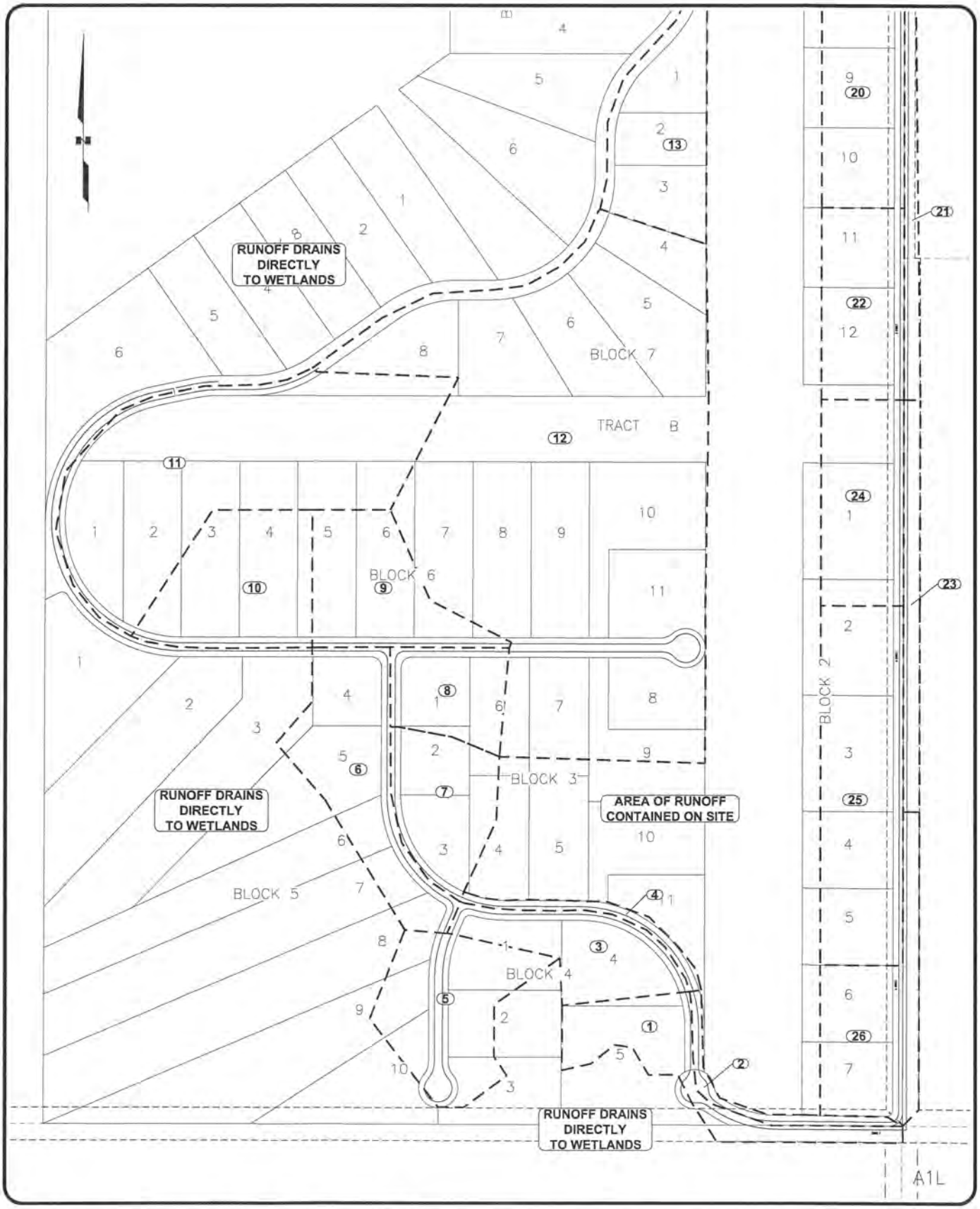
WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE STUDY

OVERALL PLAN

FIGURE 1



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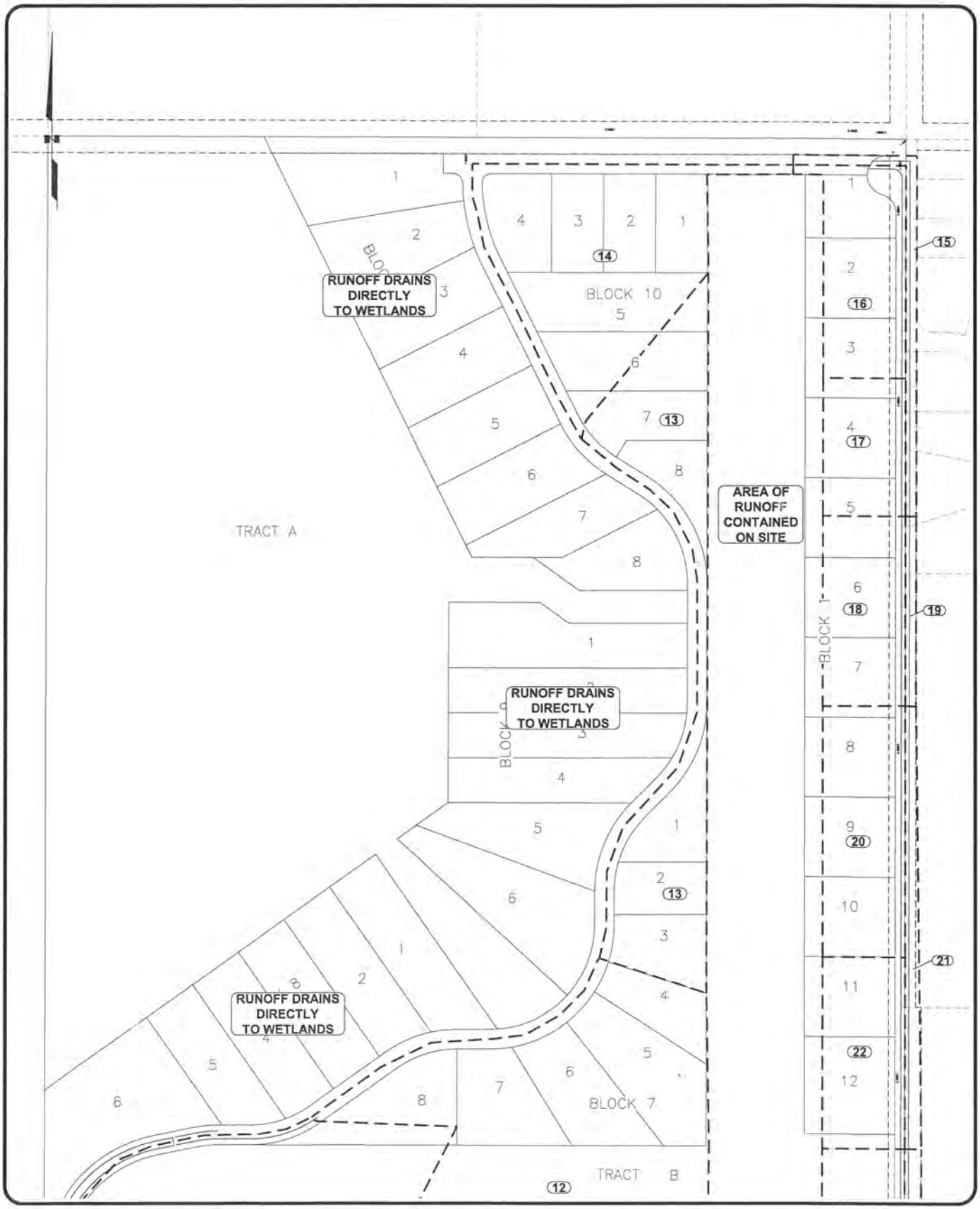
WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE STUDY

SOUTH AREA

FIGURE 2A



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WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE STUDY

NORHT AREA

FIGURE 2B

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Drainage Basin = 1

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

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Drainage Basin = 1

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	184	ft
Tt =	0.93	minutes
Tc =	**16.98**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 1

Rational Method

Q = CiA

Total Area = 121,808 sf
2.80 Acres

A = **2.80 Acres**

A	Pavement and Structures =		12,000 sf
	Grassy Araea		109,808 sf
		Total =	**121,808 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.247**

I From MOA-DCM

Tc = 16.98 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.283 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.02 in/hr
Multiplier 1.50

I (10yr) = 1.523 in/hour

Q (10yr) = CiA = 1.053 cfs or 472.7 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 2

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 2

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft
Assume Triangle Shaped Channel		
Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	99	ft
Tt =	0.50	minutes
Tc =	**10.00 minutes**	(If Tc is < 10 min, use 10 min.)

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Drainage Basin = 2

Rational Method

Q = CiA

Total Area = 28,372 sf
0.65 Acres

A = **0.65 Acres**

A	Pavement and Structures =		9,500 sf
	Grassy Araea		18,872 sf
		Total =	**28,372 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.431**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.167 *	
y =	-0.664 *	
i =	1.44 in/hr	
Multiplier	1.50	
I (10yr) =	**2.164 in/hour**	

Q (10yr) = CiA = 0.606 cfs or 272.1 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 2

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	18	in
Area =	1.767	sf
R (full) =	0.375	
Slope =	1.00%	
Manning's n =	0.024	
Q =	**5.71**	**cfs**
	2,560	**gpm**
Site Flow Through Culvert	272	gpm

10.6% used for flow from project site.

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 3

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	72	ft
Tt =	2.86	minutes

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Drainage Basin = 3

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	496	ft
Tt =	2.51	minutes
Tc =	**21.41**	**minutes** (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Wasilla, AK 99623

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Drainage Basin = 3

Rational Method

Q = CiA

Total Area = 122,749 sf
2.82 Acres

A = **2.82 Acres**

A	Pavement and Structures =		16,730 sf
	Grassy Araea		106,019 sf
		Total =	**122,749 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.276**

i From MOA-DCM

Tc = 21.41 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.357 *	
y =	-0.664 *	
i =	0.87 in/hr	
Multiplier	1.50	
I (10yr) =	**1.305 in/hour**	

Q (10yr) = CiA = 1.016 cfs or 455.9 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Wasilla, AK 99623

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Drainage Basin = 3

Infiltration Basin

Total Volume to Store =	**8,018** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3
Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 4

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 4

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	531	ft
Tt =	2.69	minutes

Tc = 10.00 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 4

Rational Method

Q = CiA

Total Area = 27,253 sf
0.63 Acres

A = **0.63 Acres**

A	Pavement and Structures =		8,920 sf
	Grassy Araea		18,333 sf
		Total =	**27,253 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.425**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.167 *	
y =	-0.664 *	
i =	1.44 in/hr	
Multiplier	1.50	
I (10yr) =	**2.164 in/hour**	

Q (10yr) = CiA = 0.579 cfs or 260.0 gpm

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Drainage Basin = 4

Infiltration Basin

Total Volume to Store =	**2,741** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 5

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

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Drainage Basin = 5

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	524	ft
Tt =	2.66	minutes
Tc =	**10.00**	**minutes** (If Tc is < 10 min, use 10 min.)

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Drainage Basin = 5

Rational Method

Q = CiA

Total Area = 175,840 sf
4.04 Acres

A = **4.04 Acres**

A	Pavement and Structures =		25,200 sf
	Grassy Araea		150,640 sf
		Total =	**175,840 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.282**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.167 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.44 in/hr
Multiplier 1.50

I (10yr) = 2.164 in/hour

Q (10yr) = CiA = 2.465 cfs or 1106.4 gpm

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Drainage Basin = 6

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	146	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.150292	hrs
	9.02	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

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Project No.: 17-006

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Drainage Basin = 6

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	955	ft
Tt =	4.84	minutes
Tc =	**13.86**	**minutes**

(If Tc is < 10 min, use 10 min.)

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Drainage Basin = 6

Rational Method

Q = CiA

Total Area = 195,036 sf
4.48 Acres

A = **4.48 Acres**

A	Pavement and Structures =		46,590 sf
	Grassy Araea		148,446 sf
		Total =	**195,036 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.356**

i From MOA-DCM

Tc = 13.86 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.231 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.16 in/hr
Multiplier 1.50

I (10yr) = 1.743 in/hour

Q (10yr) = CiA = 2.779 cfs or 1247.3 gpm

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Drainage Basin = 6

Infiltration Basin

Total Volume to Store =	**16,432** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	2
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	480 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	21,600 ft^3

Total Storage Volume = 22,080 ft^3

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 7

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	239	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.222932	hrs
	13.38	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

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Project No.: 17-006

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Drainage Basin = 7

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	583	ft
Tt =	2.95	minutes
Tc =	**16.33**	**minutes**

(If Tc is < 10 min, use 10 min.)

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Drainage Basin = 7

Rational Method

Q = CiA

Total Area = 126,898 sf
2.91 Acres

A = **2.91 Acres**

A	Pavement and Structures =		17,670 sf
	Grassy Araea		109,228 sf
		Total =	**126,898 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.279**

i From MOA-DCM

Tc = 16.33 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.272 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.04 in/hr
Multiplier 1.50

I (10yr) = 1.563 in/hour

Q (10yr) = CiA = 1.269 cfs or 569.3 gpm

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Drainage Basin = 7

Infiltration Basin

Total Volume to Store =	**8,379** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

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Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 8

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	215	ft
Tt =	8.53	minutes

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Drainage Basin = 8

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Tc = 24.57 minutes (If Tc is < 10 min, use 10 min.)

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Drainage Basin = 8

Rational Method

Q = CiA

Total Area = 97,535 sf
2.24 Acres

A = **2.24 Acres**

A	Pavement and Structures =		11,200 sf
	Grassy Araea		86,335 sf
		Total =	**97,535 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.260**

i From MOA-DCM

Tc = 24.57 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.410 *	
y =	-0.664 *	
i =	0.79 in/hr	
Multiplier	1.50	

I (10yr) = 1.191 in/hour

Q (10yr) = CiA = 0.694 cfs or 311.3 gpm

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Drainage Basin = 8

Infiltration Basin

Total Volume to Store = **6,002** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 9

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	112	ft
Tt =	4.44	minutes

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Drainage Basin = 9

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Tc = 20.49 minutes (If Tc is < 10 min, use 10 min.)

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Drainage Basin = 9

Rational Method

Q = CiA

Total Area = 153,928 sf
3.53 Acres

A = **3.53 Acres**

A	Pavement and Structures =		23,520 sf
	Grassy Araea		130,408 sf
		Total =	**153,928 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.289**

i From MOA-DCM

Tc = 20.49 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.341 *	
y =	-0.664 *	
i =	0.90 in/hr	
Multiplier	1.50	

I (10yr) = 1.344 in/hour

Q (10yr) = CiA = 1.371 cfs or 615.4 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 9

Infiltration Basin

Total Volume to Store = **10,528** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 10

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	99	ft
Tt =	3.93	minutes

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 10

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	295	ft
Tt =	1.49	minutes

Tc = 21.47 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 10

Rational Method

Q = CiA

Total Area = 183,950 sf
4.22 Acres

A = **4.22 Acres**

A	Pavement and Structures =		17,110 sf
	Grassy Araea		166,840 sf
		Total =	**183,950 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.243**

i From MOA-DCM

Tc = 21.47 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.358 *	
y =	-0.664 *	
i =	0.87 in/hr	
Multiplier	1.50	
I (10yr) =	**1.303 in/hour**	

Q (10yr) = CiA = 1.336 cfs or 599.7 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 10

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	24	in
Area =	3.142	sf
R (full) =	0.500	
Slope =	1.00%	
Manning's n =	0.024	
Q =	**12.29**	**cfs**
	5,514	**gpm**
Site Flow Through Culvert	600	gpm

10.9% used for flow from project site.

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

5900 W. Dewberry Dr.
Wasilla, AK 99623

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC

Phone: (907) 357-5609
Fax: (907) 357-5608

Drainage Basin = 11

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	516	ft
Tt =	20.48	minutes

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

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Drainage Basin = 11

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Tc = 36.52 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 11

Rational Method

Q = CiA

Total Area = 511,702 sf
11.75 Acres

A = **11.75 Acres**

A	Pavement and Structures =		24,800 sf
	Grassy Araea		486,902 sf
		Total =	**511,702 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.208**

i From MOA-DCM

Tc = 36.52 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.609 *	
y =	-0.664 *	
i =	0.61 in/hr	
Multiplier	1.50	
I (10yr) =	**0.916 in/hour**	

Q (10yr) = CiA = 2.238 cfs or 1004.4 gpm

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Drainage Basin = 11

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	24 in
Area =	3.142 sf
R (full) =	0.500
Slope =	1.00%
Manning's n =	0.024
Q =	**12.29 cfs**
	5,514 gpm
Site Flow Through Culvert	1,004 gpm

18.2% used for flow from project site.

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Drainage Basin = 12

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	791	ft
Tt =	31.39	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 12

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	491	ft
Tt =	2.49	minutes

Tc = 49.92 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 12

Rational Method

Q = CiA

Total Area = 1,253,244 sf
28.77 Acres

A = **28.77 Acres**

A	Pavement and Structures =		67,040 sf
	Grassy Araea		1,186,204 sf
		Total =	**1,253,244 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.212**

i From MOA-DCM

Tc = 49.92 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.832 *	
y =	-0.664 *	
i =	0.50 in/hr	
Multiplier	1.50	
I (10yr) =	**0.744 in/hour**	

Q (10yr) = CiA = 4.538 cfs or 2036.7 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 12

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	24 in
Area =	3.142 sf
R (full) =	0.500
Slope =	1.00%
Manning's n =	0.024
Q =	**12.29 cfs**
	5,514 gpm
Site Flow Through Culvert	2,037 gpm

36.9% used for flow from project site.

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 13

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	504	ft
Tt =	20.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 13

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	213	ft
Tt =	1.08	minutes
Tc =	**37.12**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 13

Rational Method

Q = CiA

	Total Area =	364,452 sf	
		8.37 Acres	
A =		**8.37 Acres**	
A	Pavement and Structures =		48,170 sf
	Grassy Araea		316,282 sf
		Total =	**364,452 sf**
C	Pavement / Roof =	0.95	
	HSG =	B	
	Slope =	0 to 2%	
	Earthen	0.17	
	Average C =	**0.273**	
i	From MOA-DCM		
	Tc =	37.12 minutes	
	From Figure 6-1		
	$I = A \times D^y$		
	Design Storm =	10 Year	
	A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
	D = Tc(hr)=	0.619 *	
	y =	-0.664 *	
	i =	0.60 in/hr	
	Multiplier	1.50	
	I (10yr) =	**0.906 in/hour**	

Q (10yr) = CiA = 2.070 cfs or 928.9 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 13

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	24	in
Area =	3.142	sf
R (full) =	0.500	
Slope =	1.00%	
Manning's n =	0.024	
Q =	**12.29**	**cfs**
	5,514	**gpm**
Site Flow Through Culvert	929	gpm

16.8% used for flow from project site.

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

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Drainage Basin = 14

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	561	ft
Tt =	22.26	minutes

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 14

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft
Assume Triangle Shaped Channel		
Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	431	ft
Tt =	2.18	minutes
Tc =	**40.49**	**minutes** (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 14

Rational Method

Q = CiA

Total Area = 397,977 sf
9.14 Acres

A = **9.14 Acres**

A	Pavement and Structures =		48,930 sf
	Grassy Araea		349,047 sf
		Total =	**397,977 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.266**

i From MOA-DCM

Tc = 40.49 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.675 *	
y =	-0.664 *	
i =	0.57 in/hr	
Multiplier	1.50	
I (10yr) =	**0.855 in/hour**	

Q (10yr) = CiA = 2.079 cfs or 933.0 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 14

Culvert Capacity will be determined using the Manning's Equation

$$Q = \frac{1.49}{n} \times AR^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

n = Manning's Number
A = pipe end area (ft2)
R = Hydraulic Radius (ft)
S = Slope of the total head , slope of the pipe

Pipe Capacity

Diameter =	24	in
Area =	3.142	sf
R (full) =	0.500	
Slope =	1.00%	
Manning's n =	0.024	
Q =	**12.29**	**cfs**
	5,514	**gpm**
Site Flow Through Culvert	933	gpm

16.9% used for flow from project site.

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 15

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 15

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	1138	ft
Tt =	5.77	minutes
Tc =	**10.00**	**minutes** (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 15

Rational Method

Q = CiA

Total Area = 46,845 sf
1.08 Acres

A = **1.08 Acres**

A	Pavement and Structures =		14,800 sf
	Grassy Araea		32,045 sf
		Total =	**46,845 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.416**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.167 *	
y =	-0.664 *	
i =	1.44 in/hr	
Multiplier	1.50	
I (10yr) =	**2.164 in/hour**	

Q (10yr) = CiA = 0.972 cfs or 436.3 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 15

Infiltration Basin

Total Volume to Store = **4,612** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

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Drainage Basin = 16

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	276	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.250139	hrs
	15.01	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 16

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	373	ft
Tt =	1.89	minutes
Tc =	**16.90**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 16

Rational Method

Q = CiA

Total Area = 167,084 sf
3.84 Acres

A = **3.84 Acres**

A	Pavement and Structures =		23,880 sf
	Grassy Araea		143,204 sf
		Total =	**167,084 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.281**

i From MOA-DCM

Tc = 16.90 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.282 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.02 in/hr
Multiplier 1.50

I (10yr) = 1.527 in/hour

Q (10yr) = CiA = 1.648 cfs or 739.7 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

5900 W. Dewberry Dr.
Wasilla, AK 99623

SDCS, LLC
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Drainage Basin = 16

Infiltration Basin

Total Volume to Store = **11,112** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 17

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	293	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.262391	hrs
	15.74	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 17

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	285	ft
Tt =	1.44	minutes
Tc =	**17.19**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 17

Rational Method

Q = CiA

Total Area = 106,540 sf
2.45 Acres

A = **2.45 Acres**

A	Pavement and Structures =		13,180 sf
	Grassy Araea		93,360 sf
		Total =	**106,540 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.266**

i From MOA-DCM

Tc = 17.19 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.286 *	
y =	-0.664 *	
i =	1.01 in/hr	
Multiplier	1.50	

I (10yr) = 1.510 in/hour

Q (10yr) = CiA = 0.984 cfs or 441.7 gpm

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 17

Infiltration Basin

Total Volume to Store =	**6,707** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 18

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	293	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.262391	hrs
	15.74	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 18

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	216	ft
Tt =	1.09	minutes
Tc =	**16.84 minutes**	(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 18

Rational Method

Q = CiA

Total Area = 147,042 sf
3.38 Acres

A = **3.38 Acres**

A	Pavement and Structures =		5,790 sf
	Grassy Araea		141,252 sf
		Total =	**147,042 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.201**

i From MOA-DCM

Tc = 16.84 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.281 *	
y =	-0.664 *	
i =	1.02 in/hr	
Multiplier	1.50	

I (10yr) = 1.531 in/hour

Q (10yr) = CiA = 1.040 cfs or 466.8 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 18

Infiltration Basin

Total Volume to Store =	**6,995** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 19

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	276	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.250139	hrs
	15.01	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 19

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	358	ft
Tt =	1.81	minutes
Tc =	**16.82 minutes**	(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 19

Rational Method

Q = CiA

Total Area = 19,090 sf
0.44 Acres

A = **0.44 Acres**

A	Pavement and Structures =		18,290 sf
	Grassy Araea		800 sf
		Total =	**19,090 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.917**

i From MOA-DCM

Tc = 16.82 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.280 *	
y =	-0.664 *	
i =	1.02 in/hr	
Multiplier	1.50	
I (10yr) =	**1.532 in/hour**	

Q (10yr) = CiA = 0.618 cfs or 277.4 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 19

Infiltration Basin

Total Volume to Store = **4,143** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 20

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	289	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.259521	hrs
	15.57	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 20

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	414	ft
Tt =	2.10	minutes

Tc = 17.67 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 20

Rational Method

Q = CiA

Total Area = 194,274 sf
4.46 Acres

A = **4.46 Acres**

A	Pavement and Structures =		28,640 sf
	Grassy Araea		165,634 sf
		Total =	**194,274 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.285**

I From MOA-DCM

Tc = 17.67 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.294 *	
y =	-0.664 *	
i =	0.99 in/hr	
Multiplier	1.50	
I (10yr) =	**1.483 in/hour**	

Q (10yr) = CiA = 1.885 cfs or 845.9 gpm

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 20

Infiltration Basin

Total Volume to Store = **13,104** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	2
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	480 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	21,600 ft^3

Total Storage Volume = 22,080 ft^3

Project Name: Willow Creek Airpark Subdivision

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Drainage Basin = 21

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 21

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	1178	ft
Tt =	5.97	minutes
Tc =	**10.00 minutes**	(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

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Drainage Basin = 21

Rational Method

Q = CiA

Total Area = 55,935 sf
1.28 Acres

A = **1.28 Acres**

A	Pavement and Structures =		13,450 sf
	Grassy Araea		42,485 sf
		Total =	**55,935 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.358**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.167 *	
y =	-0.664 *	
i =	1.44 in/hr	
Multiplier	1.50	

I (10yr) = 2.164 in/hour

Q (10yr) = CiA = 0.992 cfs or 445.0 gpm

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

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Drainage Basin = 21

Infiltration Basin

Total Volume to Store =	**4,739** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 22

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	291	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.260957	hrs
	15.66	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 22

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	415	ft
Tt =	2.10	minutes
Tc =	**17.76**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

5900 W. Dewberry Dr.
Wasilla, AK 99623

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC

Phone: (907) 357-5609
Fax: (907) 357-5608

Drainage Basin = 22

Rational Method

Q = CiA

Total Area = 148,136 sf
3.40 Acres

A = **3.40 Acres**

A	Pavement and Structures =		15,840 sf
	Grassy Araea		132,296 sf
		Total =	**148,136 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.253**

i From MOA-DCM

Tc = 17.76 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.296 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 0.99 in/hr
Multiplier 1.50

I (10yr) = 1.478 in/hour

Q (10yr) = CiA = 1.271 cfs or 570.5 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 22

Infiltration Basin

Total Volume to Store =	**8,870** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3
Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 23

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	10	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.017598	hrs
	1.06	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 23

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	992	ft
Tt =	5.03	minutes
Tc =	**10.00 minutes**	(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 23

Rational Method

Q = CiA

Total Area = 62,746 sf
1.44 Acres

A = **1.44 Acres**

A	Pavement and Structures =		12,500 sf
	Grassy Araea		50,246 sf
		Total =	**62,746 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.325**

i From MOA-DCM

Tc = 10.00 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.167 *	
y =	-0.664 *	
i =	1.44 in/hr	
Multiplier	1.50	
I (10yr) =	**2.164 in/hour**	

Q (10yr) = CiA = 1.013 cfs or 454.5 gpm

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 23

Infiltration Basin

Total Volume to Store =	**4,826** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3
Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 24

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	291	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.260957	hrs
	15.66	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 24

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	359	ft
Tt =	1.82	minutes

Tc = 17.48 minutes (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 24

Rational Method

Q = CiA

Total Area = 159,447 sf
3.66 Acres

A = **3.66 Acres**

A	Pavement and Structures =		16,260 sf
	Grassy Araea		143,187 sf
		Total =	**159,447 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.250**

i From MOA-DCM

Tc = 17.48 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.291 *	
y =	-0.664 *	
i =	1.00 in/hr	
Multiplier	1.50	

I (10yr) = 1.494 in/hour

Q (10yr) = CiA = 1.367 cfs or 613.4 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 24

Infiltration Basin

Total Volume to Store = **9,434** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 25

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	290	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.260239	hrs
	15.61	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

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Drainage Basin = 25

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	819	ft
Tt =	4.15	minutes
Tc =	**19.76**	**minutes** (If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

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Drainage Basin = 25

Rational Method

Q = CiA

Total Area = 278,234 sf
6.39 Acres

A = **6.39 Acres**

A	Pavement and Structures =		30,960 sf
	Grassy Araea		247,274 sf
		Total =	**278,234 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.257**

i From MOA-DCM

Tc = 19.76 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.329 *	
y =	-0.664 *	

i = 0.92 in/hr
Multiplier 1.50

I (10yr) = 1.377 in/hour

Q (10yr) = CiA = 2.261 cfs or 1014.5 gpm

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 25

Infiltration Basin

Total Volume to Store = **16,923** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	2
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	480 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	21,600 ft^3

Total Storage Volume = 22,080 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 26

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	292	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.261674	hrs
	15.70	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

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Drainage Basin = 26

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	210	ft
Tt =	1.06	minutes
Tc =	**16.76**	**minutes**

(If Tc is < 10 min, use 10 min.)

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = 26

Rational Method

Q = CiA

Total Area = 163,614 sf
3.76 Acres

A = **3.76 Acres**

A	Pavement and Structures =		24,440 sf
	Grassy Araea		139,174 sf
		Total =	**163,614 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.287**

I From MOA-DCM

Tc = 16.76 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A = 0.439 *
D = Tc(hr)= 0.279 *
y = -0.664 *

* Information from MSB DCM D07.1, Figure D-1

i = 1.02 in/hr
Multiplier 1.50

I (10yr) = 1.536 in/hour

Q (10yr) = CiA = 1.657 cfs or 743.7 gpm

Project Name: Willow Creek Airpark Subdivision

Date: 2/12/2021

Project No.: 17-006

By: D. Steiner

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Drainage Basin = 26

Infiltration Basin

Total Volume to Store =	**11,113** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	2
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	480 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	21,600 ft^3

Total Storage Volume = 22,080 ft^3

Project Name: Willow Creek Airpark Subdivision

Project No.: 17-006

Date: 2/12/2021

By: D. Steiner

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Drainage Basin = Roadway outside of proposed subdivision

Time of Concentration

Overland Flow (150' max.)

$Tt = [0.007(NL)^{0.8}]/[(P_2)^{0.5}(S)^{0.4}]$

Tt = travel time, hour
N = roughness coefficient for overland and sheet flow
L = sheet flow length (<300 feet)
P2 = 2-year, 24-hour adjusted rainfall volume, inches
S = slope of hydraulic grade line (land slope), feet/foot

N =	0.15	(Short grass)
L =	300	ft
P_2 =	1.91	inches
S =	0.1	ft/ft
Tt =	0.267394	hrs
	16.04	minutes

Shallow Concentrated Flow

$V = 33kS^{0.5}$

V = velocity, feet/second
k = intercept coefficient, dimensionless
S = slope, feet/feet

k =	0.18	
S =	0.005	ft/ft
V =	0.42002143	ft/sec
Length =	0	ft
Tt =	0.00	minutes

Drainage Basin = Roadway outside of proposed subdivision

Channel Flow

$V = 1.49/nR^{2/3}S^{0.5}$

V = velocity, feet/second
n = Manning's roughness coefficient for channel flow
S = slope, feet/foot
R = hydraulic radius, feet

n =	0.02	
S =	0.005	ft/ft

Assume Triangle Shaped Channel

Depth =	0.52	ft
Width =	3.12	ft
Area =	0.8112	sq.ft.
Perimeter =	1.64438438	
R =	0.49331531	
V =	3.29	ft/sec
Length =	1700	ft
Tt =	8.61	minutes

Tc = 24.66 minutes (If Tc is < 10 min, use 10 min.)

Drainage Basin = Roadway outside of proposed subdivision

Rational Method

Q = CiA

Length of Roadway =	**2,000**	ft
Half of ROW+50'	80	
Total Area =	160,000	sf
	3.67	Acres

A = **3.67 Acres**

A	Pavement =		20,000 sf
	Grassy Araea		140,000 sf
		Total =	**160,000 sf**

C	Pavement / Roof =	0.95
	HSG =	B
	Slope =	0 to 2%
	Earthen	0.17
	Average C =	**0.268**

I From MOA-DCM

Tc = 24.66 minutes

From Figure 6-1
$I = A \times D^y$
Design Storm = 10 Year

A =	0.439 *	* Information from MSB DCM D07.1, Figure D-1
D = Tc(hr)=	0.411 *	
y =	-0.664 *	
I =	0.79 in/hr	
Multiplier	1.50	

I (10yr) = 1.188 in/hour

Q (10yr) = CiA = 1.169 cfs or 524.6 gpm

Drainage Basin = Roadway outside of proposed subdivision

Infiltration Basin

Total Volume to Store =	**10,148** ft^3

Basin Dimesions

Dimensions	
Length =	10 ft
Width =	6 ft
End Area	60 ft^2
Depth =	10 ft
Number of Basins	1
Voids in Drain Rock =	40%
Vol.of Storage in Basin =	240 ft^3

Infiltration Rate =	2 min/in
Time =	3 Days
	72 hours
	4,320 min.
Equ. Depth of Basin =	2160 in
	180 ft
Volume of infiltration w/ MH =	10,800 ft^3

Total Storage Volume = 11,040 ft^3

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WILLOW CREEK AIRPARK SUBDIVISION

DRAINAGE PLAN

WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 4/16/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN SHEET LAYOUT

SHEET
D1.00

EXHIBIT C-2

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WILLOW CREEK AIRPARK SUBDIVISION

DRAINAGE PLAN

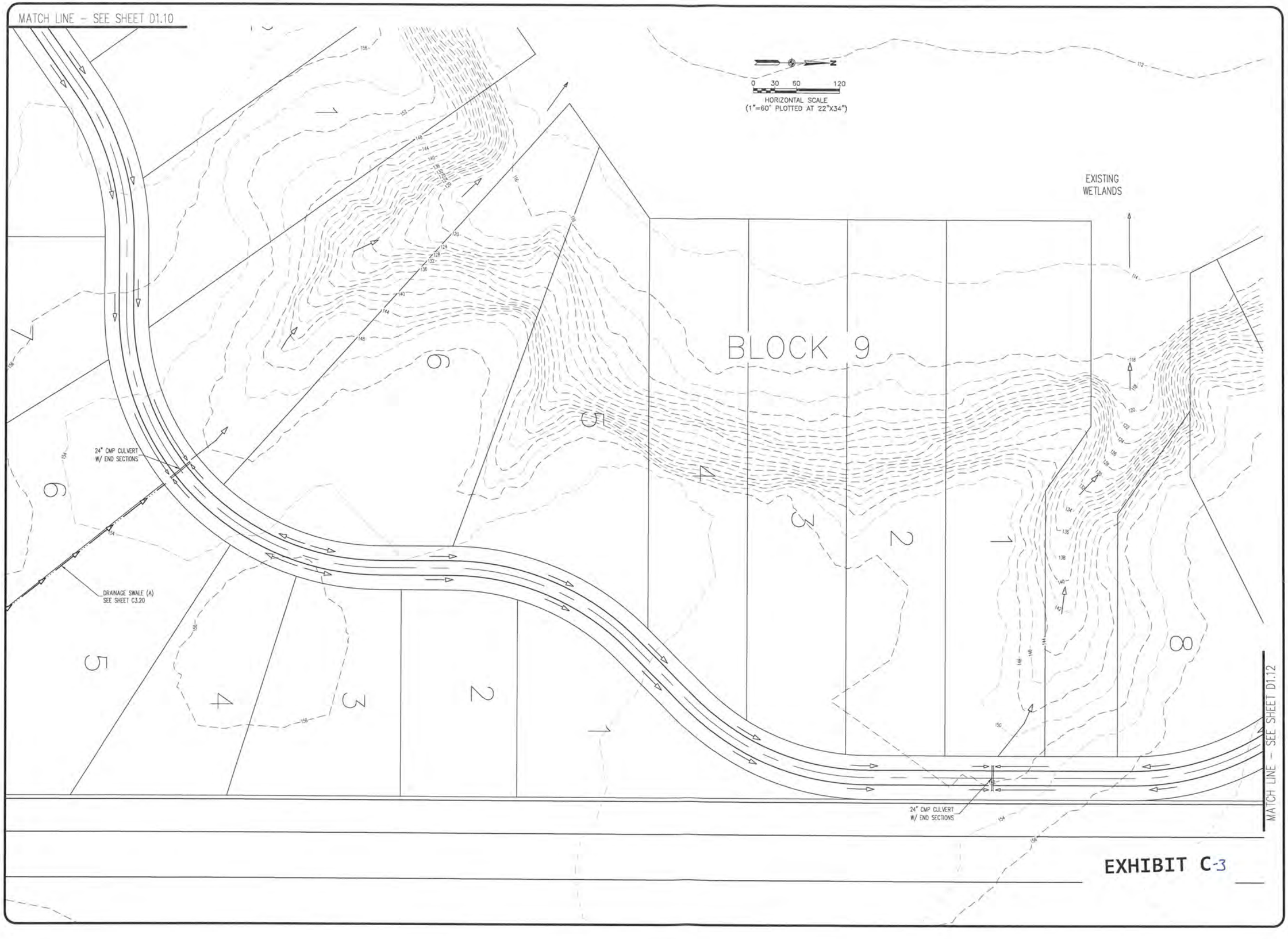
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 2/12/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D1.10



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WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 2/12/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D1.11

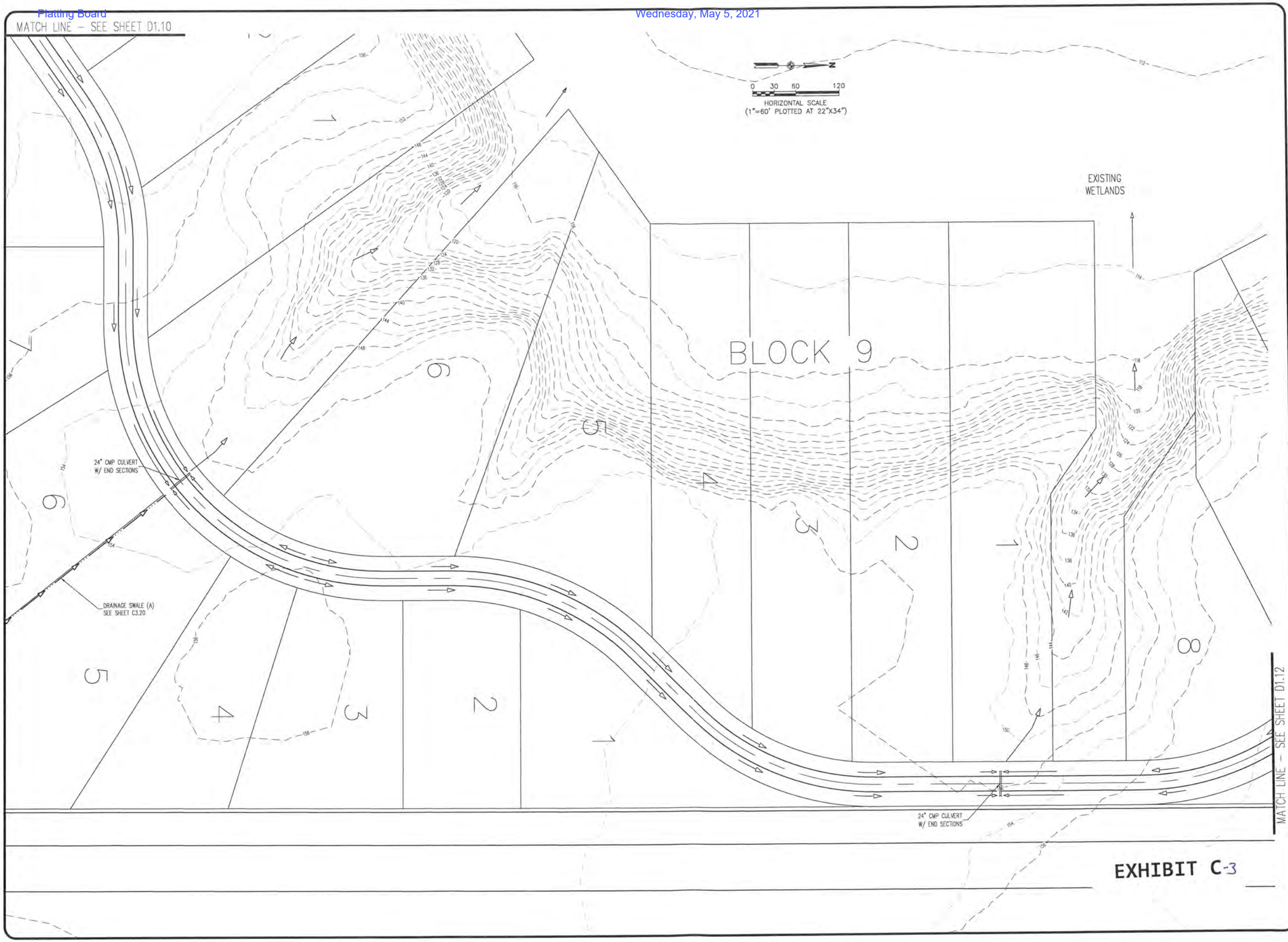


EXHIBIT C-3

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY D.R. PH: (907) 357-5609
WASILLA, AK 99623 FAX: (907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 2/12/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D1.11

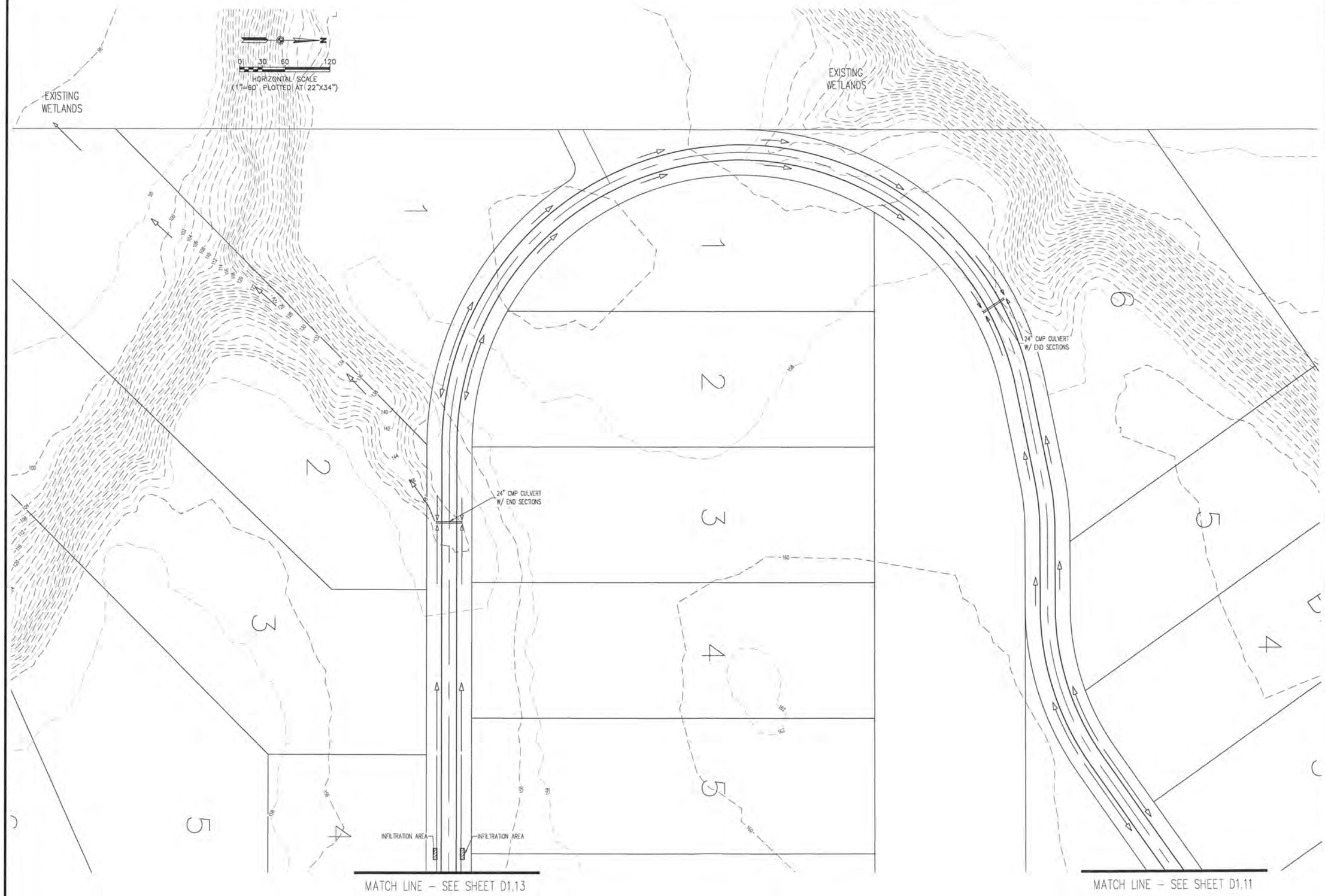


EXHIBIT C-4

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 2/12/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D1.12

EXHIBIT C-5

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 4/16/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D1.13

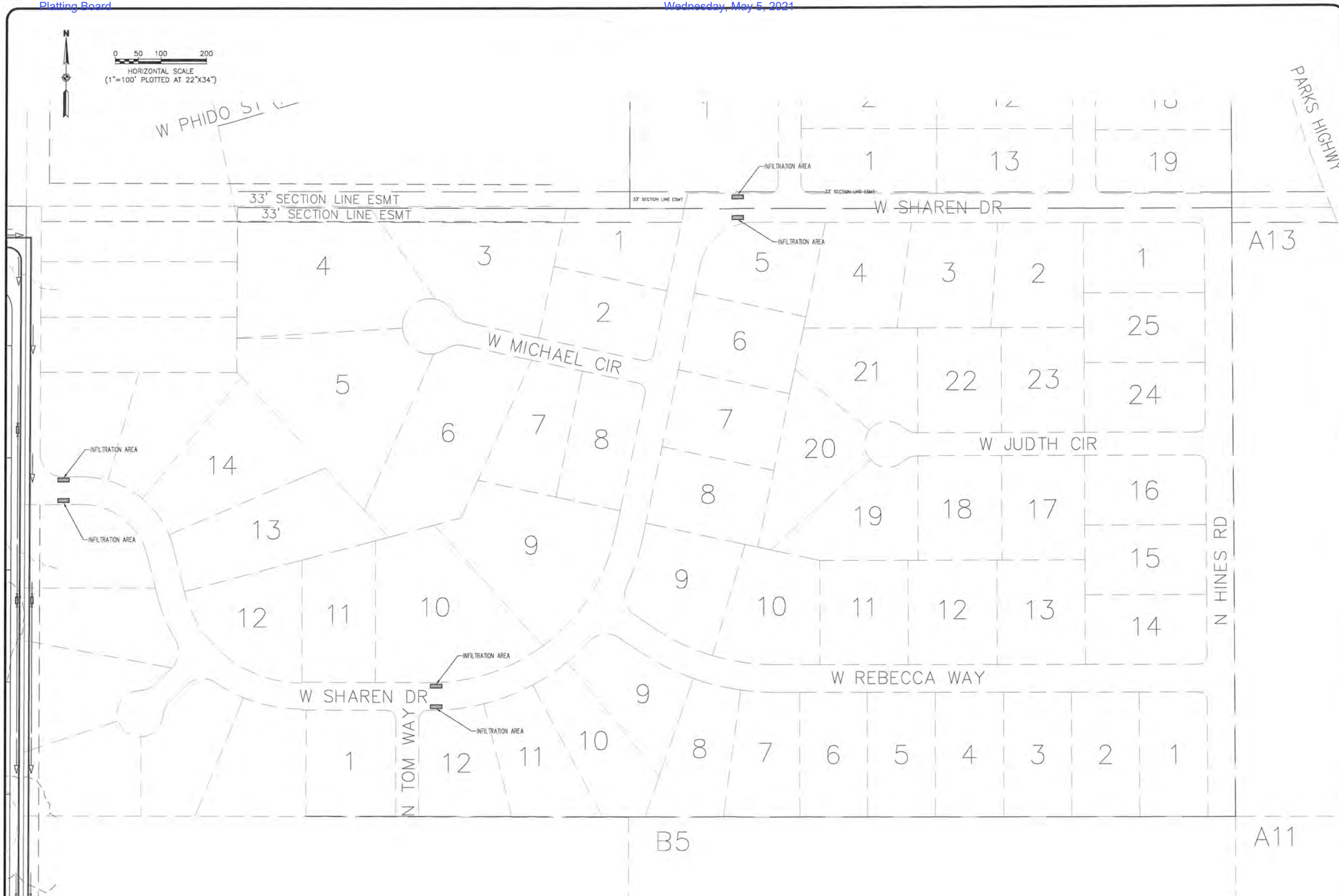


EXHIBIT C-7

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 4/16/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D2.01

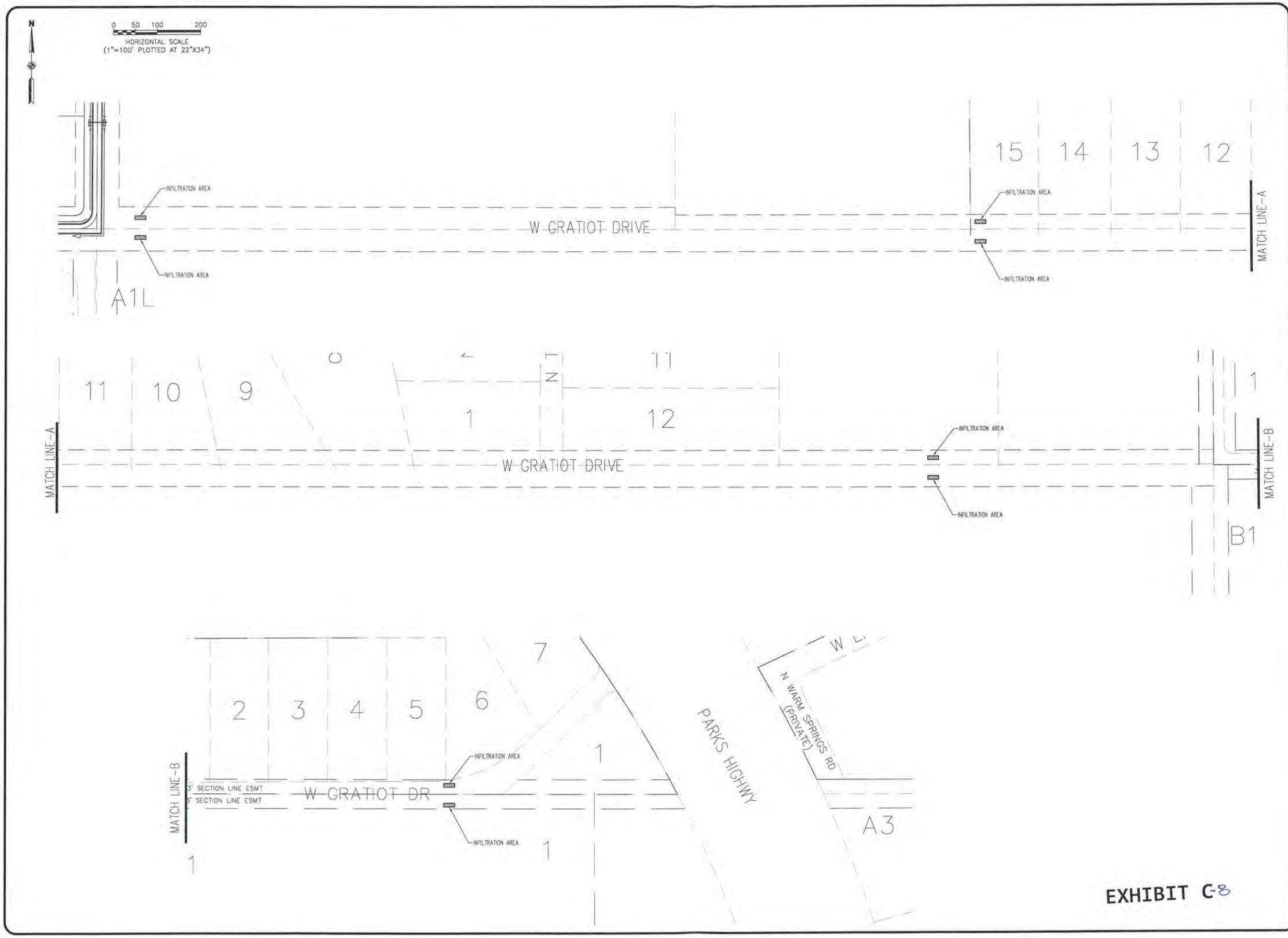


EXHIBIT C-8

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH: (907) 357-5609
WASILLA, AK 99623 FAX: (907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
DRAINAGE PLAN
WILLOW, ALASKA

BY	DATE	REVISIONS

JOB NO.: 17-005
DATE: 4/16/2021
DRAWN: DES
REVIEWED: DES

SHEET TITLE
DRAINAGE PLAN

SHEET
D2.02

EXHIBIT D-1

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

AREA INCLUDED IN ADT ANALYSIS

FIGURE 1

EXHIBIT D-2

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

ADT AT INTERSECTIONS SOUTH ACCES

FIGURE 2

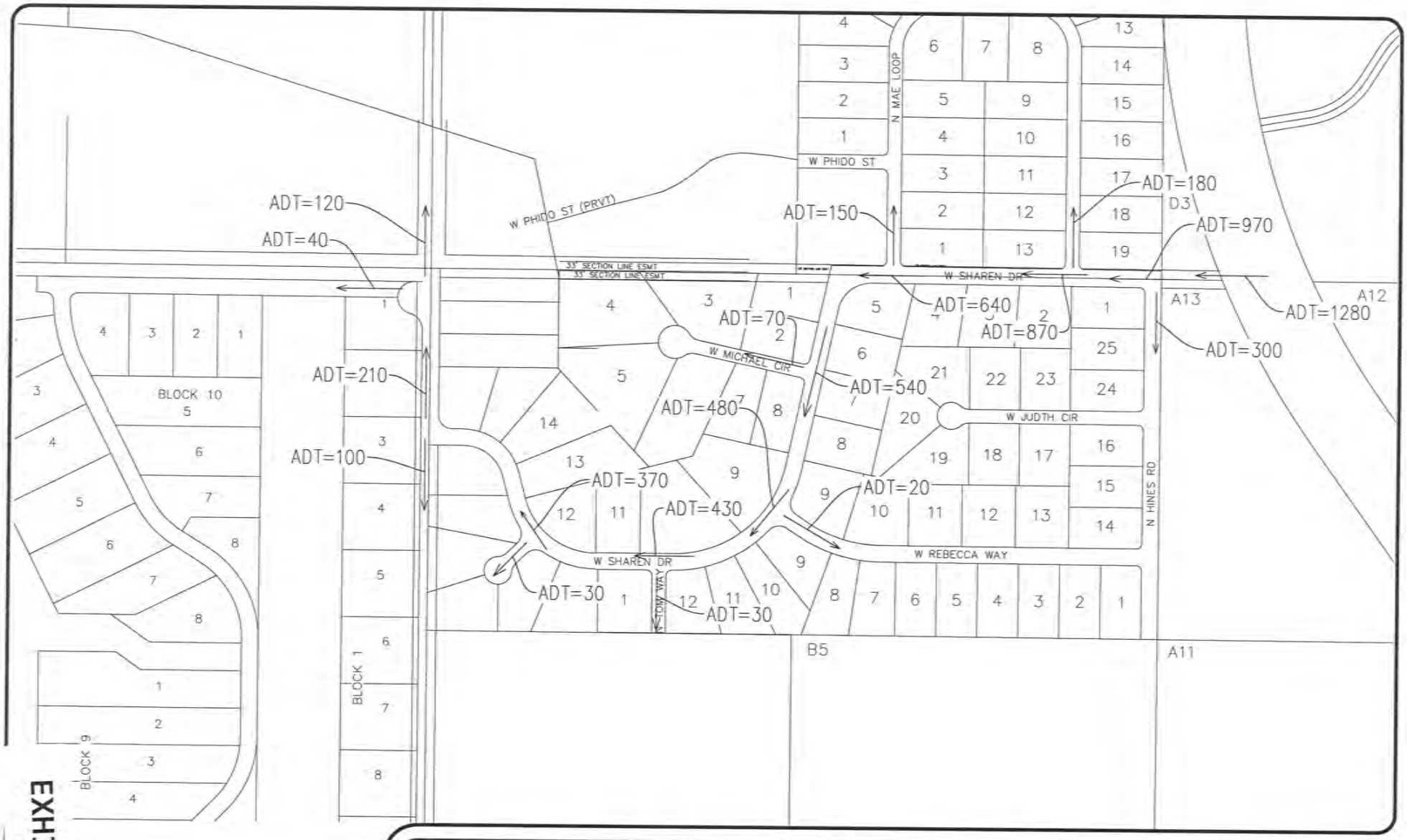


EXHIBIT D-3

SDCS, LLC
STEINER DESIGN & CONSTRUCTION SERVICES, LLC
5900 W. DEWBERRY DR. PH:(907) 357-5609
WASILLA, AK 99623 FAX:(907) 357-5608

WILLOW CREEK AIRPARK SUBDIVISION
ENGINEER'S REPORT

ADT AT INTERSECTIONS
NORTH ACCESS

FIGURE
3

Fred Wagner

From: Jamie Taylor
Sent: Tuesday, April 6, 2021 7:16 PM
To: Veronica Bojko; Fred Wagner; dsteiner@mtaonline.net
Cc: Mark Aimonetti; 'Scott Jewell'
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

Hi all – see my comments below in blue. I think that answers everything in the thread, but let me know if I missed anything. Dan – I'm sorry to hear you've been ill, I hope your recovery is quick! Let me know if you have any questions. Jamie

---

From: Veronica Bojko <roni@edgesurvey.net>
Sent: Monday, April 5, 2021 4:37 PM
To: Fred Wagner <Frederic.Wagner@matsugov.us>; dsteiner@mtaonline.net; Jamie Taylor <Jamie.Taylor@matsugov.us>
Cc: Mark Aimonetti <mark@edgesurvey.net>; 'Scott Jewell' <jewellflyalaska@gmail.com>
Subject: Re: RFC Willow Creek Airpark MSP #2021-031

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]
Hello All,
Fred and I just spoke. With us needing these few more days to pull everything together then him needing a few days after that to pull the packet together, there is not enough time to get everything ready for the scheduled meeting so as much as we hate to do this, we are going to be pushed to the **MAY 6th.**

Jamie,
Can you please review my comments about the roads and let us know:
Should we redesign the intersection of A Street/B street now so there is no 90 degree turn or is that something that can wait until Phase 2?
Should i pull the hammerhead design and go back to a cul-de-sac...but shift it so the arc hits Tract B?
Do you have any questions regarding my answers for North Arctic Cat? Is that question resolved?

Do any of the existing parcels need to be taken into consideration in the ADT calculations for the interior subdivision intersections since they are private?
How many existing along North Arctic Cat need to be taken into consideration in the ADT calculation. Fred was not sure of these ADT questions and said you were the one to let us know. We need to know in order to submit a proper ADT count.

Dan will take care of the ADT, soils and drainage. I will draft any revisions on the road designs.
Please let us know so we can get all this information back to you and Fred in a timely manner

thanks

Veronica (Roni) L. Bojko, PLS
Edge Survey & Design, LLC
12501 Old Seward Highway, Suite D
Anchorage, AK 99515
Office (907)334-5990

EXHIBIT E-1

Cell (707)529-4960
roni@edgesurvey.net

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Monday, April 5, 2021 3:57 PM
To: dsteiner@mtaonline.net <dsteiner@mtaonline.net>; Veronica Bojko <roni@edgesurvey.net>; Jamie Taylor <Jamie.Taylor@matsugov.us>
Cc: Mark Aimonetti <mark@edgesurvey.net>; 'Scott Jewell' <jewellflyalaska@gmail.com>
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

All of this needed to be in by today.

From: dsteiner@mtaonline.net <dsteiner@mtaonline.net>
Sent: Monday, April 5, 2021 3:52 PM
To: Fred Wagner <Frederic.Wagner@matsugov.us>; 'Veronica Bojko' <roni@edgesurvey.net>; Jamie Taylor <Jamie.Taylor@matsugov.us>
Cc: 'Mark Aimonetti' <mark@edgesurvey.net>; 'Scott Jewell' <jewellflyalaska@gmail.com>
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

[**EXTERNAL EMAIL** - CAUTION: Do not open unexpected attachments or links.]
I am home from the hospital. I am sorry, but I have been very sick with Covid-19 and then covid pneumonia. I will address the engineering questions within the next couple of days. Can you please wait until I have addressed the engineering questions before deciding that we cannon be ready by the 15th?

Dan Steiner, PE
SDCS, LLC
(wk) 907-357-5609
(cell) 907-715-7704

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Monday, April 5, 2021 3:46 PM
To: Veronica Bojko <roni@edgesurvey.net>; Jamie Taylor <Jamie.Taylor@matsugov.us>
Cc: Mark Aimonetti <mark@edgesurvey.net>; Dan Steiner <dsteiner@mtaonline.net>; Dan Steiner <dsteiner@mtaonline.net>; Scott Jewell <jewellflyalaska@gmail.com>
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

Roni,

Looking at this list this case will not be ready to be heard on April 15th. Most of these items need to be taken care of prior to the public hearing. The engineering questions, if not answered adequately could very well be grounds for denial.

Sincerely,

Fred Wagner, PLS
MSB Platting Officer
(907)861-7870 Office
(907)354-8501 Cell

EXHIBIT E-2

From: Veronica Bojko <roni@edgesurvey.net>
Sent: Monday, April 5, 2021 3:07 PM
To: Jamie Taylor <Jamie.Taylor@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>
Cc: Mark Aimonetti <mark@edgesurvey.net>; Dan Steiner <dsteiner@mtaonline.net>; Dan Steiner <dsteiner@mtaonline.net>; Scott Jewell <jewellflyalaska@gmail.com>
Subject: Fw: RFC Willow Creek Airpark MSP #2021-031

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]
Hello Jamie,
I wanted to reach out about the comments Public Works had about the Willow Creek Airpark Master Plan that will be heard at the April 15th meeting. I have gone ahead and made some responses to the comments below. Please take a look and let me know what we may need to do.

My comments are in red and my team will chime in if i have misspoken about anything as these are all design/engineering-based questions that i may not be privy to every aspect of the details.

thanks
Roni

Veronica (Roni) L. Bojko, PLS
Edge Survey & Design, LLC
12501 Old Seward Highway, Suite D
Anchorage, AK 99515
Office (907)334-5990
Cell (707)529-4960
roni@edgesurvey.net

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Tuesday, March 30, 2021 10:08 AM
To: Veronica Bojko <roni@edgesurvey.net>
Subject: FW: RFC Willow Creek Airpark MSP #2021-031

FYI – You will need to address these comments, some I will make as conditions of approval. I will have my staff report ready this afternoon – hopefully.

There is also a question about A street. On sheet one it is listed as public, but later on is listed as private?

Fred & I discussed his comment about this. A street started out as a Public street and as the project evolved, it will now be Private. I had most of the preliminary plats/map completed and just missed that label in changing it from Public to Private. Fred stated he would make a note in the summary.

Sincerely,

EXHIBIT E-3

Fred Wagner, PLS
MSB Platting Officer
(907)861-7870 Office
(907)354-8501 Cell

From: Jamie Taylor <Jamie.Taylor@matsugov.us>
Sent: Friday, March 26, 2021 4:00 PM
To: Fred Wagner <Frederic.Wagner@matsugov.us>
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

Submit ADT calculations for intersections within the subdivision and at every intersection out to existing collector streets or higher classification (Gratiot & Parks and Sharen & Parks).
The ADT calculations are done by the engineering team. Unfortunately, he was in the hospital for pneumonia . I know the formula for calculating the ADT but not sure which proposed lots I would need to use. Since the entire subdivision (both phases) will have private roads (except for North Arctic Cat, I presume the only traffic would be for the subdivision residents. I am not 100% how that should be calculated. Can the ADT calculations be ties to the Conditions of Approval and submitted with each Preliminary plat Phase it relates to?
ADT calcs are a preliminary plat submittal requirement under the 2020 SCM and are needed for the entire master plan to determine road classifications. It needs to count all of the traffic that would reasonably be expected to use a route, not just traffic generated by the subdivision. The private roads within the subdivision would only need to count traffic with an origin or destination within the subdivision itself, since the roads will be gated.

No 90 degree corners. Dedicate ROW for construction of a full intersection at A Street and B Street.
We can modify the A Street/B street intersection to more of a tear drop turn. This road construction would be done in the Phase 2 plat so we can make those design changes when submitting the Prelim Plat for Phase 2. Would that work?
An intersection is best here – A Street just needs to extend 60 feet beyond the intersection point with B Street.

Hammer head T-turnaround on B Court requires DPW approval per A07.2. Why not cul-de-sac? After pre-application submittal, we did not meet the block length requirement in certain areas. After very lengthy conversations with platting, We were told that the air strip (tract 😎 and tract A would be considered a block break. It was recommended to go with a hammerhead and shift that point so it hits the air strip (Tract B), so i did that. We can go back to a culdesac, and then just shift it westerly so it hits Tract B so we strip meet the block length requirement. This portion of the road is in Phase 1 , so can this be made part of the COAs for Phase 1...or as part of the MP COAs in order to submit Phase 1?
If a cul-de-sac doesn't work or a hammerhead makes more sense, I just need to know why. Otherwise default turnaround is a cul-de-sac.

Tie into existing portion of Arctic Cat. Will a cul-de-sac be constructed at the end of public maintenance? Currently North Arctic Cat was constructed as a through street. It runs from the south part of the project (at Gratiot) all the wat to the north end. It was constructed just past that northeast corner of the project. It might go all the way up to Philo. I am not 100% sure. North Arctic will of course be public. Then we will construct a culdesac at that most NE corner and in Phase 2 have it tie into A street. There will be a gate where A street hits North Arctic Cat.
OK

Need drainage plan for all road construction, including Sharen Drive and Gratiot Drive.
Can the drainage reports be tied the COAs for each phase it relates to? Sharen Drive, A street, and part of B Street will be a part of the Phase 2 subdivision so we would like to/if possible break the resolution of any comments in the proper phase. As mentioned before, our engineer has been ill. We do not want to miss this hearing date, especially if it is a something that will be resolved in Phase 2.

EXHIBIT E-4

The Preliminary Drainage Plan is a preliminary plat submittal requirement and is a map showing proposed drainage patterns, similar to 1991 SCM drainage plans. The Drainage Report is not needed until the preconstruction conference. Both need to include all areas of road construction.

Soils report

It's hard to tell on the Test Pit Location Map where the test pits are located in relation to the proposed property lines.

ML soils found in three test pits – was the extent of those soils determined or estimated and are those areas excluded from useable area? Otherwise need perc tests showing a percolation rate of 60 min/in or faster.

SM soils found in at least five test pits (18, 20, 24, 32, 35), but sieves are only included for 24, 32, and 35.

As far as the soils report goes, I do not have any answers on that. I am not sure how Dan is feeling right now and am wanting him to focus on getting better.... so again, tying as much as possible to COA's for each subsequent phase allows the project to move forward and also give Dan time to recover.

OK

I will send additional questions and comments re: drainage report to engineer after a more thorough review.

Jamie Taylor, PE
Civil Engineer
Matanuska-Susitna Borough
Department of Public Works
Operations & Maintenance
t: 907-861-7765 c: 907-355-9810
jamie.taylor@matsugov.us
http://www.matsugov.us/

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; mearow@matanuska.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: RFC Willow Creek Airpark MSP #2021-031

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

EXHIBIT E-5

https://matsugovus-my.sharepoint.com/:f:/g/personal/frederic_wagner_matsugov_us/EpDQsVYfAQ5Esy1aBd8j-6QBH_Zrz6ODnH0ALay1caT-ew?e=8ajrAi

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Sincerely,

Fred Wagner, PLS
MSB Platting Officer
(907)861-7870 Office
(907)354-8501 Cell

EXHIBIT E-6

Fred Wagner

From: Byker, Lucas J POA <Lucas.J.Byker@usace.army.mil>
Sent: Friday, March 19, 2021 3:47 PM
To: Fred Wagner
Cc: Alvarez, Calvin L CIV USARMY CEPOA (USA)
Subject: Willow Creek Air Park Subdivision

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

Mr. Wagner,

Based on our review of the information you provided and available to our office, we have preliminarily determined the subject property area may contain waters of the U.S. and wetlands under the Corps of Engineers (Corps) regulatory jurisdiction.

Department of the Army authorization is required if Scott Jewell proposes to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S.

Mr. Jewell can find a copy of the DA permit application online at www.poa.usace.army.mil/Missions/Regulatory. Mr. Jewell can refer to the sample drawing on our website at www.poa.usace.army.mil/Portals/34/docs/regulatory/guidetodrawings2012.pdf.

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District. Aquaculture structures and work would require Section 10 Authorization. (If no Sect 10 then you can delete this part)

Please feel free to contact me if you have any questions or concerns. You can reach me via email at lucas.j.byker@usace.army.mil or by phone at 907-753-2760.

Lucas Byker
Regulatory Specialist
U.S. Army Corps of Engineers
2204 Tally Ave.
JBER, AK 99506
907-753-2760
Lucas.j.byker@usace.army.mil

EXHIBIT F

Fred Wagner

From: Kelsey Anderson
Sent: Wednesday, March 24, 2021 4:00 PM
To: Fred Wagner
Cc: Leda Borys
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

PA: 2021031

Wetlands:
This parcel contains a complex of wetlands. If development is to occur across these wetlands, a permit to develop wetlands may need to be obtained from the U.S. Army Corps of Engineers. In addition, owners developing near wetlands should adhere to the Matanuska-Susitna Borough's *Best Management Practices for Development Around Water Bodies.*

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; mearow@matanuska.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: RFC Willow Creek Airpark MSP #2021-031

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

https://matsugovus-my.sharepoint.com/:f:/g/personal/frederic_wagner_matsugov_us/EpDQsVYfAQ5Esy1aBd8j-6QBH_Zrz6ODnH0ALay1caT-ew?e=8ajrAi

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Sincerely,

Fred Wagner, PLS
MSB Platting Officer
(907)861-7870 Office
(907)354-8501 Cell

EXHIBIT G

MATANUSKA-SUSITNA BOROUGH
Community Development
Land & Resource Management
350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7869 • Fax (907) 861-8635

MEMORANDUM

DATE: March 15, 2021

TO: Fred Wagner, Platting Officer

FROM: Land & Resource Management

SUBJECT: Preliminary Plat Comments / Case #2021-031

Platting Tech:	Fred Wagner
Public Hearing:	April 15, 2021
Applicant / Petitioner:	JM Assets
TRS:	22N05W26
Tax ID:	22N04W26A001
Subd:	Willow Creek Airpark MP
Tax Map:	WI 06

Comments:

- MSB land adjacent on west boundary of subject parcel. Appears there is walk-in access to MSB property planned within Phase One.
- Trails of any type within MSB property are not allowed without application and approved permit from Land & Resource Management.
- No objection to proposed subdivision.

EXHIBIT H

Fred Wagner

From: Brad Sworts
Sent: Friday, April 16, 2021 1:06 PM
To: Fred Wagner
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

Fred,
do you know if there are any fish streams or wetland fish habitat that the subdivision roads cross? If so they need to make sure their culverts are the proper size and are installed correctly so there is enough water in the culverts for fish passage.
Brad

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; mearow@matanuska.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: RFC Willow Creek Airpark MSP #2021-031

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

https://matsugovus-my.sharepoint.com/:f:/g/personal/frederic_wagner_matsugov_us/EpDQsVYfAQ5Esy1aBd8j-6QBH_Zrz6ODnH0ALay1caT-ew?e=8ajrAi

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Sincerely,

Fred Wagner, PLS
MSB Platting Officer
(907)861-7870 Office
(907)354-8501 Cell

EXHIBIT I

Fred Wagner

From: Tammy L. Simmons <Tammy.Simmons@mea.coop>
Sent: Wednesday, March 17, 2021 10:31 AM
To: Fred Wagner
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]
MEA comments to add to the plat notes that private road right-of-ways may be used for utilities.

Thank you.

Tammy Simmons, SR/WA
Right of Way Technician
907-761-9276

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; MEA_ROW <MEAROW@mea.coop>; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: RFC Willow Creek Airpark MSP #2021-031

CAUTION: This email originated from outside of the MEA.coop organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

https://matsugovus-my.sharepoint.com/:f:/g/personal/frederic_wagner_matsugov_us/EpDQsVYfAQ5Esy1aBd8j-6QBH_Zrz6ODnH0ALay1caT-ew?e=8ajrAi

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Sincerely,

Fred Wagner, PLS
MSB Platting Officer

EXHIBIT J – 1

Fred Wagner

From: Holly Sparrow <hsparrow@mtasolutions.com>
Sent: Thursday, March 25, 2021 2:41 PM
To: Fred Wagner
Subject: RE: RFC Willow Creek Airpark MSP #2021-031

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

MTA has reviewed the plat for Willow Creek Airport. MTA has no comments.

Thank you for the opportunity to comment.

Holly Sparrow, Right of Way Agent
MTA | 1740 S. Chugach Street | Palmer, Alaska 99645
office: 907-761-2599 | www.mtasolutions.com

Life. Technology. Together.

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; mearow@matanuska.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: RFC Willow Creek Airpark MSP #2021-031

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

EXHIBIT J - 2

ENSTAR
Natural Gas Company

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

March 22, 2021

Matanuska-Susitna Borough, Platting Division
350 East Dahlia Avenue
Palmer, AK 99645-6488

To whom it may concern:

ENSTAR Natural Gas Company has reviewed the following preliminary plats and has no comments, concern, or recommendations.

- **Willow Creek Airpark Master Plan (MSB Case # 2021-031)**

If you have any questions, please feel free to contact me at 907-334-7944 or by email at cassie.acres@enstarnaturalgas.com.

Sincerely,

Cassie Acres

Cassie Acres
ROW & Compliance Technician
ENSTAR Natural Gas Company

EXHIBIT J - 3

Fred Wagner

From: OSP Design Group <ospdesign@gci.com>
Sent: Thursday, March 11, 2021 11:20 AM
To: Fred Wagner
Cc: OSP Design Group
Subject: RE: RFC Willow Creek Airpark MSP #2021-031
Attachments: PLN - PLT - Subdivision Case Files - Willow Crk Airpk MSP - Platting Board - Agenda Plat Sht 1.PDF; PLN - PLT - Subdivision Case Files - Willow Crk Airpk MSP - Platting Board - Agenda Plat Sht 2.PDF; PLN - PLT - Subdivision Case Files - Willow Crk Airpk MSP - Platting Board - Agenda Plat Sht 3.PDF; PLN - PLT - Subdivision Case Files - Willow Crk Airpk MSP - Platting Board - Agenda Plat Sht 4.PDF; RFC.pdf

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

In review GCI has no comments or objections to the plats, attached are the signed plat sheets.

Thanks,
MIREYA ARMESTO
GCI | Technician II, GIS Mapping
m: 907-744-5166 | **w:** www.gci.com

From: Fred Wagner <Frederic.Wagner@matsugov.us>
Sent: Wednesday, March 10, 2021 4:39 PM
To: allen.kemplen@alaska.gov; tucker.hurn@alaska.gov; Nichols, Melanie A (DOT) <melanie.nichols@alaska.gov>; adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; waco_chair@waco-ak.org; admin@waco-ak.org; rgfnorth@mtaonline.net; mcbrides@mtaonline.net; mearow@matanuska.com; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Brad Sworts <Brad.Sworts@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>; MSB Farmers <MSB.Farmers@matsugov.us>; msb.hpc@gmail.com; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; cassie.acres@enstarnaturalgas.com; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Willow Creek Airpark MSP #2021-031

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

The following link contains a preapplication conference request to create 95 lots. Comments are due by March 26, 2021. Please let me know if you have any questions.

https://matsugovus-my.sharepoint.com/:f:/g/personal/frederic_wagner_matsugov_us/EpDQsVYfAQ5Esy1aBd8j-6QBH_Zrz6ODnH0ALay1caT-ew?e=8ajrAi

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

EXHIBIT J -4

MATANUSKA-SUSITNA BOROUGH
PLATTING DIVISION
350 EAST DAHLIA AVENUE
PALMER, ALASKA 99645

U.S. POSTAGE PITNEY BOWES
ZIP 99645 $ 000.51
02 4W
0000366428 MAR 24 202

T CLASS

NOTIFICATION OF PUBLIC HEARING

The Matanuska-Susitna Borough **Platting Board** will consider the following:

PETITIONER/OWNER: JM ASSETS, LP

REQUEST: The request is to create 92 lots and three tracts, by a two-phase Master Plan, from the East ½ of Section 26 (Tax Parcel A1), to be known as **WILLOW CREEK AIRPARK MASTER PLAN**, containing 320.32 acres +/-. The plat is located west of W. Parks Highway, north of W. Gratiot Drive and west of W. Sharen Drive, (Tax ID # 220N05W26A001); within Section 26, Township 20 North, Range 05 West, Seward Meridian, Alaska. In the Willow Community Council and in Assembly District #7: Tam Boeve.

The Matanuska-Susitna Borough **Platting Board** will hold a public hearing in the **Assembly Chambers** at the **Dorothy Swanda Jones Building**, 350 E. Dahlia Avenue, Palmer, Alaska on the proposed **Subdivision.** The public hearing is scheduled for **April 15, 2021**, starting at 1 p.m. We are sending you this notice as required by State Law and Borough Ordinances.

For comments regarding the proposed action, this form may be used for your convenience by filling in the information below and mail this notice to the MSB Platting Division, 350 E. Dahlia, Palmer, Alaska 99645 or e-mail: platting@matsugov.us. Comments received from the public after the platting board packet has been written and sent to the Board will be given to the Platting Board in a "Hand-Out" the day of the meeting. Please do not send comments or questions directly to Platting Board members. Board 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. **All public comments are due one (1) day prior, by 12:00 p.m** To request additional information please contact the Platting Technician, ***Fred Wagner*** at (907) 861-7870.

To view the agenda or meeting packet please go to the following link: www.matsugov.us/boards/platting. **Please follow all public protocols in relation to the mandates regarding Covid-19 for public participation.**

[ ] No Objection [ ] Objection [X] Concern

Name: DANIEL THOMAS *Address:* P.O. BOX 143, WILLOW, AK. 99688

Comments: I HAVE A PRIVATE AIRSTRIP THAT HAS BEEN FAA REGISTERED (AK08 AKA THOMAS STRIP) SINCE 1992 WHEN I CONSTRUCTED IT. THIS HAS BEEN MY PERMANENT RESIDENCE SINCE AND THE AIRSTRIP IS USED REGULARLY. MY AIRSTRIP IS APPROX. 2000' DUE EAST FROM THE WILLOW CREEK AIRPARK. I AM SURE WE CAN COEXIST AS LONG AS DUE CONSIDERATION IS GIVEN TO MY EXISTING FAA APPROVED TRAFFIC PATTERN IN TERMS OF AVOIDING DIRECT AIR TRAFFIC CONFLICTS.

Case # 2021-031 FW *Note: Vicinity map Located on Reverse Side*

EXHIBIT K

THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Transportation and Public Facilities

Program Development and Statewide Planning
Anchorage Field Office

4111 Aviation Avenue
P.O. Box 196900
Anchorage, AK 99519-6900
Main number: 907-269-0520
Fax number: 907-269-0521
Website: dot.state.ak.us

March 18, 2021

Fred Wagner, Platting Officer
Matanuska-Susitna Borough
350 East Dahlia Avenue
Palmer, Alaska 99645

Re: Plat Review

Dear Mr. Wagner:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has reviewed the following plats and has no comments:

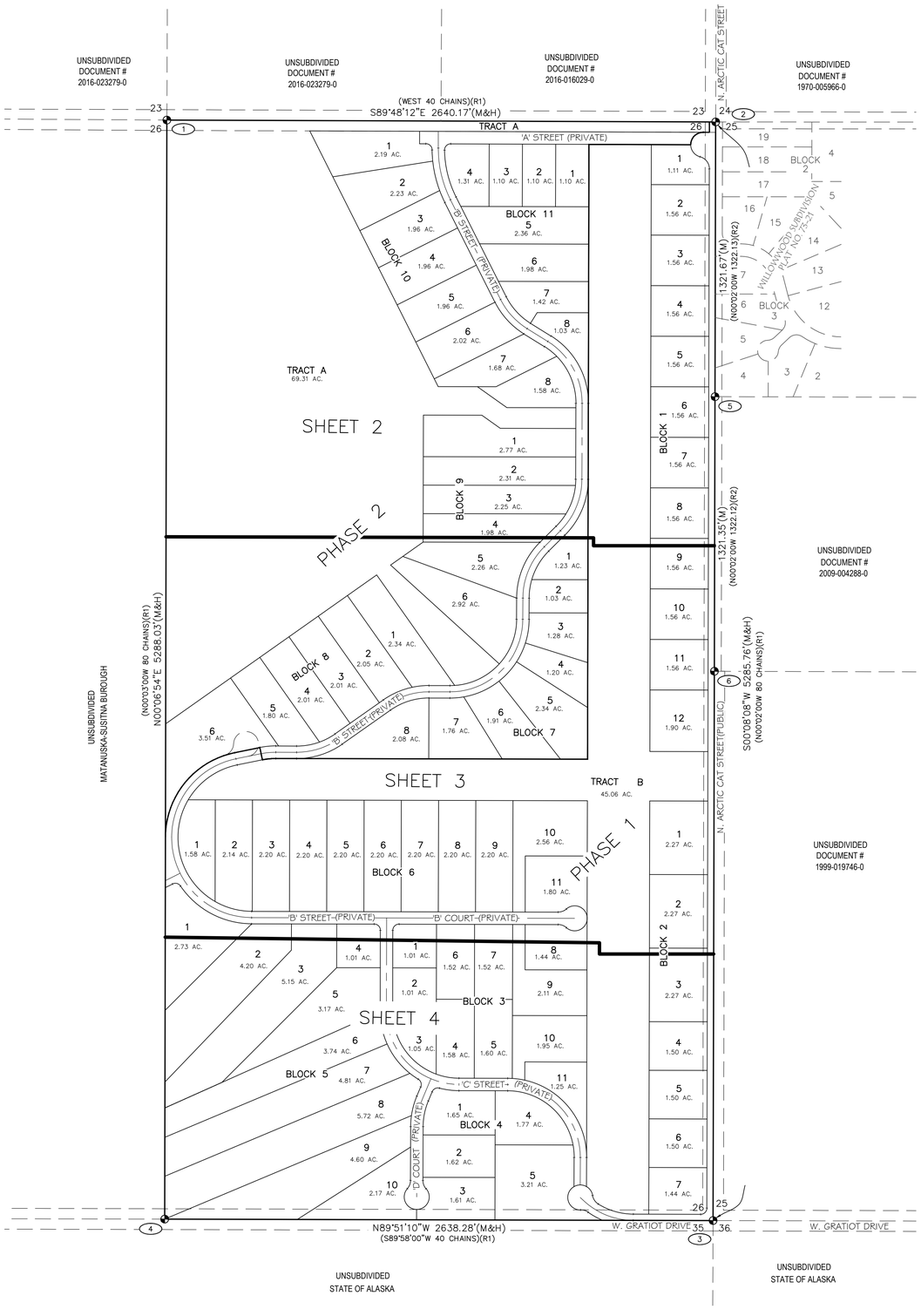
- **Tax Map CN 06, Sec 25, T20N, R05E (Harrison, Keogh, & Clayton)**
- **Willow Creek Airpark Master Plan (Assets)**

The Alaska Department of Transportation and Public Facilities (DOT&PF) has reviewed the following plats and has the following comments:

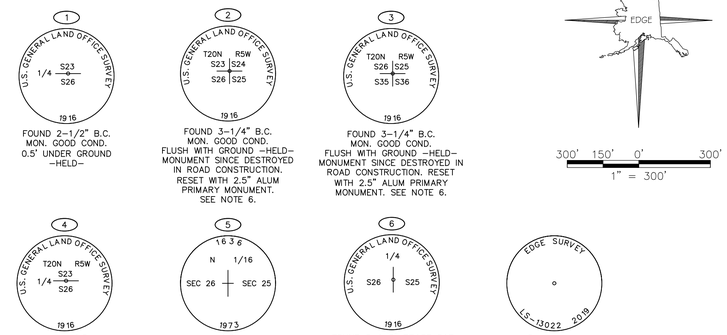
- **Tax Map PA04, Sec 16 & 17, T18N, R02E (Shadrach & Webb)**
  - We object to the plat as presented. Both lots must access Farm Loop Road because no direct access will be granted to the Glenn Highway from any of the lots. According to the Alaska Preconstruction Manual (section 1190), access cannot be granted to the Glenn Highway when there are alternative routes.
- **Mt. Pilot, Phase 1 (Kroenke & Hanson Land Solutions)**
  - No direct access will be granted to Trunk Road. All lots must access via Mt. Pilot Circle or Marcell Circle.

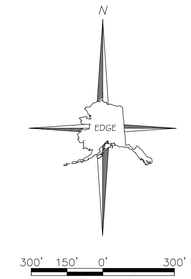
All properties accessing DOT&PF roads must apply to Right-of-Way for a driveway permit, subject to provisions listed in 17 AAC 10.020. Any previously issued driveway permits become invalid once the property undergoes a platting action and must be reissued.

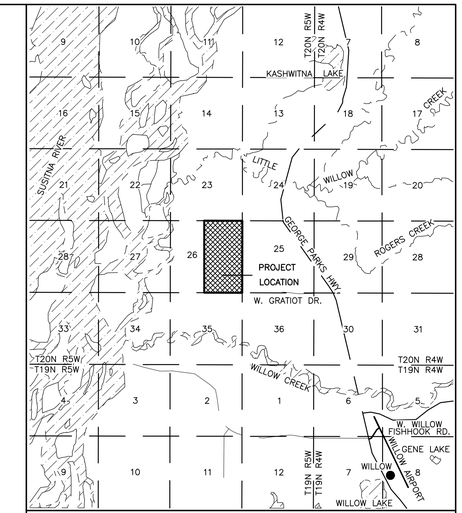
We recommend the petitioner verify all section line easements and DOT&PF road rights-of-way adjacent to their property and dedicate them. If there is an existing right-of-way or easement, the petitioner is unable to develop that portion of the property yet continues to pay property taxes on it; dedicating will remove that cost to the petitioner.



MONUMENT SUMMARY







VICINITY MAP

1" = 1 MILE

LEGEND

(OA)	OVERALL DIMENSION		SUBDIVISION BOUNDARY
(R#)	RECORD DATA (SEE REFERENCES)		INTERIOR PROPERTY LINE
(M)	MEASURED		ROAD CENTER LINE
(H)	HELD		EASEMENT LINE AS NOTED
	FOUND MONUMENT AS NOTED		ADJACENT PROPERTY LINE
(x)	FOUND MONUMENT NUMBER		SHEET INDEX LINE

REFERENCES

(R1) BLM GLO SURVEY OF T20N R5W

(R2) PLAT OF WILLOWWOOD SUBDIVISION (PLAT 73–21)

NOTES

1. THERE MAY BE FEDERAL, STATE, OR LOCAL REQUIREMENTS GOVERNING LAND USE. THE INDIVIDUAL PARCEL OWNER SHALL OBTAIN A DETERMINATION WHETHER THESE REQUIREMENTS APPLY TO THE DEVELOPMENT OF PARCELS SHOWN ON THIS PLAT.
2. NO INDIVIDUAL WATER SUPPLY SYSTEM OR SEWAGE DISPOSAL SYSTEM SHALL BE PERMITTED ON ANY LOT UNLESS THE SYSTEM IS LOCATED, CONSTRUCTED, AND EQUIPPED IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS, AND RECOMMENDATIONS OF THE STATE OF ALASKA, DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WHICH GOVERNS THOSE SYSTEMS.
3. THE FOLLOWING STREETS ARE PRIVATE AND CONSIST OF 15.37 ACRES:
   - A STREET
   - B STREET
   - B COURT
   - C STREET
   - D COURT
4. UTILITIES WITHIN TRACT B SHALL NOT EXTEND MORE THEN 5 FEET ABOVE EXISTING GRADE.
5. A 5/8" x 30" REBAR WITH 2" ALUM. CAP WAS SET AT ALL PROPERTY CORNERS UNLESS OTHERWISE INDICATED.
6. MONUMENTS 2, 3, AND 5 WERE DESTROYED IN CONSTRUCTION. TEMPORARY MARKERS HAVE BEEN PLACED AND WILL RESET WITH 2.5" ALUM CAP PRIMARY MONUMENT ATTACHED TO A 2.25" X 30" FLANGED ALUM PIPE RECESSED 0.5' BELOW GRADE IN THE PHASE 1 SUBDIVISION.
7. TEMPORARY TURNAROUND EASEMENT DEDICATED IN PHASE 1 TO BE AUTOMATICALLY TERMINATED UPON THE EXTENSION OF THE ROAD IN PHASE 2.
8. ALL EASEMENT BEING DEDICATED IN THE PLATTING PROCESS WILL BE DONE SO IN THE APPROPRIATE PHASE.

CERTIFICATE OF SURVEYOR

I, MARK AIMONETTI 13022–S, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN ON THE PLAT ACTUALLY EXIST AS DESCRIBED, AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

MARK AIMONETTI DATE
PLS 13022–S

PRELIMINARY
STATE OF ALASKA 49TH
Mark A. Aimonetti No. 13022-S
REGISTERED PROFESSIONAL LAND SURVEYOR

CERTIFICATE OF OWNERSHIP AND DEDICATION

I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED IN THIS PLAN AND THAT I ADOPT THIS PLAN OF SUBDIVISION BY MY FREE CONSENT, DEDICATE ALL RIGHTS–OF–WAY TO THE MATANUSKA–SUSITNA BOROUGH AND GRANT ALL EASEMENTS TO THE USE SHOWN.

JM ASSETS, LP DATE
P.O. BOX 1021
WILLOW, AK 99688

NOTARY ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____ DAY OF _____, 2021, FOR _____.

NOTARY FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES

NOTARY STAMP

PLANNING AND LAND USE DIRECTOR'S CERTIFICATE

PLANNING DIRECTOR'S STAMP

I CERTIFY THAT THIS SUBDIVISION PLAN HAS BEEN FOUND TO COMPLY WITH THE LAND SUBDIVISION REGULATIONS OF THE MATANUSKA–SUSITNA BOROUGH, AND THAT THE PLAT HAS BEEN APPROVED BY THE PLATTING AUTHORITY BY PLAT RESOLUTION NUMBER _____, DATED _____, 20_____, AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RECORDER IN THE PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA IN WHICH THE PLAT IS LOCATED.

DATE: _____ PLANNING AND LAND USE DIRECTOR

ATTEST: _____
PLATTING CLERK

RECORDER'S STAMP AREA 2.25" 2.25"

CERTIFICATE OF PAYMENT OF TAXES

I HEREBY CERTIFY THAT ALL CURRENT TAXES AND SPECIAL ASSESSMENTS, THROUGH _____, 20_____, AGAINST THE PROPERTY, INCLUDED IN THE SUBDIVISION OR RESUBDIVISION, HEREON HAVE BEEN PAID.

_____, 20_____

TAX COLLECTION OFFICIAL (MATANUSKA–SUSITNA BOROUGH)

MASTER PLAN

WILLOW CREEK AIRPARK SUBDIVISION

BEING ALL OF THE
EAST 1/2 OF SECTION 26, T.20N., R.5W., S.M., ALASKA
PALMER RECORDING DISTRICT, STATE OF ALASKA
CONTAINING 320.32 ACRES MORE OR LESS

EDGE SURVEY AND DESIGN, LLC
12501 OLD SEWARD, D ANCHORAGE, AK 99515
Phone (907) 344-5990 Fax (907) 344-7794
ACEL # 1392

DRAWN BY: VLB	PROJECT # 18(15)–220	PLAT CASE # 2021–	
CHECKED BY: MA	DATE: 04/07/2021	SCALE: 1"=300'	SHEET 1 OF 4

SHEET 2 CURVE TABLE

CURVE #	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD LENGTH	TANGET
C1	550.00'	26°52'02"	257.91'	S13°14'13"E	255.55'	131.37'
C2	350.00'	31°27'30"	192.17'	S42°24'00"E	189.76'	98.57'
C3	350.00'	58°15'53"	355.92'	N28°59'49"W	340.78'	195.07'
C4	30.00'	91°08'11"	47.72'	S44°37'42"W	42.85'	30.60'
C5	60.00'	75°31'21"	79.90'	S37°37'33"E	73.48'	46.48'
C6	60.00'	165°35'01"	173.40'	S07°24'17"W	119.05'	474.40'
C7	580.00'	26°52'02"	271.98'	S13°14'13"E	269.49'	138.54'
C8	520.00'	14°06'07"	127.99'	N7°59'27"W	127.66'	64.32'
C9	380.00'	31°27'30"	208.64'	S42°24'00"E	206.03'	85.90'
C10	320.00'	31°27'30"	175.70'	N42°24'00"W	173.50'	107.02'
C11	320.00'	58°15'53"	325.41'	N28°59'49"W	311.57'	179.35'
C12	380.00'	58°15'53"	386.43'	N28°59'49"W	369.99'	211.79'
C13	580.00'	5°17'42"	56.60'	S3°21'49"E	53.58'	26.82'
C14	580.00'	14°24'18"	145.82'	S13°12'49"E	145.44'	73.30'
C15	580.00'	6°15'16"	63.31'	S23°32'37"E	63.28'	31.69'
C16	350.00'	45°00'00"	274.89'	N22°38'08"E	267.88'	144.97'
C17	380.00'	45°00'00"	298.45'	N22°38'08"E	290.84'	102.74'
C18	320.00'	45°00'00"	251.33'	N22°38'08"E	244.92'	132.55
C19	320.00'	05°22'00"	29.97'	S02°49'08"W	29.96'	15.00'
C20	320.00'	26°04'36"	145.64'	S18°32'26"W	144.39'	74.10'
C21	320.00'	13°33'24"	75.72'	S38°21'26"W	75.54'	38.04'
C107	60.00'	90°00'00"	94.25'	S45°11'48"W	84.85'	60.00'
C108	60.00'	75°35'01"	79.15'	S37°35'43"E	73.54'	46.53'
C109	320.00'	13°20'50"	74.54'	S51°27'20"E	74.38'	37.44'
C110	320.00'	44°55'03"	250.87'	S22°19'24"E	244.49'	132.28'
C111	30.00'	89°05'14"	46.65'	S45°15'35"E	42.00'	29.53'

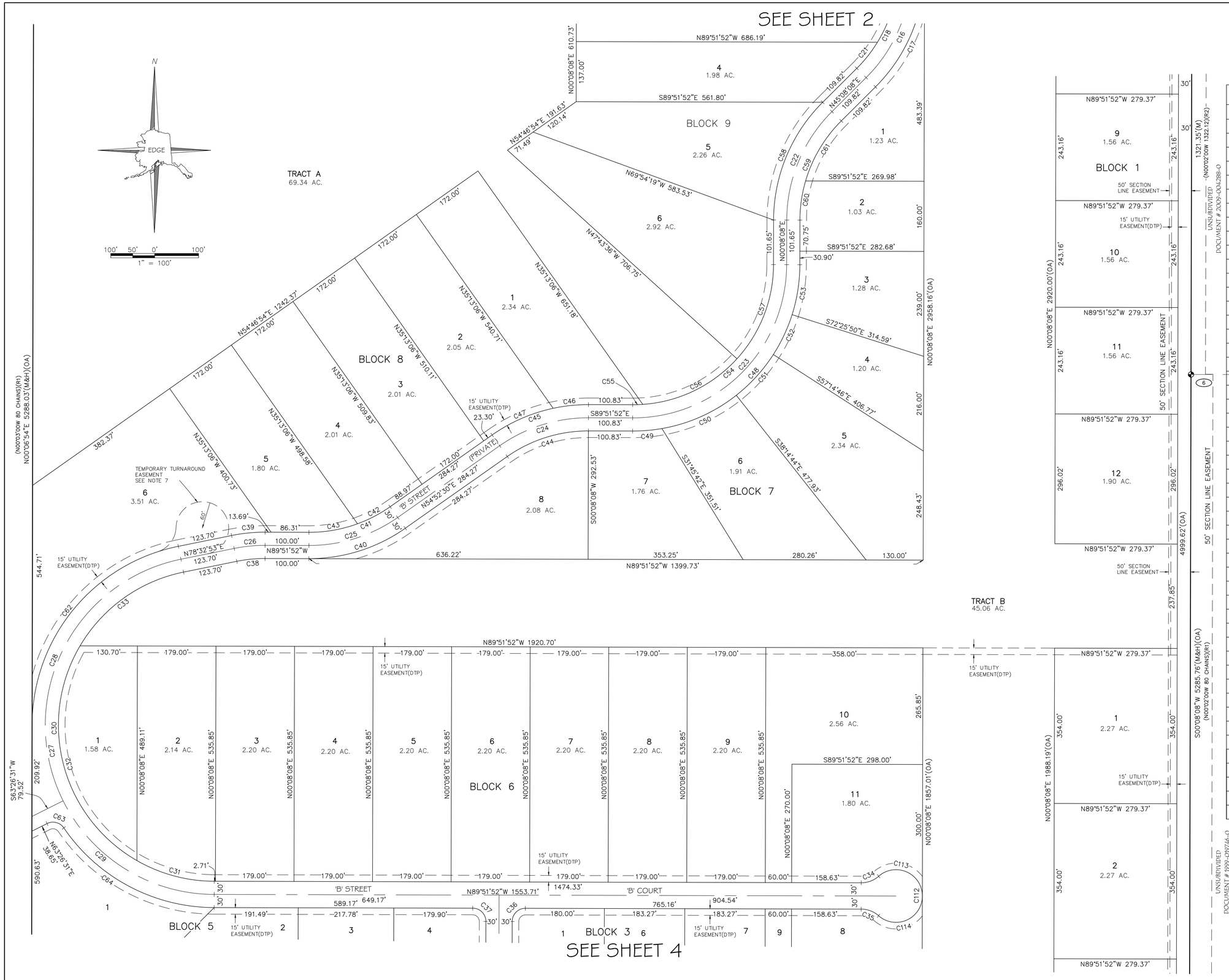
MASTER PLAN

WILLOW CREEK AIRPARK SUBDIVISION

BEING ALL OF THE
EAST 1/2 OF SECTION 26, T.20N., R.5W., S.M., ALASKA
PALMER RECORDING DISTRICT, STATE OF ALASKA
CONTAINING 320.32 ACRES MORE OR LESS

EDGE SURVEY AND DESIGN, LLC
12501 OLD SEWARD, D ANCHORAGE, AK 99515
Phone (907) 344-5990 Fax (907) 344-7794
ACEL # 1392

DRAWN BY: VLB	PROJECT # 18(15)-220	PLAT CASE # 2021-	
CHECKED BY: MA	DATE: 04/07/2021	SCALE: 1"=100'	SHEET 2 OF 4



SHEET 3 CURVE TABLE

CURVE #	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD LENGTH	TANGENT
C16	350.00'	45°00'00"	274.89'	N22°38'08"E	267.88'	144.97'
C17	380.00'	45°00'00"	298.45'	N22°38'08"E	290.84'	102.74'
C18	320.00'	45°00'00"	251.33'	N22°38'08"E	244.92'	132.55
C21	320.00'	13°33'24"	75.72'	S38°21'26"W	75.54'	38.04'
C22	350.00'	45°00'00"	274.89'	S22°38'08"W	267.88'	144.97'
C23	350.00'	90°00'00"	549.78'	N45°08'08"E	494.97'	305.00'
C24	350.00'	35°15'38"	215.39'	S72°30'19"W	212.01'	111.23'
C25	350.00'	35°15'38"	215.39'	N72°30'19"E	212.01'	111.23'
C26	350.00'	11°35'15"	70.78'	S84°20'30"W	70.66'	35.51'
C27	385.87'	168°24'45"	1134.20'	S05°39'30"E	767.79'	3802.91
C28	385.87'	105°06'22"	707.85'	N25°59'42"E	612.69'	503.84'
C29	385.87'	63°18'23"	426.35'	N58°12'41"W	404.99'	237.88'
C30	355.87'	168°24'45"	1046.02'	S5°39'30"E	708.10'	3507.25'
C31	355.87'	29°41'45"	184.44'	S75°01'00"E	182.38'	94.34'
C32	355.87'	90°41'10"	563.25'	S14°49'33"E	506.27'	360.15'
C33	355.87'	48°01'50"	298.32'	S54°31'57"W	289.66'	158.56'
C34	60.00'	41°24'35"	43.36'	N69°25'50"E	42.43'	22.68'
C35	60.00'	41°24'35"	43.36'	S69°09'35"E	42.43'	22.68'
C36	30.00'	90°00'00"	47.12'	N45°08'08"E	42.43'	30.00'
C37	30.00'	90°00'00"	47.12'	N44°51'52"W	42.43'	30.00'
C38	320.00'	11°35'15"	64.72'	S84°20'30"W	64.61'	32.47'
C39	380.00'	11°35'15"	76.85'	S84°20'30"W	76.72'	38.56'
C40	380.00'	35°15'38"	233.86'	N72°30'19"E	230.18'	120.76'
C41	320.00'	35°15'38"	196.93'	N72°30'19"E	193.84'	101.70'
C42	320.00'	15°02'30"	84.01'	S62°23'45"W	83.77'	42.25'
C43	320.00'	20°13'08"	112.92'	S80°01'34"W	112.34'	57.05'
C44	320.00'	35°15'38"	196.93'	S72°30'19"W	193.84'	101.70'
C45	380.00'	35°15'38"	233.86'	S72°30'19"W	230.18'	120.76'
C46	380.00'	12°12'55"	81.01'	S84°01'40"W	80.86'	40.66'
C47	380.00'	23°02'43"	152.84'	S66°23'51"W	151.81'	77.47'
C48	380.00'	90°00'00"	596.90'	N45°08'08"E	537.40'	380.00'
C49	380.00'	10°06'27"	67.03'	S85°04'54"W	66.95'	33.60'
C50	380.00'	28°16'25"	187.52'	S65°53'28"W	185.62'	95.71'
C51	380.00'	19°00'01"	126.02'	S42°15'15"W	125.44'	63.59'
C52	380.00'	15°11'04"	100.71'	S25°09'42"W	100.41'	50.65'
C53	380.00'	17°26'02"	115.63'	S8°51'09"W	115.18'	58.26'
C54	320.00'	90°00'00"	502.65'	N45°08'08"E	452.55'	320.00'
C55	320.00'	4°07'00"	22.99'	N88°04'38"E	22.99'	11.50'
C56	320.00'	43°44'44"	244.32'	N64°08'46"E	238.43'	128.46'
C57	320.00'	42°08'16"	235.34'	N21°12'16"E	230.07'	123.28'
C58	380.00'	45°00'00"	298.45'	S22°38'08"W	290.84'	157.40'
C59	320.00'	45°00'00"	251.33'	S22°38'08"W	244.92'	132.55'
C60	320.00'	16°11'37"	90.44'	S8°13'56"W	90.14'	45.52'
C61	320.00'	28°48'23"	160.89'	S30°43'56"W	159.20'	82.18'
C62	415.87'	78°17'39"	568.28'	S39°24'03"W	525.08'	338.53'
C63	30.00'	82°15'59"	43.07'	N75°25'30"W	39.47'	26.20'
C64	415.87'	55°34'22"	403.36'	S62°04'42"E	387.73'	219.13'
C112	60.00'	262°49'09"	275.22'	S00°08'08"W	90.00'	
C113	60.00'	131°24'34"	137.61'	S65°34'10"E	109.37'	132.91'
C114	60.00'	131°24'35"	137.61'	N65°50'25"E	109.37'	132.91'

MASTER PLAN

WILLOW CREEK AIRPARK SUBDIVISION

BEING ALL OF THE

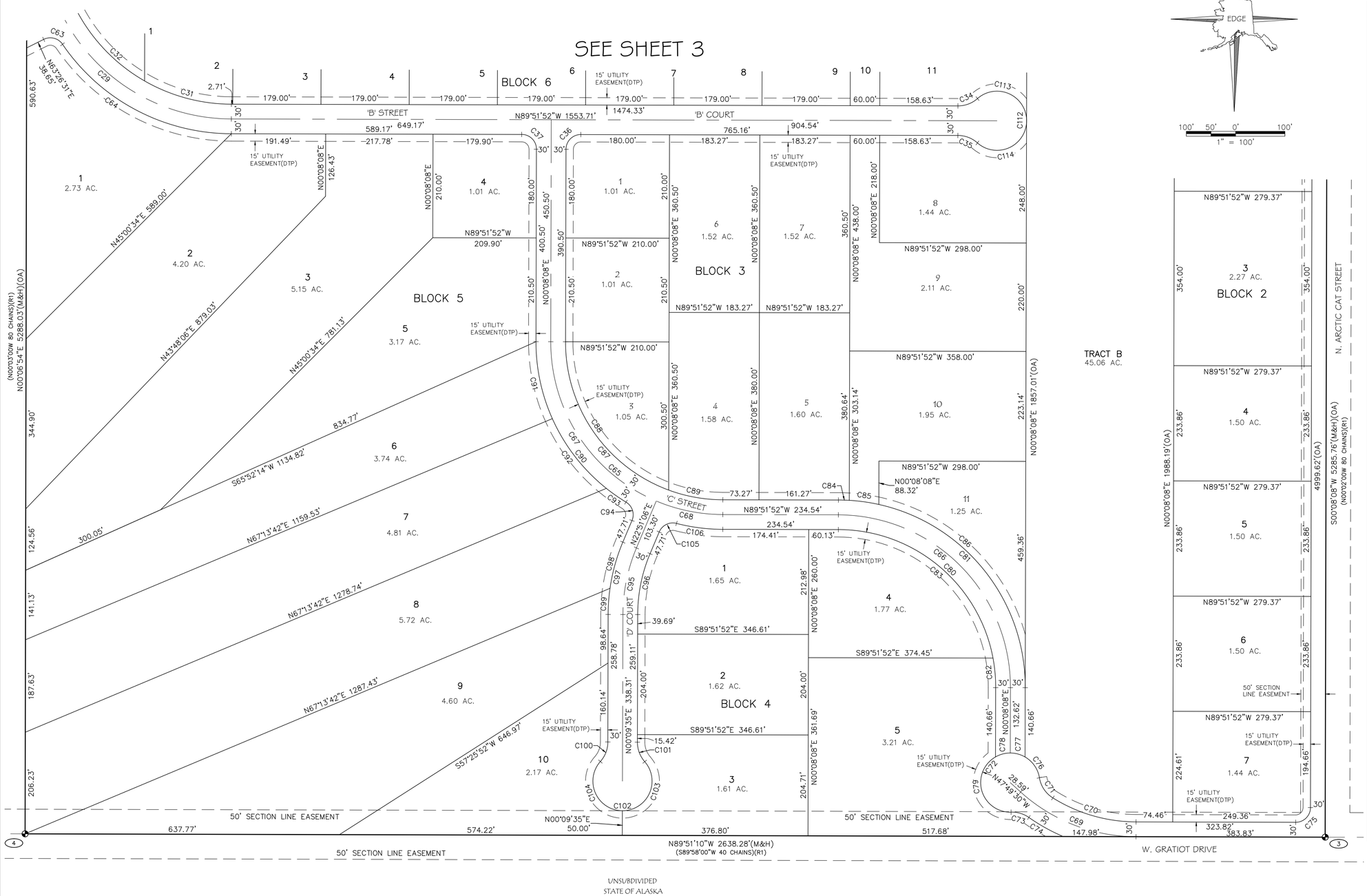
EAST 1/2 OF SECTION 26, T.20N., R.5W., S.M., ALASKA

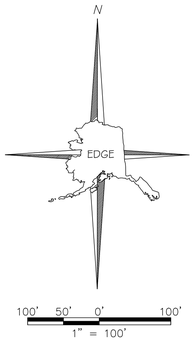
PALMER RECORDING DISTRICT, STATE OF ALASKA

CONTAINING 320.32 ACRES MORE OR LESS

EDGE SURVEY AND DESIGN, LLC
12501 OLD SEWARD, D ANCHORAGE, AK 99515
Phone (907) 344-5990 Fax (907) 344-7794
ACEL # 1392

DRAWN BY: VLB	PROJECT # 18(15)-220	PLAT CASE # 2021-	
CHECKED BY: MA	DATE: 04/07/2021	SCALE: 1"=100'	SHEET 3 OF 4





SHEET 4 CURVE TABLE						
CURVE #	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD LENGTH	TANGENT
C29	385.87'	63°18'23"	426.35'	N58°12'41"W	404.99'	237.88'
C35	60.00'	41°24'35"	43.36'	S69°09'35"E	42.43'	22.68'
C36	30.00'	90°00'00"	47.12'	N45°08'08"E	42.43'	30.00'
C37	30.00'	90°00'00"	47.12'	N44°51'52"W	42.43'	30.00'
C63	30.00'	82°15'59"	43.07'	N75°25'30"W	39.47'	26.20'
C64	415.87'	55°34'22"	403.36'	S62°04'42"E	387.73'	219.13'
C65	350.00'	90°00'00"	549.78'	S44°51'52"E	494.97'	350.00'
C66	350.00'	90°00'00"	549.78'	N44°51'52"W	494.97'	350.00'
C67	350.00'	67°17'01"	411.01'	S33°30'23"E	387.80'	232.91'
C68	350.00'	22°42'59"	138.77'	S78°30'23"E	137.86'	70.31'
C69	350.00'	42°01'39"	256.73'	S68°50'20"E	251.02'	134.45'
C70	320.00'	31°51'35"	177.94'	S73°55'22"E	175.65'	91.33'
C71	60.00'	48°32'13"	50.83'	S33°43'28"E	49.32'	27.05'
C72	60.00'	262°09'56"	274.54'	S39°27'40"E	90.45'	
C73	60.00'	36°41'10"	38.42'	N73°16'43"W	37.76'	19.89'
C74	380.00'	11°59'52"	79.57'	S60°56'04"E	79.43'	39.93'
C75	30.00'	90°00'43"	47.13'	S45°08'29"W	42.43'	30.01'
C76	60.00'	50°24'31"	52.79'	N34°39'37"W	51.10'	28.24'
C77	60.00'	30°00'00"	31.42'	N74°51'52"W	31.06'	16.08'
C78	60.00'	30°00'00"	31.42'	S75°08'08"W	31.06'	16.08'
C79	60.00'	151°45'26"	158.92'	S15°44'35"E	116.37'	238.49'
C80	320.00'	90°00'00"	502.65'	N44°51'52"W	452.55'	320.00'
C81	380.00'	90°00'00"	596.90'	N44°51'52"W	537.40'	380.00'
C82	320.00'	10°48'25"	60.36'	N5°16'05"W	60.27'	30.27'
C83	320.00'	79°11'35"	442.30'	N50°16'05"W	407.92'	264.69'
C84	380.00'	3°19'08"	22.01'	N88°12'18"W	22.01'	11.01'
C85	380.00'	9°08'34"	60.64'	N81°58'27"W	60.57'	30.38'
C86	380.00'	77°32'17"	514.25'	N38°38'01"W	475.90'	305.19'
C87	320.00'	90°00'00"	502.65'	S44°51'52"E	452.55'	320.00'
C88	320.00'	69°53'40"	390.36'	S34°48'42"E	366.61'	223.63'
C89	320.00'	20°06'20"	112.29'	S79°48'42"E	111.72'	56.73'
C90	380.00'	58°52'07"	390.43'	S29°17'56"E	373.48'	214.42'
C91	380.00'	24°15'54"	160.93'	S11°59'49"E	159.73'	81.69'
C92	380.00'	27°14'08"	180.63'	S37°44'50"E	178.94'	92.06'
C93	380.00'	07°22'05"	48.87'	S55°02'57"E	48.83'	24.47'
C94	30.00'	81°35'06"	42.72'	N17°56'27"W	39.20'	25.89'
C95	350.00'	22°42'59"	138.77'	N11°29'37"E	137.86'	70.31'
C96	320.00'	22°42'59"	126.87'	S11°29'37"W	126.04'	64.28'
C97	380.00'	22°42'59"	150.66'	S11°29'37"W	149.68'	73.33'
C98	380.00'	14°41'29"	97.44'	S15°30'22"W	97.17'	48.99'
C99	380.00'	8°01'30"	53.22'	S4°08'53"W	53.18'	26.66'
C100	60.00'	41°30'48"	43.47'	N20°53'32"E	42.53'	22.74'
C101	60.00'	41°18'20"	43.26'	S20°31'03"E	42.32'	22.62'
C102	60.00'	262°49'09"	275.22'	S89°45'38"E	90.00'	
C103	60.00'	131°19'48"	137.53'	N24°29'41"E	109.34'	132.67'
C104	60.00'	131°29'20"	137.69'	S24°05'44"E	109.41'	133.16'
C105	30.00'	81°35'06"	42.72	S63°38'40"W	39.20'	25.89'
C106	380.00'	14°18'05"	94.85'	S82°42'50"E	94.60'	47.67'
C112	60.00'	262°49'09"	275.22'	S00°08'08"W	90.00'	
C113	60.00'	131°24'34"	137.61'	S65°34'10"E	109.37'	132.91'
C114	60.00'	131°24'35"	137.61'	N65°50'25"E	109.37'	132.91'

MASTER PLAN

WILLOW CREEK AIRPARK SUBDIVISION

BEING ALL OF THE

EAST 1/2 OF SECTION 26, T.20N., R.5W., S.M., ALASKA

PALMER RECORDING DISTRICT, STATE OF ALASKA

CONTAINING 320.32 ACRES MORE OR LESS

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ACEL # 1392

DRAWN BY: VLB	PROJECT # 18(15)-220	PLAT CASE # 2021-	
CHECKED BY: MA	DATE: 04/07/2021	SCALE: 1"=100'	SHEET 4 OF 4

6B

STAFF REVIEW AND RECOMMENDATIONS
PUBLIC HEARING
MAY 5, 2021

PRELIMINARY PLAT:	LARSEN ESTATES (W. ALAMO ROAD VAC)
LEGAL DESCRIPTION:	SEC 09, T17N, R03W, SEWARD MERIDIAN AK
PETITIONERS:	BRUCE M. GREEN & FRANCINE SCHILMOELLER LARSEN TRUST
SURVEYOR:	FRONTIER SURVEYS
ACRES: 3.62 ±	PARCELS: 3
REVIEWED BY:	AMY OTTO-BUCHANAN CASE #: 2021-039/040

REQUEST: The request is to create three lots from Lots 1-1 and 1-2, Block 3; Lots 5 & 6, Block 4; Lots 8 & 9, Block 4; and Lots 4-7, Block 5, Texas Subdivision, Plat No. 63-15, to be known as **LARSEN ESTATES,** containing 3.62 acres +/-. The plat is located northwest of Stepan Lake, southeast of Big Beaver Lake, and east of S. Beaver Lake Road; within Section 09, Township 17 North, Range 03 West, Seward Meridian, Alaska. Petitioner proposes to vacate a section of W. Alamo Road and is applying for a variance from MSB 43.20.060(C) Legal access, as S. Melozzi Hot Springs Road is 30' wide.

EXHIBITS

Vicinity Map and Aerial Photos	**EXHIBIT A** – 4 pgs
Petition for Vacation of Right-of-Way	**EXHIBIT B** – 11 pgs
Variance Application	**EXHIBIT C** – 4 pgs
AGENCY COMMENTS	
Department of Public Works Operations & Maintenance	**EXHIBIT D** – 1 pg
Department of Emergency Services	**EXHIBIT E** – 1 pg
Utilities	**EXHIBIT F** – 4 pgs

DISCUSSION: The proposed subdivision is located between Stepan Lake and Big Beaver Lake, east of W. Beaver Lake Road and accessed by S. Melozzi Hot Springs Road. Petitioner proposes to create one lot from Lots 1-1 & 1-2, Block 3; one lot from Lots 5 & 6, Block 4; and one lot from Lots 8 & 9, Block 4 and Lots 4-7, Block 5. The elimination of these common lots lines can be heard under MSB 43.15.065 Wavier of Standards for Resubdivision of Substandard Lots. These lots were created lawfully and met all conditions of the applicable provisions of law and ordinance at the time the plat was approved, Texas Subdivision, Plat No. 63-15, but they do not conform to one or more of the applicable standards of MSB Title 43. The replat will eliminate substandard acreage of the lots (MSB 43.15.065(A)(3)) and reduce the number of substandard lots in the subdivision (MSB 43.15.065(A)(4)).

Access: Legal and physical access to the proposed lots are required pursuant to MSB 43.20.100 Access Required, MSB 43.20.120 Legal Access and MSB 43.20.140 Physical Access. S. Melozzi Hot Springs Road is owned and maintained by MSB. However, the right-of-way width of the street is 30'. Therefore,

petitioner is requesting a variance from MSB 43.20,060(C), which states right-of-way must be a minimum of 50' wide.

Variance from MSB 43.20.060(C):

Petitioner requests a variance from MSB 43.20.060(C) (**Exhibit C**). Petitioner has provided answers to the criteria A-C of MSB 43.15.075 Variance; Standards for Approval (**Exhibit C**).

The original 1961 plat dedicated 30' wide right-of-way for S. Melozzi Hot Springs Road. Access along S. Melozzi Hot Springs Road and W. Alamo Road has been ongoing for 60 years. MSB has maintained S. Melozzi Hot Springs Road in its current form for many years. Adjusting the common boundary of Lot 1A and Lot 5A and S. Melozzi Hot Springs Road for an additional 20'/30' would lessen the square footage of Lot 1A and Lot 5A of these substandard lots even more. Does MSB want portions of S. Melozzi Hots Springs Road right-of-way to vary from 30' to a greater width along the subject properties and then back again? This would case a non-symmetrical road width along S. Melozzi Hot Springs Road. Why is it incumbent of the owner to "absorb" the entire additional 20'/30' in right-of-way width? Should the owners of the property on the opposite side of S. Melozzi Hot Springs Road wish to subdivide, they would not be required to provide for additional right-of-way encumbrance and thus be privileged to maintain existing square footage and maximum value of said land. In Texas Subdivision, all lots are already developed and the number of lots will not increase due to subdivision and thus little to no increase in traffic will affect S. Melozzi Hot Springs Road.

A. The granting of the variance shall not be detrimental to the public health, safety or welfare, or injurious to adjacent property. *The granting of this variance is not detrimental to public health, safety or the welfare of the surrounding community. Access to all of Texas Subdivision from S. Melozzi Hot Springs Road is still facilitated.*
B. The variance request is based upon conditions of the property that are atypical to other properties. *Existing access to Texas Subdivision is gained through S. Melozzi Hot Springs Road and W. Alamo Road. Existing infrastructure and development has already occurred for most lots in Texas Subdivision. The 30' wide existing right-of-way has worked for the public for approximately 60 years. Lots 1A and 5A are already substandard lots; adding another 20'/30' of right-of-way will make them further substandard lots and potentially not developable.*
C. Because of the unusual physical surroundings, shape, or topographical conditions of the property for which the variance is south, or because of the taking of a part of the property through condemnation or because of surrounding development or conditions, the strict application of MSB 43.20.120 and MSB 43.20.140 shall result in undue substantial hardship to the owner of the property. *Granting of this variance allows for the owners of Lots 1A and Lot 5A Larsen Estates to maintain as much buildable area in an already substandard lot. By adding another 20'/30' of right-of-way along the frontage of S. Melozzi Hot Springs Road will make the useable/buildable area very difficult with current MSB property and right-of-way setbacks.*

Vacation of Right-of-Way: **(Exhibit B)**:

Pursuant to MSB 43.15.035(B), a public use easement or right-of-way may be vacated if equal or better access exists to all areas affected, (B)(1)(a), or;

the surrounding area is fully developed and all planned or needed rights-of-way and utilities are constructed, (B)(1)(b)or;

the right-of-way is not being used, a road is impossible or impractical to construct and alternative access is provided (B)(1)(c).

This portion of W. Alamo Road is a 30' wide right-of-way, created by Texas Subdivision, Plat No. 63-15. It has not been constructed. A portion of W. Alamo Road was vacated between the southern boundary of Lot 7 and the northern boundary of Lot 13, Block 5, by Little Beaver Camp Subdivision, Plat No. 2006-79, and was absorbed into Tract A of Little Beaver Camp Subdivision, as was Lots 8-12. Therefore, this portion of W. Alamo Drive does not connect to the right-of-way to the south. However, it does provide a northern access for Tract A, which is owned by the Alaska District Council of Assemblies of God, Inc. It does not provide access to Stepan Lake. Petitioner has proposed to dedicate a replacement 30' wide right-of-way on the southern lot line of proposed Lot 5A. However, code does not allow for a partial dedication of right-of-way. The replacement right-of-way will be 60' wide (see ***Recommendation #4***).

Pursuant to MSB 43.10.065(G), a sign notifying the public of the vacation request and the date, time and location of public hearing, shall be posted and maintained by the applicant at the site for 30 days prior to the public hearing. Petitioner has submitted an affidavit to Platting staff, verifying the posting has been made. Posting Affidavit at **Exhibit B-9**.

Comments: Department of Public Works Operations & Maintenance (**Exhibit D**) notes the proposed right-of-way dedication shall be a minimum of 60' wide (see ***Recommendation #4***). Dedicate an additional 15' of right-of-way along S. Melozzi Hot Springs Road to help accommodate the existing road (see ***Recommendation #8***). Department of Emergency Services (**Exhibit E**) has no issues.

Utilities: (**Exhibit F**) MTA has no comments. Enstar has no comments, recommendations or objections. MEA requests a 15' wide utility easement be granted along all road rights-of-way (see ***Recommendation #7***). GCI has no objections.

At the time of staff report write-up, there were no responses to the Request for Comments from US Army Corps of Engineers, ADF&G; Community Council Big Lake; Fire Service Area #136 West Lakes; Road Service Area #21 Big Lake; MSB Community Development, Assessments, Planning, Pre-Design Division or Development Services.

CONCLUSION: The preliminary plat of Larsen Estates is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plats and MSB 43.15.065 Waiver of Standards for Resubdivision of Substandard Lots. The variance from MSB 43.20.060(C) is consistent with the requirements of MSB 43.15.075 Variance; Standards for Approval. The vacation of a portion of W. Alamo Road is consistent with MSB 43.15.035(B). There were no objections from any federal or state agencies, Borough departments, or utilities. There were no objections to the plat from the public in response to the Notice of Public Hearing. Legal and physical access will exist to the proposed lots, consistent with MSB 43.20.100 Access Required, MSB 43.20.120 Legal Access and MSB 43.20.140 Physical Access. Frontage for the subdivision will exist, pursuant to MSB 43.20.320 Frontage. A soils report was not required, as this is essentially an elimination of common lot lines, pursuant to MSB 43.15.025(4)(1).

FINDINGS OF FACT

1. The plat of Larsen Estates is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plats, MSB 43.15.065 Waiver of Standards for Resubdivision of Substandard Lots and MSB 43.15.025(4)(1).
2. The vacation is consistent with MSB 43.15.035(B).

3. The variance from MSB 43.20.060(C) is consistent with the requirements of MSB 43.15.075 Variance; Standards for Approval. Petitioner has provided answers to the criteria A-C of MSB 43.15.075 Variance; Standards of Approval:

a) The granting of the variance shall not be detrimental to the public health, safety or welfare, or injurious to adjacent property. *The granting of this variance is not detrimental to public health, safety or the welfare of the surrounding community. Access to all of Texas Subdivision from S. Melozzi Hot Springs Road is still facilitated.*

b) The variance request is based upon conditions of the property that are atypical to other properties. *Existing access to Texas Subdivision is gained through S. Melozzi Hot Springs Road and W. Alamo Road. Existing infrastructure and development has already occurred for most lots in Texas Subdivision. The 30' wide existing right-of-way has worked for the public for approximately 60 years. Lots 1A and 5A are already substandard lots; adding another 20'/30' of right-of-way will make them further substandard lots and potentially not developable.*

c) Because of the unusual physical surroundings, shape, or topographical conditions of the property for which the variance is south, or because of the taking of a part of the property through condemnation or because of surrounding development or conditions, the strict application of MSB 43.20.120 and MSB 43.20.140 shall result in undue substantial hardship to the owner of the property. *Granting of this variance allows for the owners of Lots 1A and Lot 5A Larsen Estates to maintain as much buildable area in an already substandard lot. By adding another 20'/30' of right-of-way along the frontage of S. Melozzi Hot Springs Road will make the useable/buildable area very difficult with current MSB property and right-of-way setbacks.*

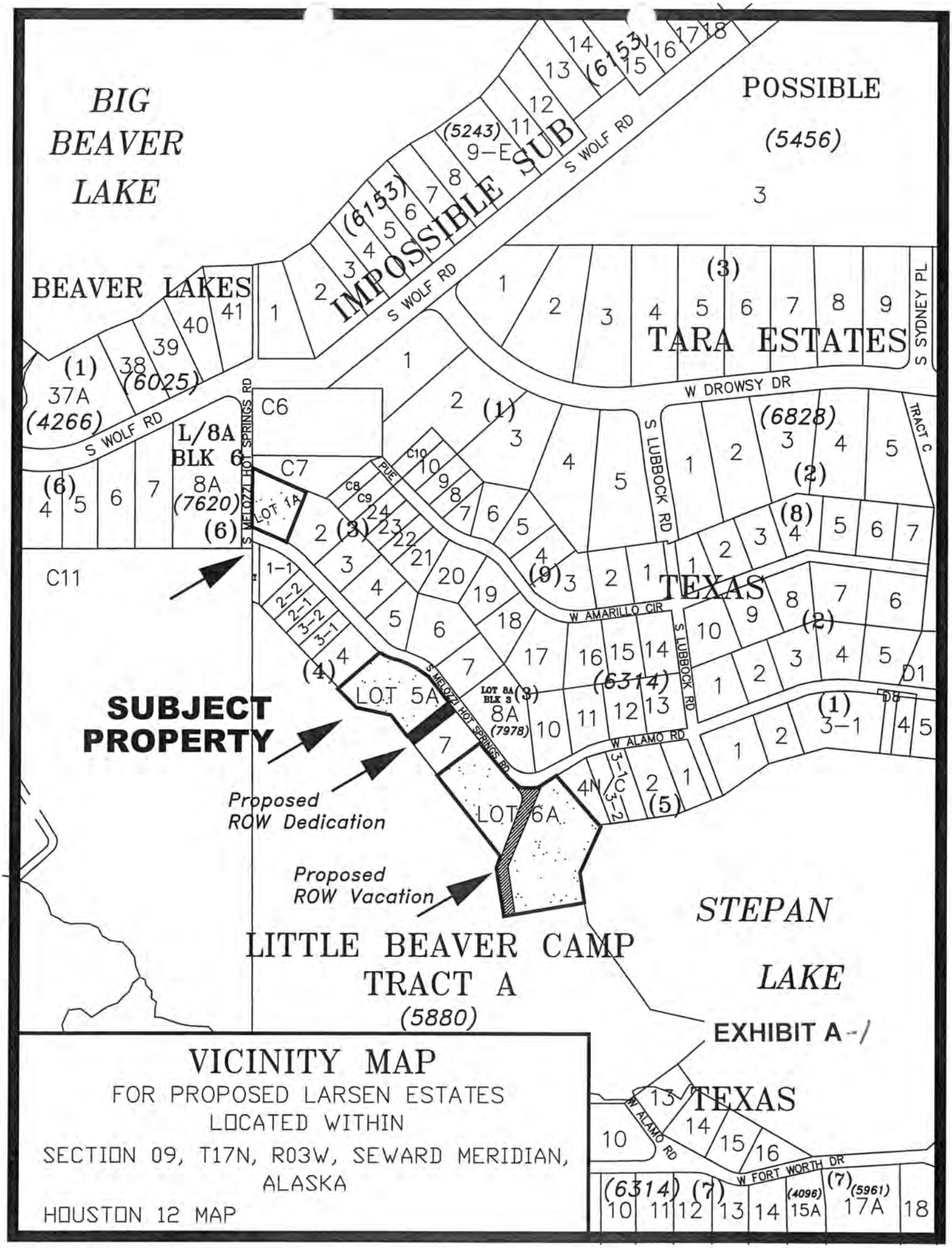
4. A soils report was not required, as this is essentially an elimination of common lot lines, pursuant to MSB 43.15.025(4)(1).
5. No road construction is required, as all lots have legal and physical access consistent with MSB 43.20.100, MSB 43.20.120 and MSB 43.20.140.
6. Each lot has the required frontage pursuant to MSB 43.20.320 and MSB 43.20.300(E).
7. A posting affidavit of vacation notice was provided to Platting staff.
8. At the time of staff report write-up, there were no responses to the Request for Comments from US Army Corps of Engineers, ADF&G; Community Council Big Lake; Fire Service Area #136 West Lakes; Road Service Area #21 Big Lake; MSB Community Development, Assessments, Planning, Pre-Design Division or Development Services.
9. There were no objections from any federal or state agencies, or Borough departments.
10. There were no objections from the public in response to the Notice of Public Hearing.

RECOMMENDATIONS OF CONDITIONS OF APPROVAL

Suggested motion: I move to approve the preliminary plat of Larsen Estates, the vacation of a portion of W. Alamo Road, and the variance from MSB 43.20.060(C), Section 09, Township 17 North, Range 03W, Seward Meridian, Alaska, contingent on staff recommendations:

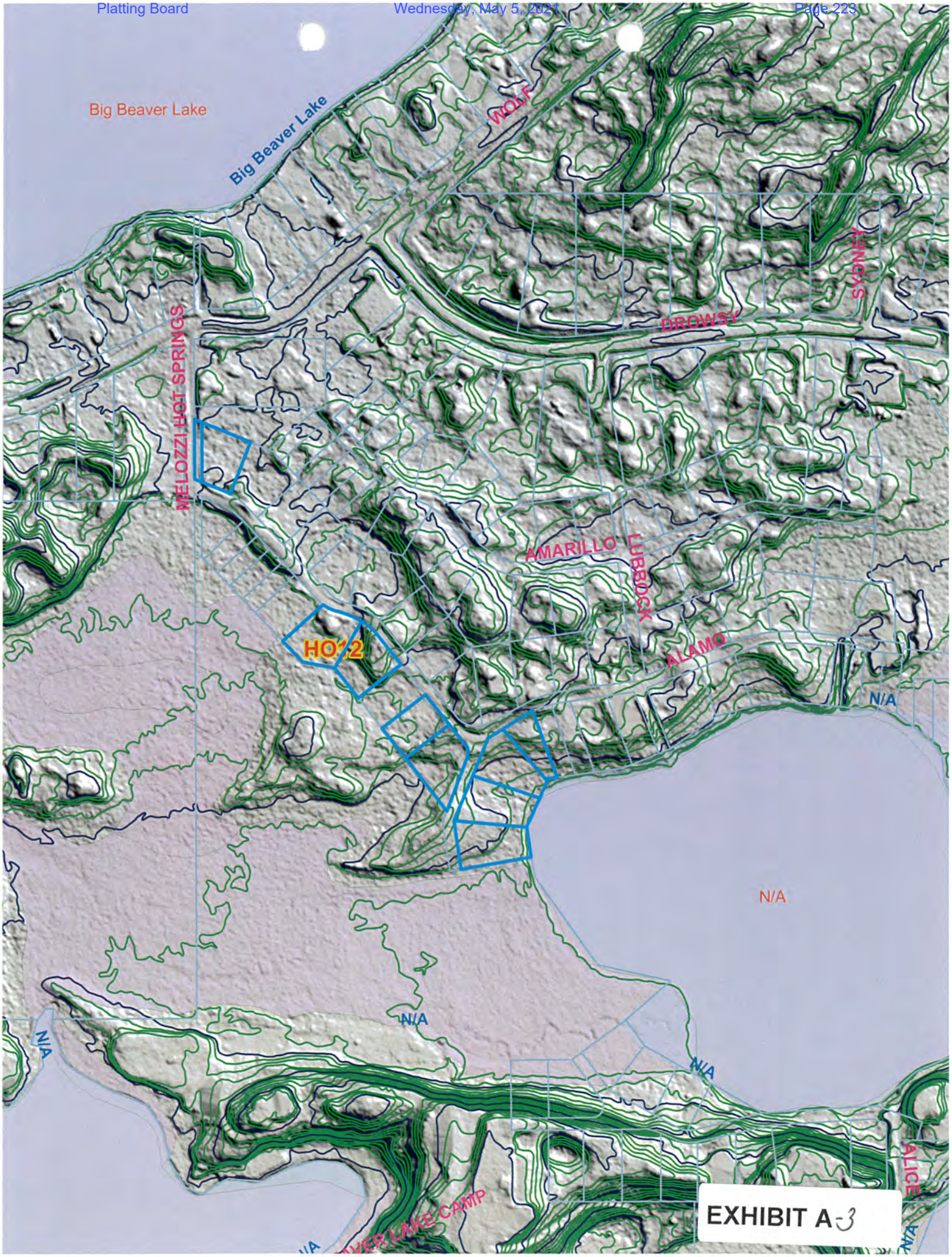
1. Obtain approval of the vacation from the Assembly within 30 days of the written decision.
2. Taxes and special assessments must be paid in full for the year of recording, pursuant to MSB 43.15.053(F) and AS 40.15.020. Pay taxes and special assessments (LIDs), by CERTIFIED FUNDS OR CASH.
3. Provide updated Certificate to Plat executed within seven (7) days of recording of plat and submit Beneficiary Affidavit for any holders of a beneficial interest.
4. Provide a 60' wide replacement right-of-way.
5. Pay postage and advertising fees.

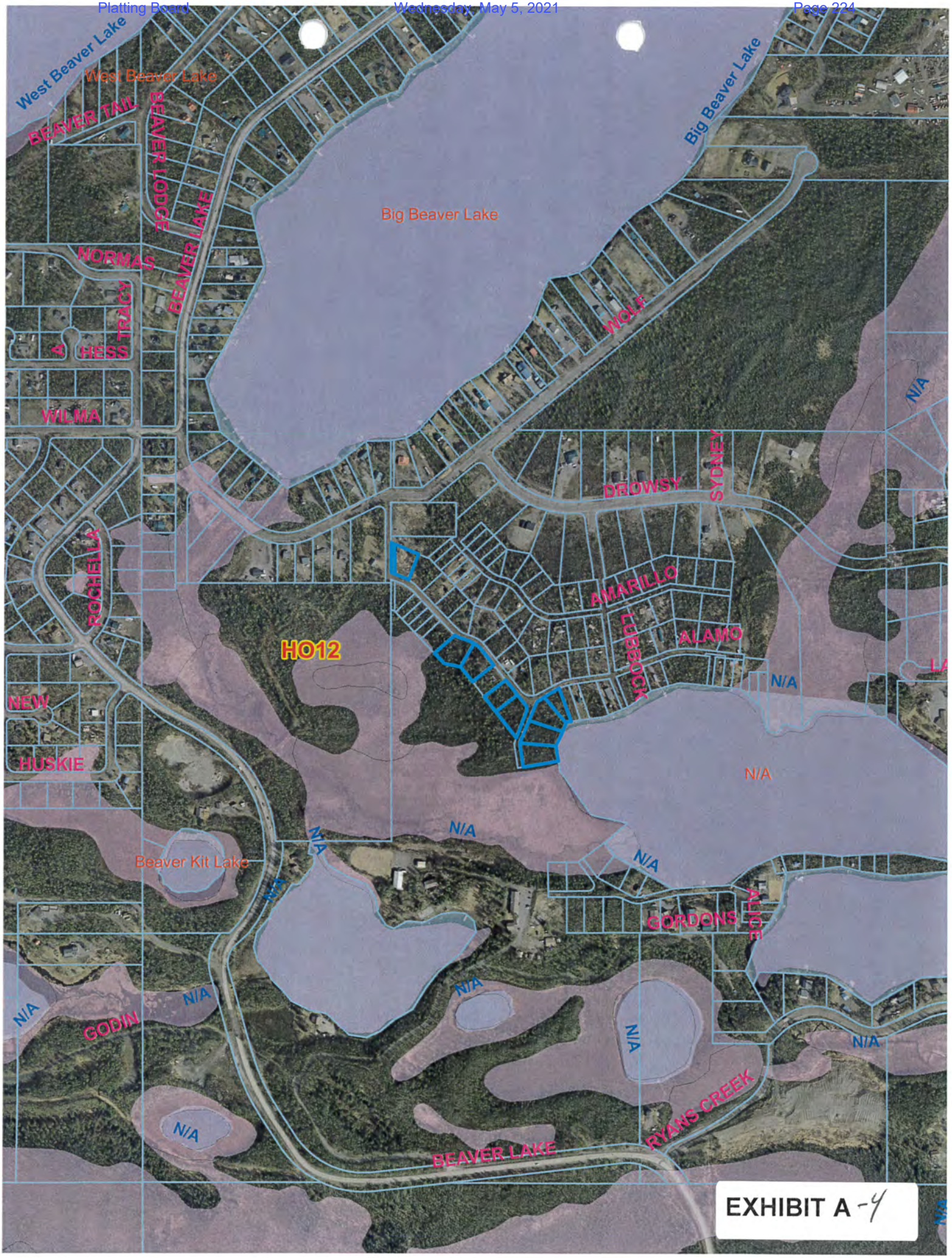
6. Show all easements of record on final plat.
7. Grant a 15' wide utility easement along all rights-of-way.
8. Dedicate 15' wide right-of-way adjoining S. Melozzi Hot Springs Road.
9. Submit recording fees, payable to Department of Natural Resources (DNR).
10. Submit final plat in full compliance with Title 43.



VICINITY MAP
FOR PROPOSED LARSEN ESTATES
LOCATED WITHIN
SECTION 09, T17N, R03W, SEWARD MERIDIAN, ALASKA
HOUSTON 12 MAP

Big Beaver Lake
Big Beaver Lake
WOLF
DROWSY
SYDNEY
MELOZZI HOT SPRINGS
AMARILLO
LUBBOCK
ALAMO
HO12
N/A
N/A
N/A
N/A
N/A
N/A
EXHIBIT A-2


Big Beaver Lake
Big Beaver Lake
WOLF
SYDNEY
DROWSY
MELOZZI HOT SPRINGS
AMARILLO
LUBBOCK
ALAMO
HO12
N/A
N/A
N/A
N/A
N/A
N/A
ALICE
CAMP
EXHIBIT A-3


West Beaver Lake
West Beaver Lake
BEAVER TAIL
BEAVER LODGE
BEAVER LAKE
Big Beaver Lake
Big Beaver Lake
NORMAS
TRACY
HESS
WILMA
WOLF
DROWSY
SYDNEY
ROCHELLA
AMARILLO
LUBBOCK
ALAMO
HO12
NEW
HUSKIE
N/A
N/A
N/A
N/A
N/A
N/A
Beaver Kit Lake
N/A
GORDONS
ALICE
N/A
N/A
N/A
GODIN
N/A
N/A
N/A
RYANS CREEK
BEAVER LAKE
EXHIBIT A-4

Matanuska-Susitna Borough
Telephone (907) 861-7874

350 East Dahlia Avenue
Palmer, Alaska 99645-6488

PETITION FOR VACATION OF RIGHT-OF-WAY

Comes now the undersigned, Shane Stragier, and petitions the Matanuska-Susitna Borough to vacate the right-of-way lying within the following described property, to-wit:
Lots 8 & 9, Block 4; Lots 4-7, Block 5 Texas Subdivision Plat No. 63-15

Said right-of-way being more fully described as: W. Alamo Road – 30' Wide R.O.W.

(ATTACH SUPPLEMENTAL SHEET IF APPLICABLE)

Submitted herewith are the following:

1. A copy of the plat showing the right-of-way to be vacated; or
2. A recorded public easement creating the public right-of-way; and
3. **$250.00** Right-of-Way Vacation Fee with Regular Plat; or
4. **$500.00** for Stand Alone Vacation.

The action sought by this petition is for the following reason(s): ***(ATTACH PAGES, IF NEEDED)***

To vacate W. Alamo Rd. R.O.W. between Lots 8 & 9, Block 4; Lots 4-7, Block 5 in order to combine said lots to allow for more useable area and enable ease of construction. Currently all lots are non-conforming as stand-alone lots as they do not provide the minimum 40,000 Sq. Ft. area per Borough Code 43.20.281 A (1). Vacating said R.O.W. and eliminating common lot lines between subject lots will create a new lot parcel approximately 2.56 acres that will then be a conforming lot per Borough Code 43.20.281 A (1). W Alamo Rd is only a 30' wide R.O.W. that was never constructed and has no record or visible use by the public. Petitioner also wishes to dedicate a new R.O.W. on south side of Lot 6, Block 4 Texas Subdivision to provide equal or better access to Tract A Little Beaver Camp Subdivision Plat No. 2006-79. Petitioner has tried to contact via mail and telephone Alaska District Council of Assemblies of God, Inc the owner of Tract A and has had no response in regards to the vacation and dedication of W Alamo Road. (See supporting mailed documents).

EXHIBIT B -/

APPLICANT Name: Francine Larsen Email: Francine.Larsen@gmail.com

OR Mailing Address: 5303 Sillary Cir. Anchorage, Ak Zip: 99508

OWNER Contact Person: Francine Larsen Phone: 907-764-8724

SURVEYOR Name (FIRM): Frontier Surveys Email: p.stragier@frontiersurveys.com s.stragier@frontiersurveys.com

Mailing Address: 650 W. 58th Ave Suite E Anchorage, Ak Zip: 99518

Contact Person: Shane Stragier Phone: 907-460-1686

SIGNATURES OF PETITIONER(S):

_____ _____

_____ _____

_____ _____

NOTE: In accordance with MSB 43.15.035(D), vacations of public rights-of-way are subject to consent of the City Council or Borough Assembly. The City Council or Borough Assembly has 30 days from the date of Platting Board written decision in which to veto the action.

❖❖❖

Francine Schilmoeller Larsen
5303 Sillary Circle
Anchorage, AK 99508-4946

August 4, 2020

Alaska District Council of Assemblies of God, Inc.
1048 W. International Airport Rd
Suite #101
Anchorage, AK 99518-1005

Re: Tract A – Proposal for purchase of area north of creek; easement relocation

Greetings,

I am writing to advise you that I have entered a Pre-Application process with the Matanuska-Susitna Borough to generally prepare lots, family owned since 1963, for building a personal home. We are situated north across Stepan Lake from your Little Beaver Camp (highlighted in blue on the enclosed MSB aerial map).

As I detailed to you in my May 14, 2018 letter, an unused easement, which provides access to dry areas of your Tract A north of the creek, bifurcates my lots, which causes usage and security problems for us.

I did not receive a reply to that letter, but I would still like to discuss options to resolve this land usage issue.

On the same MSB supplied aerial map, the area of dry land north of the creek appears to be roughly 3 acres. One solution would be for you to sell to me that portion of Tract A (wet and dry) north of the east-west creek, highlighted in yellow on the tax map below. Provided you have no plans for its usage, this remedy would seem to be ideal, as the majority of my lots abut this property and this would provide us additional land with easy access, in addition to resolving the easement matter, all while providing you immediate cash and decreased taxes.

However, if purchase is not possible, then I am advised I must offer an alternative easement access. Your input on this matter would be helpful. I would appreciate meeting with your representative to discuss this at your earliest opportunity, before moving forward with the Borough.

EXHIBIT B -3

Francine S. Larsen
August 4, 2020
Page 2 of 3

Thank you in advance for your time. Please call me at my home, 907-333-9222, when you receive this. This is a hard-wired phone so texts are not possible, but you may leave a voice mail that I will receive. I look forward to hearing from you and hope we can come to a remedy that benefits us both.

Most sincerely,

Francine S. Larsen

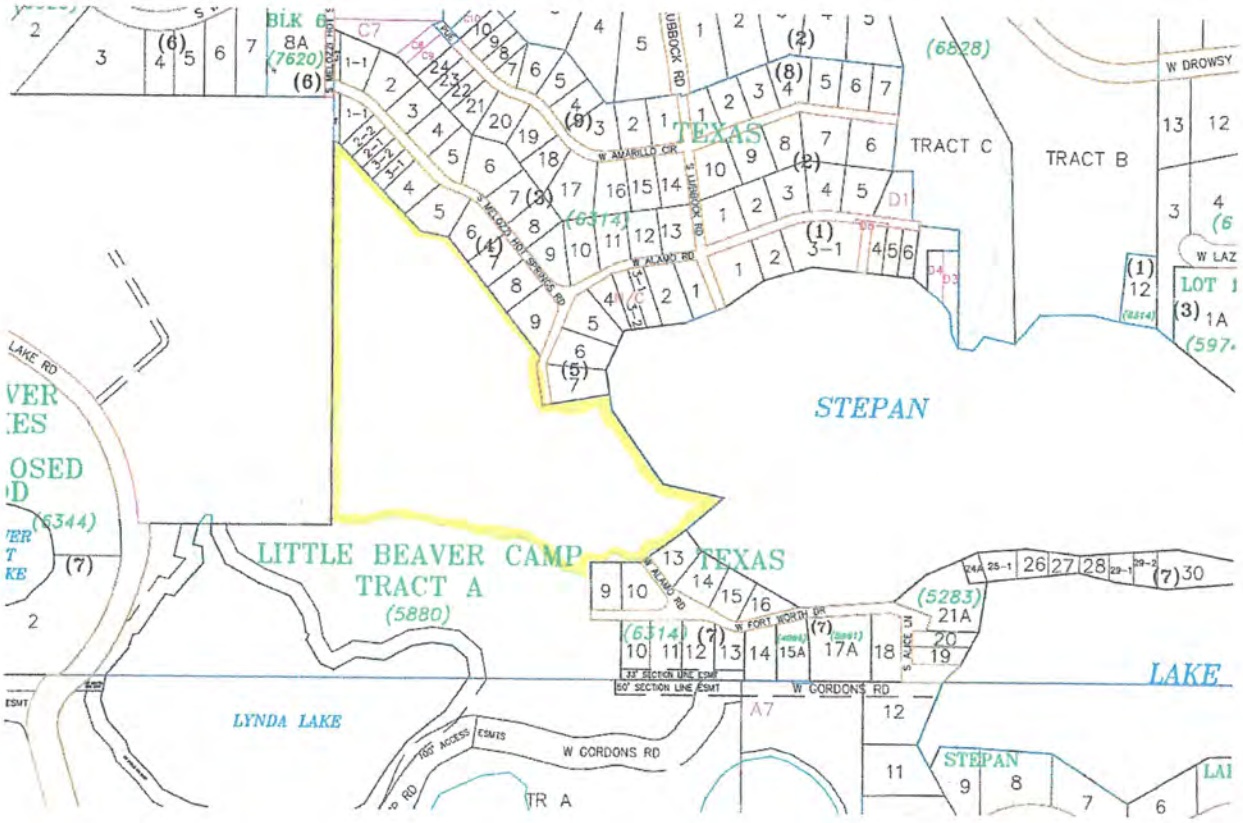


EXHIBIT B -4

West Beaver Lake
West Beaver Lake
BEAVER TAIL
BEAVER LODGE
BEAVER LAKE
Big Beaver Lake
Big Beaver Lake
NORMAS
TRACY
HESS
WILMA
WOLF
DROWSY
SYDNEY
ROCHELLA
AMARILLO
LUBBOCK
ALAMO
HO12
NEW
HUSKIE
N/A
N/A
N/A
Beaver Kit Lake
N/A
GORDONS
N/A
N/A
GODIN
N/A
N/A
N/A
N/A
RYANS CREEK
BEAVER LAKE

EXHIBIT B-5

Francine Schilmoeller Larsen
5303 Sillary Circle
Anchorage, AK 99508-4946

May 14, 2018

Alaska District Council of Assemblies of God, Inc.
1048 W. International Airport Rd
Suite 101
Anchorage, AK 99518

Re: Tract A – Proposal for resurvey and purchase of area north of creek

Greetings,

My letter is regarding your property in the Little Beaver Lake area, in the Matanuska-Susitna Borough. Please forward this communication to the individual(s) handling your property issues, with my apologies that I do not have a proper addressee.

To introduce myself, I am your neighbor to the north of Little Beaver Camp Tract A, across the wetlands. I own lots in the Texas Subdivision, which my parents purchased from Mrs. Wolfe in the early 1960's. A territorial child of Alaska, it has been my life's dream to build my retirement home on Stepan Lake. (It may help to explain that my dream originated before the Miller's Reach fire).

Nevertheless, my husband, Bruce, and I plan a modest, custom designed, ADA compliant, primarily one-story home, that we can enjoy the rest of our lives, without having to leave it because of mobility issues. I am now retired, but maintain a current nursing license. Over the years, I have prepared for this dream by completing the Master Gardener program, in addition to becoming Permaculture Design certified, along with my husband, Bruce. Our plans and actions reflect our desire to improve the property value of the area and be good neighbors. My children and grandchildren were born here, and we plan to stay.

As you might already know, the Texas Subdivision was initially developed into (what is now considered) sub-standard sized lots. I have worked to add to the

lots my family originally purchased, ultimately to facilitate better lot usage, and a more pleasing esthetic of the final plan. After years of working to locate heirs of a deceased owner, and negotiate purchase of his lots, I finally met with the Borough to request the vacation of an easement north of lots 5, 6, and 7 (see map) which, by its location, forces me to build closer to the lake than I desire (even though I can currently meet the required 75-foot set-back).

To the point of my letter: The kind ladies at the Mat-Su Borough pointed out that the existing easement assures road access to that portion of your Tract A that lies north of the creek that meanders from Texas Lot 13 on Lake Stepan, westerly through the wetlands across Tract A to C11 (see area outlined on enclosed map). They said that if I desired them to vacate the easement, I would need to offer a different access point through my property.

As I studied the maps of my lots (marked in pink), and that portion of your Tract A north of the creek in the effort to locate an alternate easement route, it occurred to me that the dry area, which becomes very narrow at the most northern point, may, in total, be slightly less than 5 acres. With it's large wet area and irregular shape, it occurred to me that perhaps it makes more sense to make an offer to purchase it from you.

With this in mind, it is my hope that we can discuss steps to provide you with cash for land for which you might not have a practical use, while solving the easement issue before me.

Thank you in advance for your consideration of this proposal. After your review, please let me know your thoughts. You may reach me at my home phone 907-333-9222 or by cell phone, 907-764-8724.

I'll look forward to hearing from you.

Thank you,

Francine S. Larsen

EXHIBIT B-7

Little Beaver Camp, Tract A

Proposed area of resurvey and purchase

Subject easement

My related lots

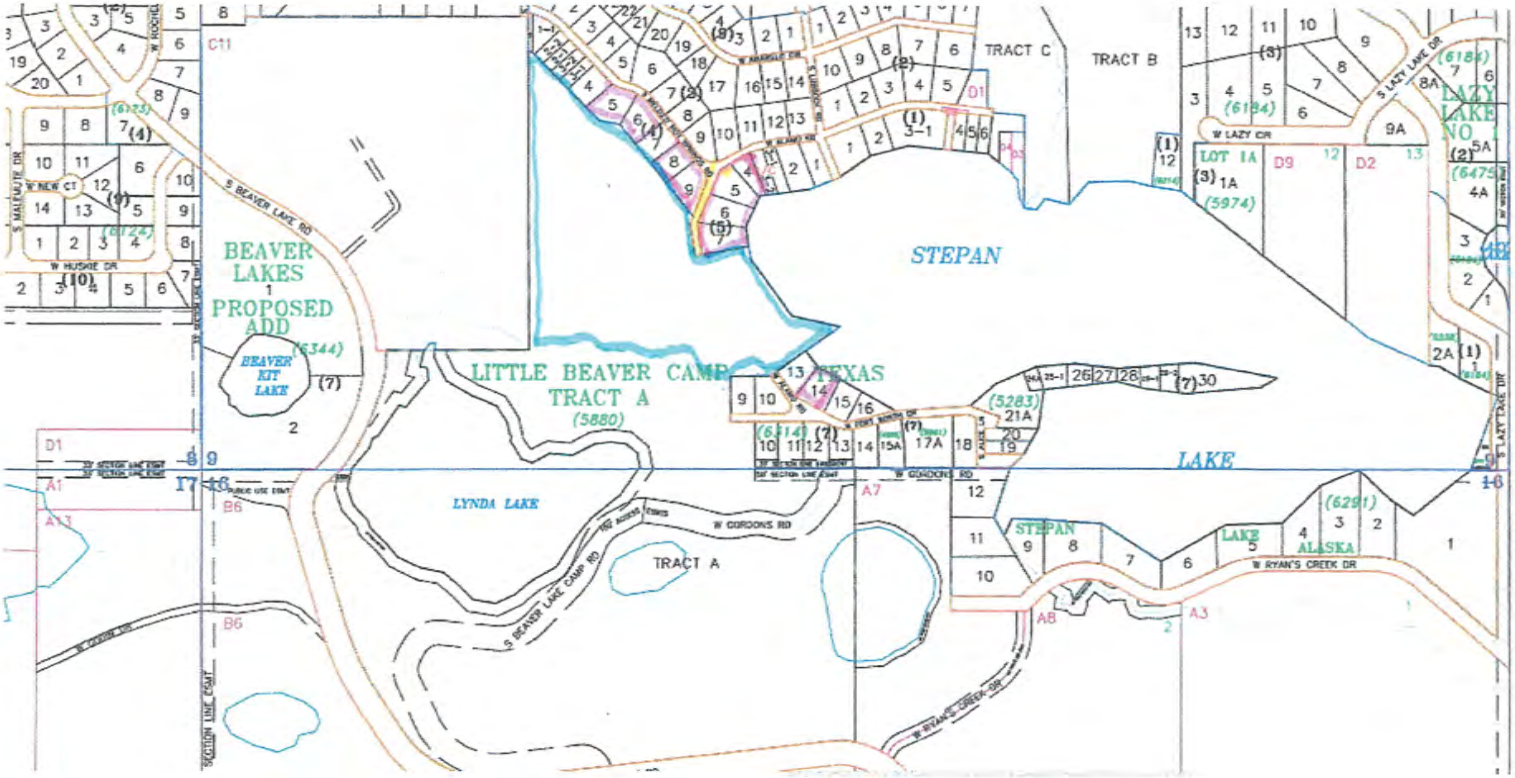


EXHIBIT B-8

RIGHT-OF-WAY VACATION POSTING AFFIDAVIT

In accordance with MSB 43.10.065(G), I hereby certify that I posted the prescribed vacation notice for 30 days prior to the public hearing along the boundary of the property at all common points of access to that portion of the proposed right-of-way vacation.

Date Posted: 4/3/2021 2:19 pm Platting Case #: 2021-039/040

Public Hearing date: 05/06/2021

Francine Schilmoeller Larsen
Printed Name

Signature

5303 Hillary Circle
Mailing Address

(907) 333-9222
Phone Number

Anchorage, AK Zip: 99508

NOTARY CERTIFICATION

State of Alaska)
)ss
Third Judicial District)

SUBSCRIBED and SWORN to (or affirmed) before me this 6th day of April

2021, by Francine Schilmoeller Larsen
(name of signers(s))

NICK VONGVICHITH
Notary Public
State of Alaska
My Commission Expires Mar 17, 2024

(signature and seal of notary)
My commission expires: 03/17/2024

This form must be signed, notarized and submitted to the Platting Division prior to the public hearing.

EXHIBIT B-9

MATANUSKA-SUSITNA BOROUGH
Planning and Land Use Department
Platting Division
PUBLIC NOTICE OF
VACATION OF A PUBLIC
RIGHT-OF-WAY

EXHIBIT B -10

Amy Otto-Buchanan

From: Francine Larsen <francine.larsen@gmail.com>
Sent: Tuesday, April 6, 2021 10:39 PM
To: Amy Otto-Buchanan
Cc: s.stragier@frontiersurveys.com
Subject: Larsen - Notice of Hearing Re Right of Way Vacation, POSTED 04/03/2021
Attachments: Posting Affidavit, Larsen 04032021.pdf; Photo of Public Hearing Notice of Right-of-Way Vacation, Posted 040321 .jpg

[**EXTERNAL EMAIL** - CAUTION: Do not open unexpected attachments or links.]
Please be advised that the MSB requirement to post a notice of hearing regarding our request to vacate the right-of-way at W. Alamo and Melozzi-Hot Springs was performed on Sat. 4/3/21, allowing for more than 30 days prior notification of the calendared meeting, now set a day earlier, on May 5th, at 1pm.

Attached is my posting affidavit, notarized today, and photo of the posted notice.

Best regards,
Francine Schilmoeller Larsen
907-333-9222

EXHIBIT B-//

Matanuska-Susitna Borough
Telephone (907) 861-7874

350 East Dahlia Avenue
Palmer, Alaska 99645-6488

VARIANCE APPLICATION

This application is to the Matanuska-Susitna Borough Platting Board for a variance from the Subdivision Ordinance, Title 43. The application must include all of the information listed below. Incomplete applications will not be processed.

Legal description of property: Lots 1-1, 1-2, Block 3; Lots 5, 6, Block 4
Texas Subdivision Plat No. 63-15

An application for a variance from a requirement of Title 43 shall contain:

1. The preliminary plat to which the variance pertains or, if presented separately, a graphic representation of what the future platting project would entail;

2. A description of the variance requested including the code section reference;

3. Explain the special circumstances for the variance *on separate pages*, addressing criteria A, B, & C as required in MSB 43.15.075.
   A. *The granting of the variance shall not be detrimental to the public health, safety or welfare, or injurious to adjacent property; and*
   B. *The variance request is based upon conditions of the property that are atypical to other properties; and*
   C. *Because of unusual physical surroundings, shape, or topographical conditions of the property for which the variance is sought, or because of the taking of a part of the property through condemnation or because of surrounding development or conditions, the strict application of MSB 43.20 shall result in undue substantial hardship to the owner of the property.*

I, Shane Stragier the owner (or owner's representative) of the above described property apply for a variance from Section 43.20.060 of the Borough Code in order to allow:

See attached page for variance request addressing criteria A, B & C above.

(Variances from Road Design Standards are variances from MSB 43.20.140, described within the Subdivision Construction Manual).

APPLICANT OR OWNER

Name: Francine Larsen Email: Francine.Larsen@gmail.com
Mailing Address: 5303 Sillary Cir. Anchorage, Ak Zip: 99508
Signature: Francine Larsen Phone: 907-764-8724

SURVEYOR

Name (FIRM): Frontier Surveys Email: s.stragier@frontiesurveys.com
Mailing Address: 650 W 58th Ave Suite Anchorage, AK Zip: 99518
Contact Person: Shane Stragier Phone: 907-460-1686

Matanuska-Susitna Borough
Telephone (907) 861-7874

350 East Dahlia Avenue
Palmer, Alaska 99645-6488

MSB has requested a variance for Larsen Estates, MSB Case # 2021-XXX, for MSB Title 43.20.060(C), Dedication of Right-of-Way, for dedicated ROW of S. Melozzi Hot Springs Rd of 30' specifically;

> *Roads shall be dedicated for access to all lots within the subdivision and parcels of land adjacent to the subdivision except that access to adjoining lands does not have to be provided where legal and constructible alternative access is available. Dedications shall be a minimum of 60 feet wide and sufficient to carry all traffic generated by the subdivision and to provide residential rights-of-way for projected traffic through the subdivision. Sixty-foot radius rights-of-way shall be dedicated at temporary and permanent cul-de-sacs.*

The Owner requests acceptance of this variance by the following statements;

- The original 1961 plat dedicated 30' Right-of Way for S. Melozzi Hot Springs Rd. Access along S. Melozzi Hot Springs Rd & W Alamo Rd. has been ongoing for 60 years.
- MSB has maintained S. Melozzi Hot Springs Rd. in its current form for many years.
- Adjusting the common boundary of Lot 1A & 5A and S. Melozzi Hot Springs Rd an additional 20'/30' would lessen the square footage of Lot 1A & 5A of these substandard lots even more.
- Would the MSB want portions of S. Melozzi Hot Springs Rd ROW to vary from 30' to a greater width along the subject properties and then back again? This would cause a non-symmetrical road width along S. Melozzi Hot Springs.
- Why is it incumbent of the Owner to "absorb" the entire additional 20'/30' in ROW width? Should the Owners of the property on the opposite side of S. Melozzi Hot Springs Rd wish to subdivide, they would not be required to provide for additional ROW encumbrance, and thus be privileged to maintain existing square footage and maximum value of said land.
- In Texas Subdivision all lots are already developed and the number of lots will not increase due to subdivision and thus little to no increase in traffic will affect S. Melozzi Hot Springs Rd.

MSB 43.17.075(A):

The granting of this variance is not detrimental to public health, safety or the welfare of the surrounding community. Access to all Texas Subdivsion from S. Melozzi Hot Springs Rd. is still facilitated.

MSB 43.17.075(B):

Existing access to Texas Subdivision is gained through S. Melozzi Hot Springs Road and W. Alamo Rd. Existing infrastructure and development has already incurred for most lots in Texas Subdivision. The 30' existing ROW has worked for the public for approximately 60 years. Lots 1A & 5A are already sub-

Matanuska-Susitna Borough
Telephone (907) 861-7874

350 East Dahlia Avenue
Palmer, Alaska 99645-6488

standard lots, adding another 20'/30' of ROW will make them further substandard lots and potentially not developable.

MSB 43.17.075(C):

Granting of this variance allows for the owner of Lots 1A & 5A Larsen Estates to maintain as much buildable area in an already substandard lot. By adding another 20'/30' of ROW along the frontage of S Melozzi Hot Springs Rd will make the useable/buildable area very difficult with current MSB property and ROW setbacks.

Amy Otto-Buchanan

From: Jamie Taylor
Sent: Tuesday, April 20, 2021 4:59 PM
To: Amy Otto-Buchanan
Subject: RE: RFC Larsen Est #21-039

Proposed ROW dedication shall be a minimum of 60' wide. Dedicate an additional 15' of ROW along Melozzi Hot Springs Road to help accommodate the existing road.

Jamie Taylor, PE
Civil Engineer
Matanuska-Susitna Borough
Department of Public Works
Operations & Maintenance
t: 907-861-7765 c: 907-355-9810
jamie.taylor@matsugov.us
http://www.matsugov.us/

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Wednesday, March 31, 2021 9:08 AM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; mokietew@gmail.com; akchief@mtaonline.net; hsfirewise@gmail.com; clinchnot@yahoo.com; Fire Code <Fire.Code@matsugov.us>; John Fairchild <John.Fairchild@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; msb.hpc@gmail.com; Brad Sworts <Brad.Sworts@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>; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; 'Cassie Acres' <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Larsen Est #21-039

The following link contains a Request for Comments for Larsen Est, along with a vacation and variance request. Comments are due by April 19, 2021. Please let me know if you have any questions. Thanks, A.

https://matsugovus-my.sharepoint.com/:f:/g/personal/amy_otto-buchanan_matsugov_us/EikqY1LsQtpMl9Yy6rMRrGQBZI4m3qXv55A094qZAJHIUQ?e=cceeah

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

EXHIBIT D

Amy Otto-Buchanan

From: Fire Code
Sent: Monday, April 19, 2021 11:26 AM
To: Amy Otto-Buchanan
Subject: RE: RFC Larsen Est #21-039

Amy,
Fire Code has no issue with this.

Donald Cuthbert
Fire Marshal
Fire & Life Safety Division
Central Mat-Su Fire Department
(907) 861-8030
FireCode@matsugov.us

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Wednesday, March 31, 2021 9:08 AM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; mokietew@gmail.com; akchief@mtaonline.net; hsfirewise@gmail.com; clinchnot@yahoo.com; Fire Code <Fire.Code@matsugov.us>; John Fairchild <John.Fairchild@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; msb.hpc@gmail.com; Brad Sworts <Brad.Sworts@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>; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; 'Cassie Acres' <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Larsen Est #21-039

The following link contains a Request for Comments for Larsen Est, along with a vacation and variance request. Comments are due by April 19, 2021. Please let me know if you have any questions. Thanks, A.

https://matsugovus-my.sharepoint.com/:f:/g/personal/amy_otto-buchanan_matsugov_us/EikqY1LsQtpMl9Yy6rMRrGQBZI4m3qXv55A094qZAJHlUQ?e=cceeah

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

EXHIBIT E

Amy Otto-Buchanan

From: Holly Sparrow <hsparrow@mtasolutions.com>
Sent: Friday, April 2, 2021 2:28 PM
To: Amy Otto-Buchanan
Subject: RE: RFC Larsen Est #21-039

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

MTA has reviewed the plat for Larsen Estates. MTA has no comments.

Thank you for the opportunity to comment.

Holly Sparrow, Right of Way Agent
MTA | 1740 S. Chugach Street | Palmer, Alaska 99645
office: 907-761-2599 | www.mtasolutions.com

Life. Technology. Together.

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Wednesday, March 31, 2021 9:08 AM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; mokietew@gmail.com; akchief@mtaonline.net; hsfirewise@gmail.com; clinchnot@yahoo.com; Fire Code <Fire.Code@matsugov.us>; John Fairchild <John.Fairchild@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; msb.hpc@gmail.com; Brad Sworts <Brad.Sworts@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>; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; 'Cassie Acres' <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Larsen Est #21-039

The following link contains a Request for Comments for Larsen Est, along with a vacation and variance request. Comments are due by April 19, 2021. Please let me know if you have any questions. Thanks, A.

https://matsugovus-my.sharepoint.com/:f:/g/personal/amy_otto-buchanan_matsugov_us/EikqY1LsQtpMI9Yy6rMRrGQBZI4m3qXv55A094qZAJHIUQ?e=cceeah

EXHIBIT F - /

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

April 6, 2021

Matanuska-Susitna Borough, Platting Division
350 East Dahlia Avenue
Palmer, AK 99645-6488

To whom it may concern:

ENSTAR Natural gas company has reviewed the following preliminary plats and has no comments or recommendations.

- **Larsen Estates**
  (MSB Case # 2021-039)

If you have any questions, please feel free to contact me at (907) 334-7944 or by email at cassie.acres@enstarnaturalgas.com.

Sincerely,

Cassie Acres

Cassie Acres
ROW & Compliance Technician
ENSTAR Natural Gas Company

EXHIBIT F-2

Amy Otto-Buchanan

From: Tammy L. Simmons <Tammy.Simmons@mea.coop>
Sent: Monday, April 12, 2021 1:18 PM
To: Amy Otto-Buchanan
Subject: RE: RFC Larsen Est #21-039

[**EXTERNAL EMAIL** - CAUTION: Do not open unexpected attachments or links.]
MEA comments to include a 15 feet wide utility easement along all road rights-of-ways.

Thank you.

Tammy Simmons, SR/WA
Right of Way Technician
907-761-9276

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Wednesday, March 31, 2021 9:08 AM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamela.j.melchert@usps.gov; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; mokietew@gmail.com; akchief@mtaonline.net; hsfirewise@gmail.com; clinchnot@yahoo.com; Fire Code <Fire.Code@matsugov.us>; John Fairchild <John.Fairchild@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; msb.hpc@gmail.com; Brad Sworts <Brad.Sworts@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>; Planning <MSB.Planning@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Mark Whisenhunt <Mark.Whisenhunt@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; MEA_ROW <MEAROW@mea.coop>; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; 'Cassie Acres' <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Larsen Est #21-039

CAUTION: This email originated from outside of the MEA.coop organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

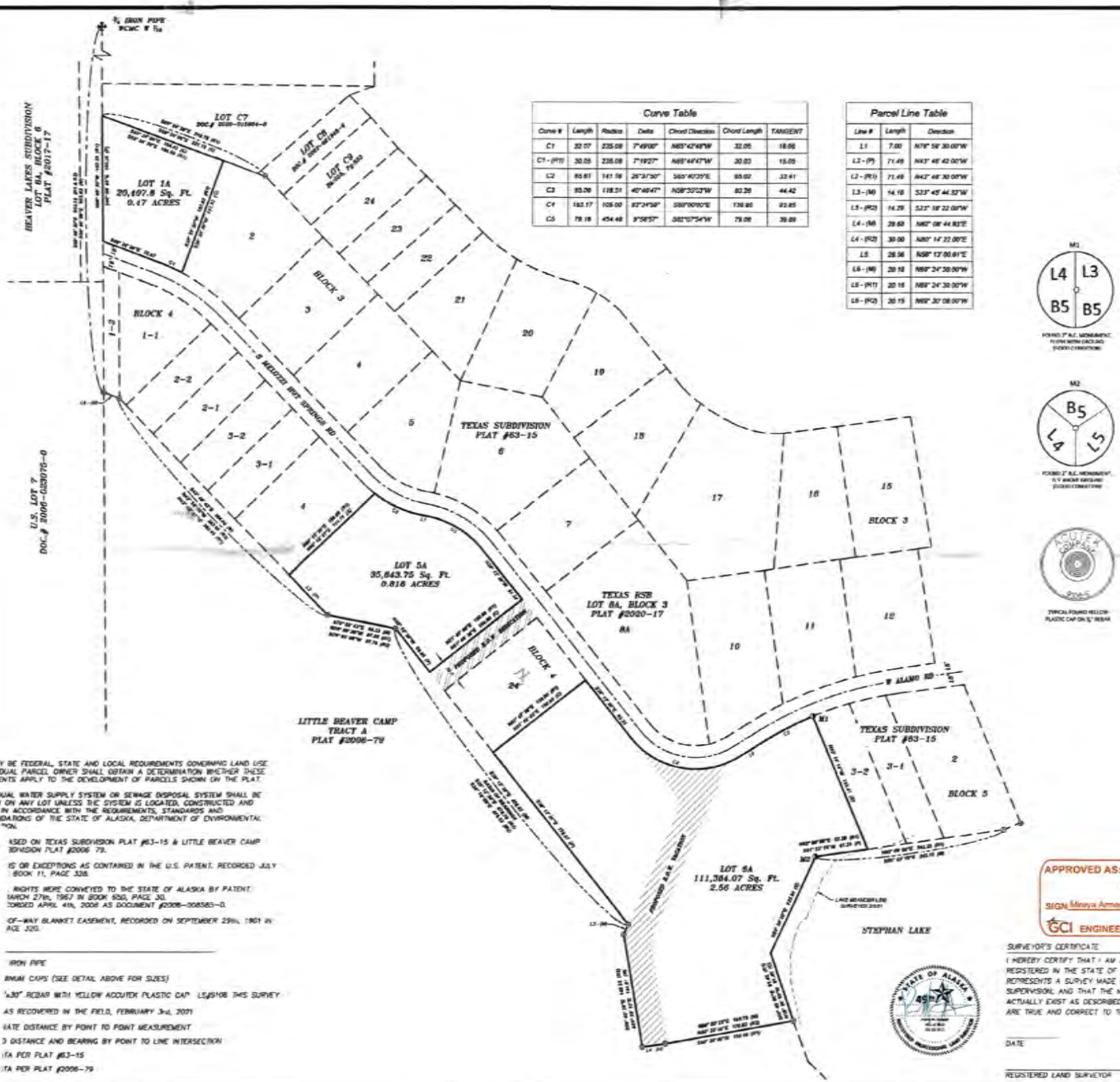
The following link contains a Request for Comments for Larsen Est, along with a vacation and variance request. Comments are due by April 19, 2021. Please let me know if you have any questions. Thanks, A.

https://matsugovus-my.sharepoint.com/:f:/g/personal/amy_otto-buchanan_matsugov_us/EikqY1LsQtpMI9Yy6rMRrGQBZI4m3qXv55A094qZAJHlUQ?e=cceeah

Please open in Chrome or copy & paste. Opening in Microsoft Edge creates viewing issues.

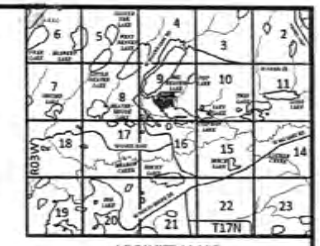
Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

EXHIBIT F-3



Curve Table						
Curve #	Length	Radius	Delta	Chord Direction	Chord Length	TANGENT
C1	32.07	235.00	7°49'00"	N65°42'48"W	32.05	16.06
C1 - (R1)	30.05	235.00	7°19'27"	N65°44'47"W	30.03	15.05
C2	85.61	141.16	29°31'30"	S60°40'35"E	85.02	33.41
C3	85.09	118.31	40°46'47"	N58°35'23"W	83.28	44.42
C4	152.17	105.00	83°04'58"	S88°00'00"E	139.05	93.85
C5	79.18	454.49	9°58'57"	S62°07'54"W	79.08	39.69

Parcel Line Table		
Line #	Length	Direction
L1	7.00	N76° 59' 30.00"W
L2 - (P)	71.49	N43° 46' 42.00"W
L2 - (R1)	71.49	N43° 46' 30.00"W
L3 - (M)	14.16	S33° 45' 44.52"W
L3 - (R2)	14.29	S33° 18' 22.00"W
L4 - (M)	29.63	N82° 08' 44.83"E
L4 - (R2)	30.00	N80° 14' 22.00"E
L5	26.56	N58° 13' 00.61"E
L6 - (M)	20.15	N89° 24' 30.00"W
L6 - (R1)	20.15	N89° 24' 30.00"W
L6 - (R2)	20.15	N89° 30' 08.00"W



VICINITY MAP
SCALE: 1" = 1 MILE
TAX MAP: H012

NOTES:

1. THERE MAY BE FEDERAL, STATE AND LOCAL REQUIREMENTS GOVERNING LAND USE. THE INDIVIDUAL PARCEL OWNER SHALL OBTAIN A DETERMINATION WHETHER THESE REQUIREMENTS APPLY TO THE DEVELOPMENT OF PARCELS SHOWN ON THE PLAT.
2. NO INDIVIDUAL WATER SUPPLY SYSTEM OR SEWAGE DISPOSAL SYSTEM SHALL BE PERMITTED ON ANY LOT UNLESS THE SYSTEM IS LOCATED, CONSTRUCTED AND EQUIPPED IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS AND RECOMMENDATIONS OF THE STATE OF ALASKA, DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

ASED ON TEXAS SUBDIVISION PLAT #63-15 & LITTLE BEAVER CAMP SUBDIVISION PLAT #2006-79.

IS OR EXCEPTIONS AS CONTAINED IN THE U.S. PATENT, RECORDED JULY BOOK 11, PAGE 326.

RIGHTS WERE CONVEYED TO THE STATE OF ALASKA BY PATENT: MARCH 27th, 1967 IN BOOK 650, PAGE 30, CORDED APRIL 4th, 2006 AS DOCUMENT #2006-008585-0.

OF-WAY BLANKET EASEMENT, RECORDED ON SEPTEMBER 25th, 1961 IN AGE 320.

IRON PIPE

BRASS CAPS (SEE DETAIL ABOVE FOR SIZES)

x30" REBAR WITH YELLOW ACCUTEK PLASTIC CAP LS#9108 THIS SURVEY

AS RECOVERED IN THE FIELD, FEBRUARY 3rd, 2021

MEASURED DISTANCE BY POINT TO POINT MEASUREMENT

D DISTANCE AND BEARING BY POINT TO LINE INTERSECTION

ITA PER PLAT #63-15

ITA PER PLAT #2006-79

EXHIBIT F-4

CERTIFICATE OF OWNERSHIP

I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED IN THIS PLAN AND THAT I HEREBY ADOPT THIS PLAN OF SUBDIVISION BY MY FREE CONSENT.

FRANCINE SHELMOELLER LARSEN
5303 SILLARY CIRCLE
ANCHORAGE, ALASKA 99508

DATE

FRANCIE SHELMOELLER LARSEN, TRUSTEE
BRUCE M. GREEN & FRANCINE SHELMOELLER LARSEN TRUST
5303 SILLARY CIRCLE
ANCHORAGE, ALASKA 99508

DATE

NOTARY'S ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____ 20____ FOR _____

NOTARY FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES:_____

NOTARY'S ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____ 20____ FOR _____

NOTARY FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES:_____

CERTIFICATE OF PAYMENT OF TAXES

I HEREBY CERTIFY THAT ALL CURRENT TAXES AND SPECIAL ASSESSMENTS, THROUGH _____ 20____ AGAINST THE PROPERTY, INCLUDED IN THE SUBDIVISION OR RESUBDIVISION, HEREON HAVE BEEN PAID.

_____ 20____

TAX COLLECTION OFFICIAL (BOROUGH)

PLANNING DIRECTOR'S CERTIFICATE

I CERTIFY THAT THIS SUBDIVISION PLAN HAS BEEN FOUND TO COMPLY WITH THE LAND SUBDIVISION REGULATIONS OF THE MATANUSKA-SUSITNA BOROUGH, AND THAT THE PLAT HAS BEEN APPROVED BY THE PLATTING AUTHORITY BY PLAT RESOLUTION NUMBER _____ DATED _____ 20____ AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RECORDER IN THE PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA IN WHICH THE PLAT IS LOCATED.

_____ 20____

PLANNING AND LAND USE DIRECTOR

ATTEST:

PLATTING CLERK

Agenda Co

APPROVED AS: SHOWN ☒
CORRECTED ☐
SIGN Mineya Armesto DATE 04/13/2021
GCI ENGINEERING & DESIGN

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN ON THE PLAT ACTUALLY EXIST AS DESCRIBED, AND THAT ALL OTHER DETAILS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

DATE _____ REGISTRATION NUMBER _____

REGISTERED LAND SURVEYOR

Plat of:

Larsen Estates

A Subdivision of
Lots 1-1 & 1-2, Block 3; Lots 5, 6, 8, 9, Block 4 & Lots 4, 5, 6, 7, Block 5 Texas Subdivision Plat #63-15
Section 9 T17N R03W S.M. Alaska
Palmer Recording District, Third Judicial District
State of Alaska
Containing XX.XX Acres More or Less

Tax Map: H012
Scale: 1"=100'
Drawn: SS / Checked: PS
AECL# 1615
Date: 03/18/2021
MSB Case No.: N/A
SHEET: 1 of 1

FRONTIER Surveys

Curve Table						
Curve #	Length	Radius	Delta	Chord Direction	Chord Length	TANGENT
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L2 - (R1)	71.48	N43° 48' 30.00"W
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L3 - (R2)	14.29	S23° 18' 22.00"W
L4 - (M)	29.68	N82° 08' 44.83"E
L4 - (R2)	30.00	N80° 14' 22.00"E
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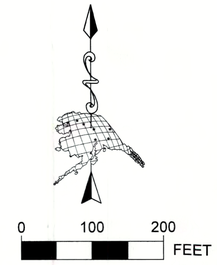
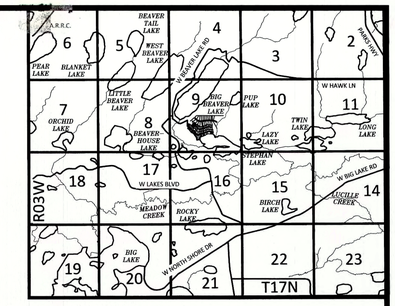
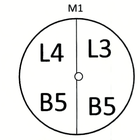
L6 - (R1)	20.16	N69° 24' 30.00"W
L6 - (R2)	20.15	N69° 30' 08.00"W





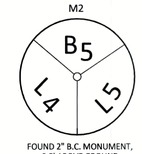
VICINITY MAP
SCALE: 1" = 1 MILE
TAX MAP H012

M1



FOUND 2" B.C. MONUMENT, FLUSH WITH GROUND (GOOD CONDITION)

M2



FOUND 2" B.C. MONUMENT, 0.5' ABOVE GROUND (GOOD CONDITION)

TYPICAL FOUND YELLOW PLASTIC CAP ON 5/8" REBAR

NOTES:

1. THERE MAY BE FEDERAL, STATE AND LOCAL REQUIREMENTS GOVERNING LAND USE. THE INDIVIDUAL PARCEL OWNER SHALL OBTAIN A DETERMINATION WHETHER THESE REQUIREMENTS APPLY TO THE DEVELOPMENT OF PARCELS SHOWN ON THE PLAT.
2. NO INDIVIDUAL WATER SUPPLY SYSTEM OR SEWAGE DISPOSAL SYSTEM SHALL BE PERMITTED ON ANY LOT UNLESS THE SYSTEM IS LOCATED, CONSTRUCTED AND EQUIPPED IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS AND RECOMMENDATIONS OF THE STATE OF ALASKA, DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
3. THIS PLAT BASED ON TEXAS SUBDIVISION PLAT #63-15 & LITTLE BEAVER CAMP TRACT A SUBDIVISION PLAT #2006-79.
4. RESERVATIONS OR EXCEPTIONS AS CONTAINED IN THE U.S. PATENT. RECORDED JULY 8th, 1955 IN BOOK 11, PAGE 328.
5. THE MINERAL RIGHTS WERE CONVEYED TO THE STATE OF ALASKA BY PATENT. RECORDED MARCH 27th, 1967 IN BOOK 65D, PAGE 30. AND RE-RECORDED APRIL 4th, 2006 AS DOCUMENT #2006-008585-0.
6. MEA RIGHT-OF-WAY BLANKET EASEMENT, RECORDED ON SEPTEMBER 29th, 1961 IN BOOK 38, PAGE 320.

LEGEND

- FOUND 3/4" IRON PIPE
- FOUND ALUMINUM CAPS (SEE DETAIL ABOVE FOR SIZES)
- FOUND 5/8"x30" REBAR WITH YELLOW ACCUTEK PLASTIC CAP LS#9106 THIS SURVEY
- **(M)** MEASURED AS RECOVERED IN THE FIELD, FEBRUARY 3rd, 2021
- **(P)** PROPORTIONATE DISTANCE BY POINT TO POINT MEASUREMENT
- **(C)** CALCULATED DISTANCE AND BEARING BY POINT TO LINE INTERSECTION
- **(R1)** RECORD DATA PER PLAT #63-15
- **(R2)** RECORD DATA PER PLAT #2006-79

CERTIFICATE OF OWNERSHIP

I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED IN THIS PLAN AND THAT I HEREBY ADOPT THIS PLAN OF SUBDIVISION BY MY FREE CONSENT.

_____
FRANCINE SHILMOELLER LARSEN
5303 SILLARY CIRCLE
ANCHORAGE, ALASKA 99508

_____
DATE

_____
FRANICE SHILMOELLER LARSEN, TRUSTEE
BRUCE M. GREEN & FRANCINE SHILMOELLER LARSEN TRUST
5303 SILLARY CIRCLE
ANCHORAGE, ALASKA 99508

_____
DATE

NOTARY'S ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____, 20_____, FOR _____.

_____
NOTARY FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES: _____

NOTARY'S ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____, 20_____, FOR _____.

_____
NOTARY FOR THE STATE OF ALASKA

MY COMMISSION EXPIRES: _____

CERTIFICATE OF PAYMENT OF TAXES

I HEREBY CERTIFY THAT ALL CURRENT TAXES AND SPECIAL ASSESSMENTS, THROUGH _____, 20_____, AGAINST THE PROPERTY, INCLUDED IN THE SUBDIVISION OR RESUBDIVISION, HEREON HAVE BEEN PAID.

_____, 20____

TAX COLLECTION OFFICIAL (BOROUGH)

PLANNING DIRECTOR'S CERTIFICATE

I CERTIFY THAT THIS SUBDIVISION PLAN HAS BEEN FOUND TO COMPLY WITH THE LAND SUBDIVISION REGULATIONS OF THE MATANUSKA-SUSITNA BOROUGH, AND THAT THE PLAT HAS BEEN APPROVED BY THE PLATTING AUTHORITY BY PLAT RESOLUTION NUMBER _____, DATED _____ 20___, AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RECORDER IN THE PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA IN WHICH THE PLAT IS LOCATED.

_____, 20____

Agenda Copy

_____
PLANNING AND LAND USE DIRECTOR

RECEIVED
MAR 1 6 2021
PLATTING

ATTEST:

_____
PLATTING CLERK

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN ON THE PLAT ACTUALLY EXIST AS DESCRIBED, AND THAT ALL OTHER DETAILS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

STATE OF ALASKA 49TH Pierre M. Stringer No. LS-9812 03/18/2021 REGISTERED PROFESSIONAL LAND SURVEYOR

_____ DATE _____ REGISTRATION NUMBER

_____
REGISTERED LAND SURVEYOR

Plat of:
Larsen Estates

A Subdivision of
Lots 1-1 & 1-2, Block 3; Lots 5, 6, 8, 9, Block 4 & Lots 4, 5, 6, 7, Block 5 Texas Subdivision Plat #63-15
Section 9 T17N R03W S.M. Alaska
Palmer Recording District, Third Judicial District
State of Alaska
Containing XX.XX Acres More or Less

Tax Map: H012	
Scale: 1"=100'	
Drawn: SS / Checked: PS	
AECL# 1615	
Date: 03/18/2021	
MSB Case No.: N/A	
SHEET: 1 of 1	

FRONTIER Surveys
650 W 58th Avenue Suite E
Anchorage, Alaska 99518
Tel: 1-907-460-1686