

# Rope break on takeoff...where are you going to land?

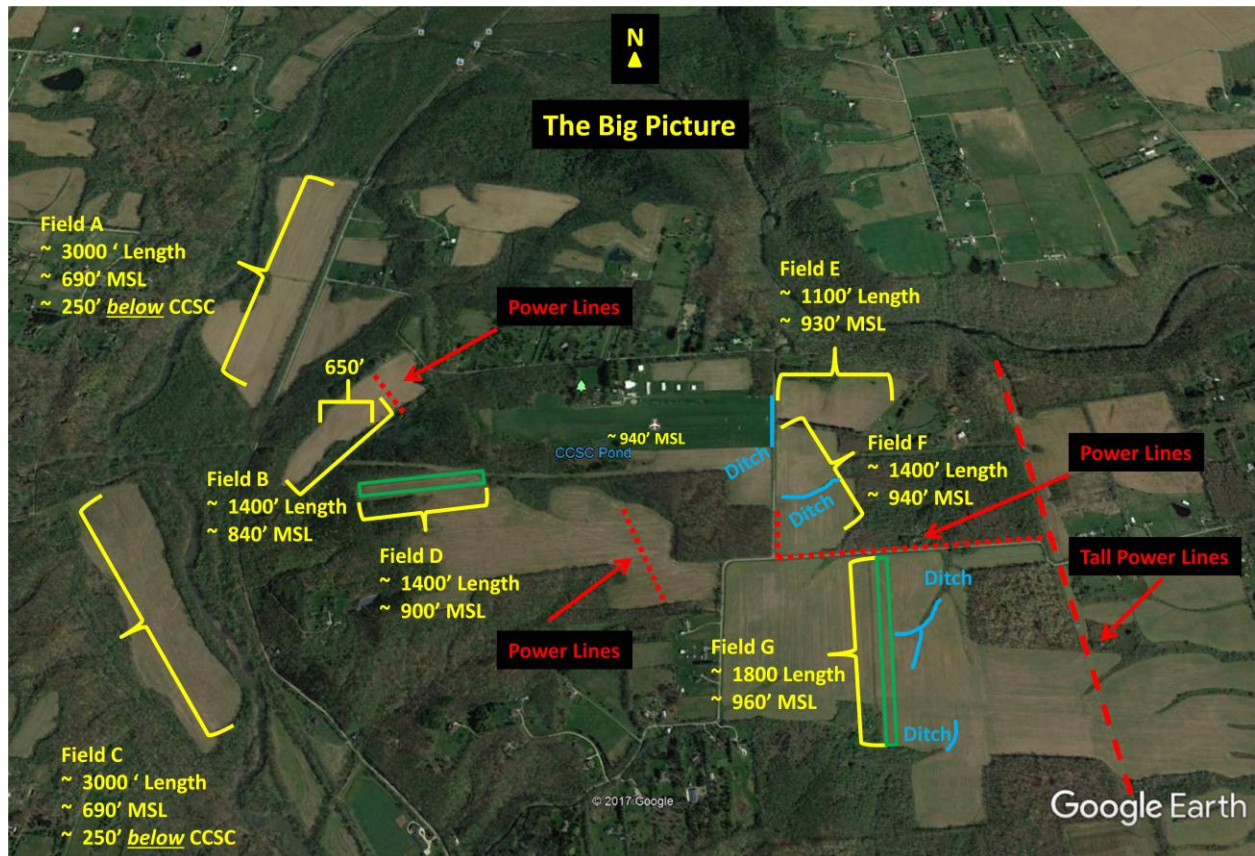
Kevin Price, CCSC Safety Officer  
Nov 30, 2017

Many pilots use the 200' **AGL** rule-of-thumb for a turn-back decision point on takeoff for a rope break, inadvertent disconnect, or problem with the tow plane. Regardless of what **AGL** rule of you use, there is a point during takeoff where you will be unable to turn back to the field to land. Hopefully for operations at CCSC you have scoped out your landing options if you choose to not turn back to CCSC. Or, in case you do decide to turn back to CCSC, you find that you do not have enough altitude to make the runway. I have given some thought to this and done a little surveying for possible options as well as concerns for continuing ahead to land. I offer those for your consideration below. Please note that this discussion does not consider the effects of crops that may be in the fields. I am assuming an unplanted field which is the case for a few months of the year. Crops though may not be much of a consideration during a rope break just after takeoff since your choice may well come down to corn or trees. I think most pilots would agree that even late year corn is probably a better choice than the trees.

**DISCLAIMER:** I am not trying to tell you where to land in the event of a takeoff emergency. My goal is to make you pause at 0 knots on the ground and give some thought to what could be a life-threatening situation one of these days at 60 knots and 100 feet. I specifically wanted to provide you with some facts and observations about the surrounding fields and hazards so that YOU can make a more informed decision in case of that rope break on takeoff. Landing in any of the fields surrounding CCSC may turn out badly; however, making a decision based on knowledge can increase your chances for success. Above all, you have to use your own judgment and air sense to make safe and proper decisions. I will offer up some observations, thoughts, and ideas, but in the end, you are on your own.

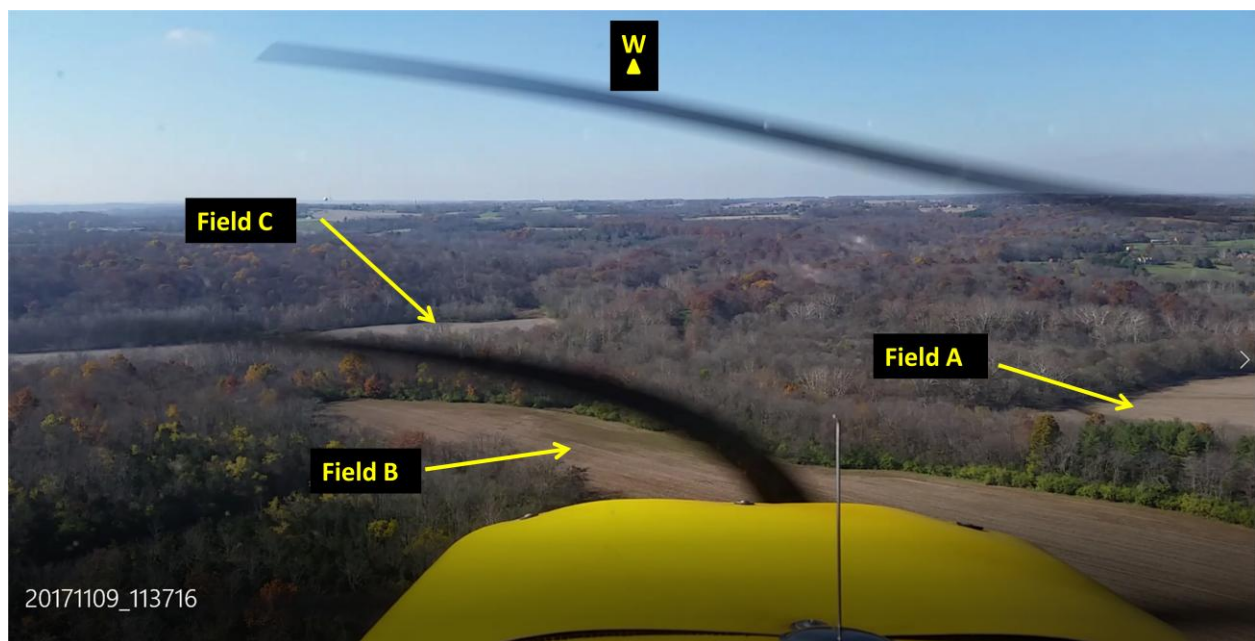
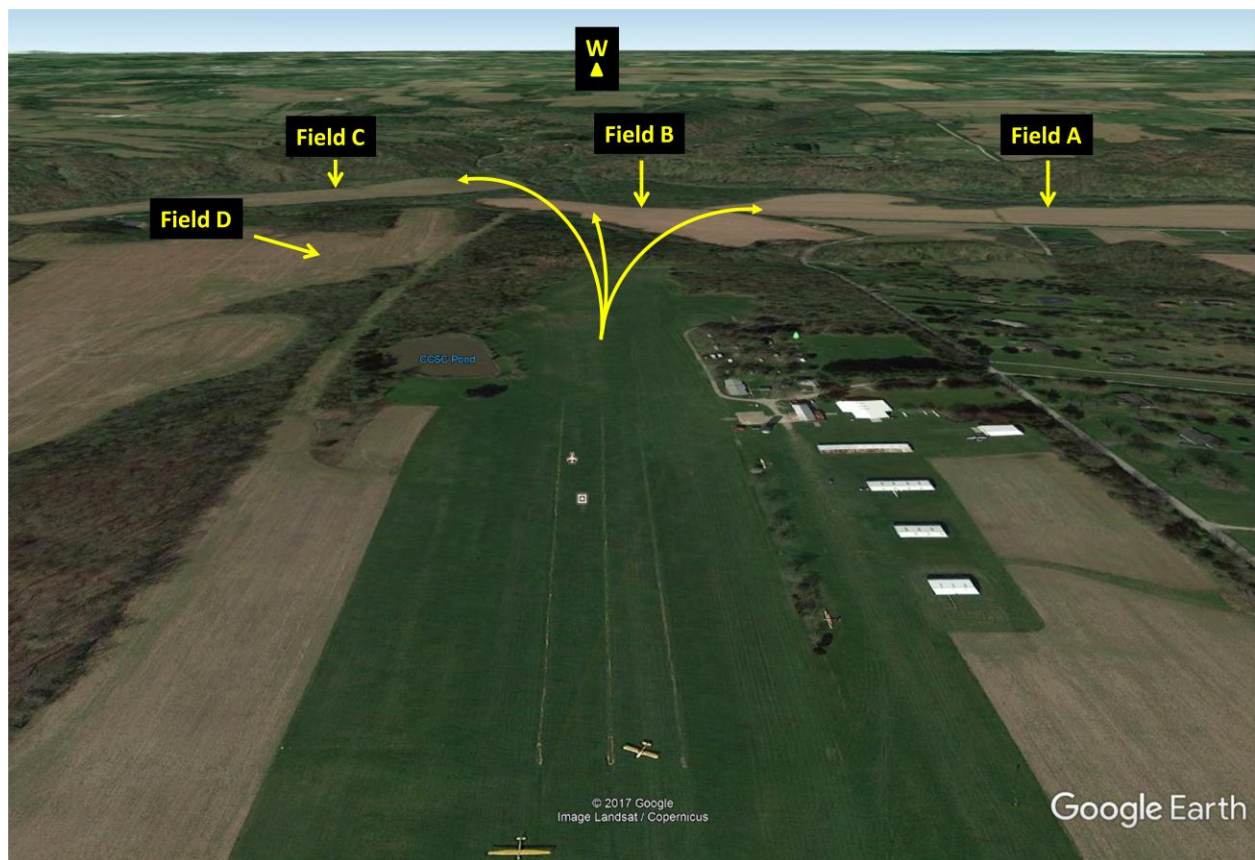


Let's begin by taking a look at an annotated map of the area right around CCSC. I'll then move on to a discussion of possible landing sites and offer up a few other things for you to consider.



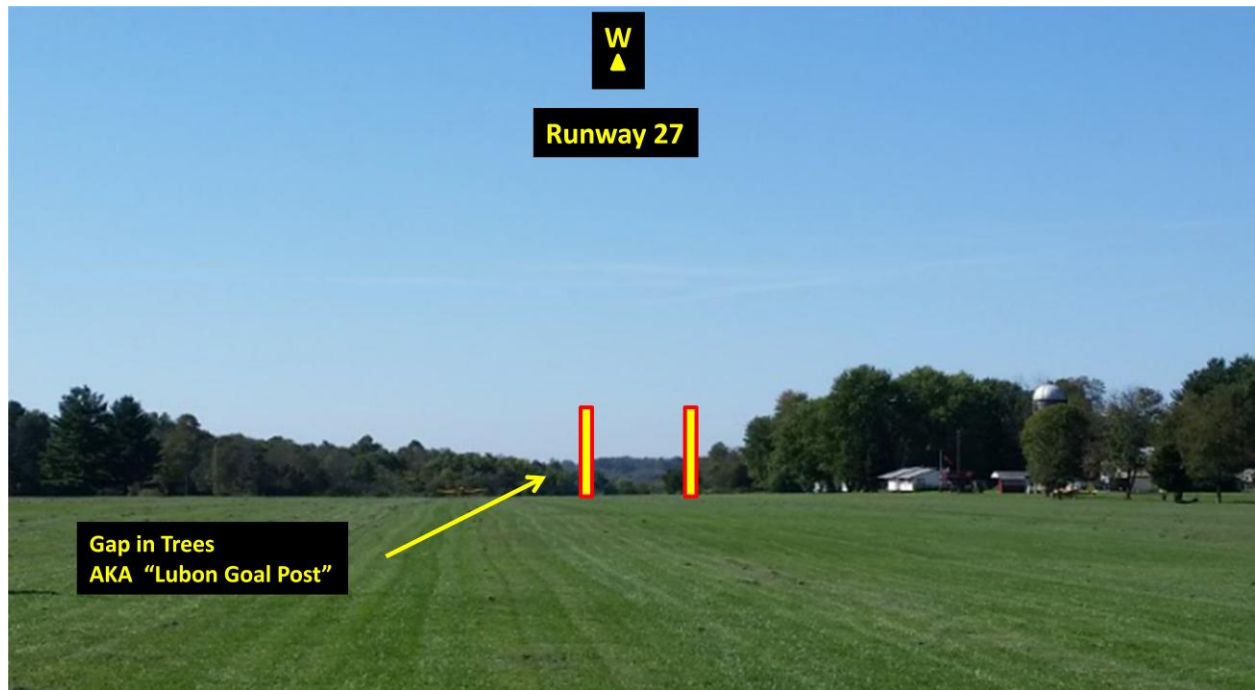
## RUNWAY 27

There are 3 fields which may provide a landing option if you continue ahead. See below for how the fields, labeled A, B, and C, are oriented relative to a runway 27 departure path:





When departing runway 27, there are a few factors to consider and of which to be aware. For one...trees! There are a lot of them, and they present a serious hazard if a rope break occurs just after takeoff and an immediate, straight ahead landing on the remaining runway is not possible. If you have not yet cleared the tree line at the departure end, be mindful of the lower ground elevation and tree height to the right of the runway 27 departure lane. This may provide a gap for you to get past the trees. See below:

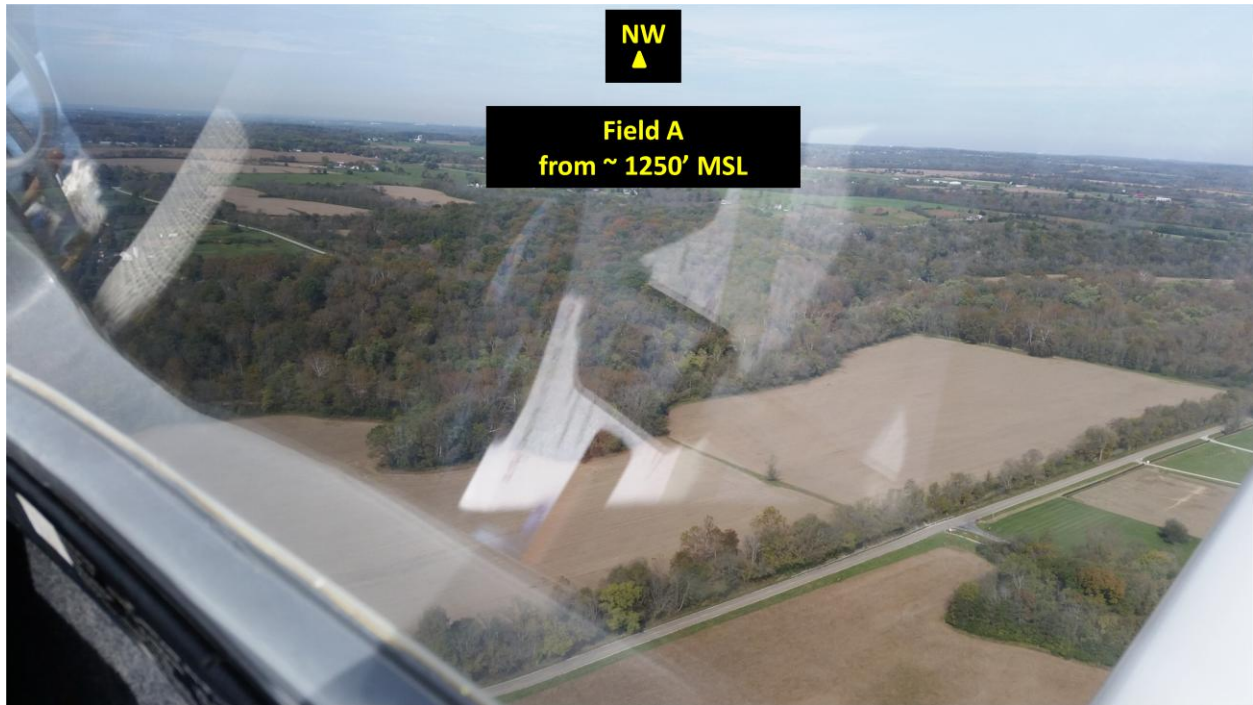


An interesting and helpful factor is that the ground elevation drops away fairly quickly and significantly as you continue west bound. This effectively gives you increased height above the ground for the same MSL altitude. The ground elevation goes from 940' MSL at CCSC to 690' MSL in about 1/2 NM as you proceed to the west. This free AGL gain MAY enable you to make it to any or all of these fields. Whether you can make it to any of these fields depends on your altitude, airspeed, location where the rope breaks, and your piloting skills. Wind can also be a significant factor. A strong west wind will diminish your range whereas a strong south or north wind can give you a significant tailwind depending on which field you choose. You will have to use your own airmanship and judgment to determine if any field is an option for you and whether one field or the other is the better choice based on the wind and other factors. You actually may find you have excess energy for landing in Field A or Field B. Full airbrakes and a slip may be required to land and get stopped in the available field length.

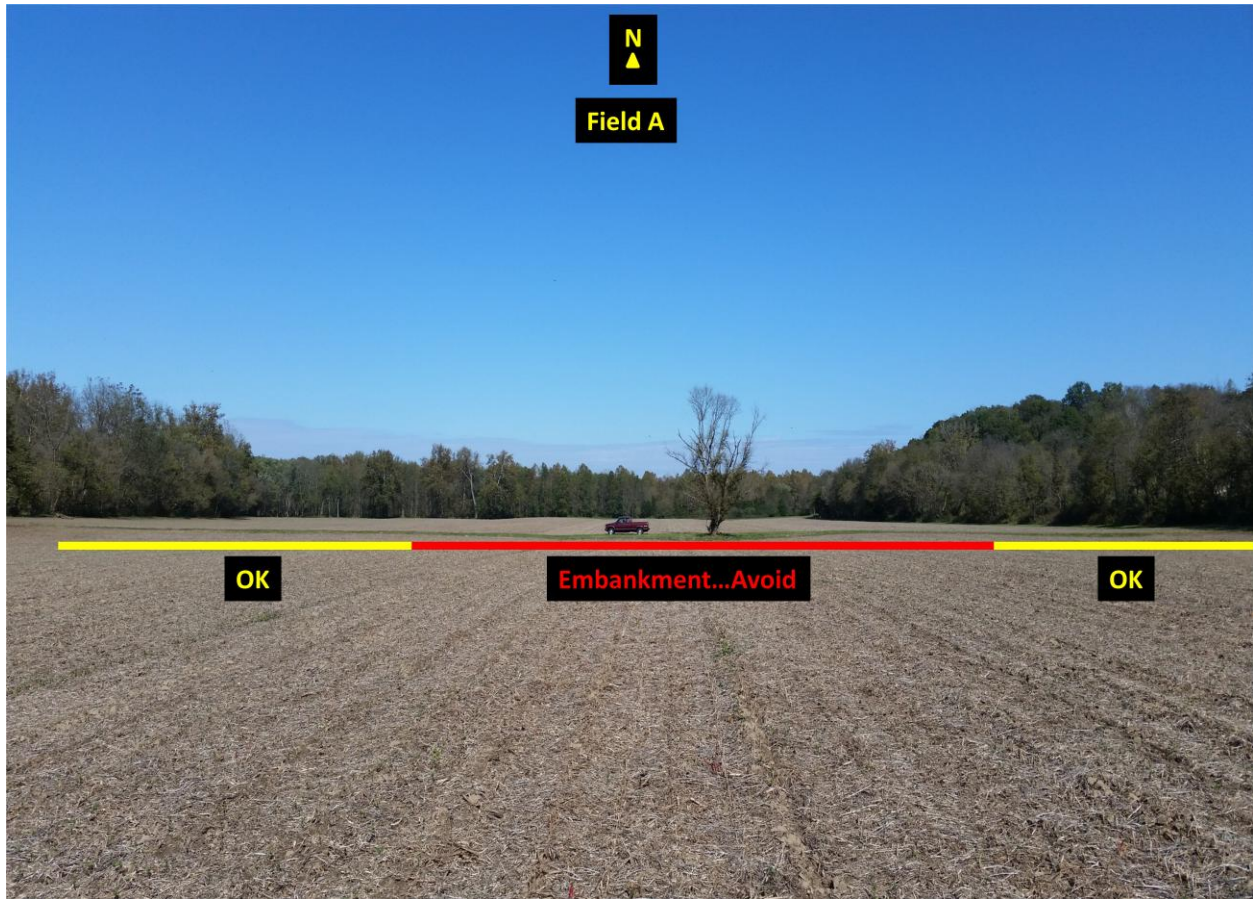
I will now discuss each field individually.

## FIELD A

From the air, Field A appears as seen below. Keep in mind though that this view is higher than what you would see with a rope break below 200 AGL'.

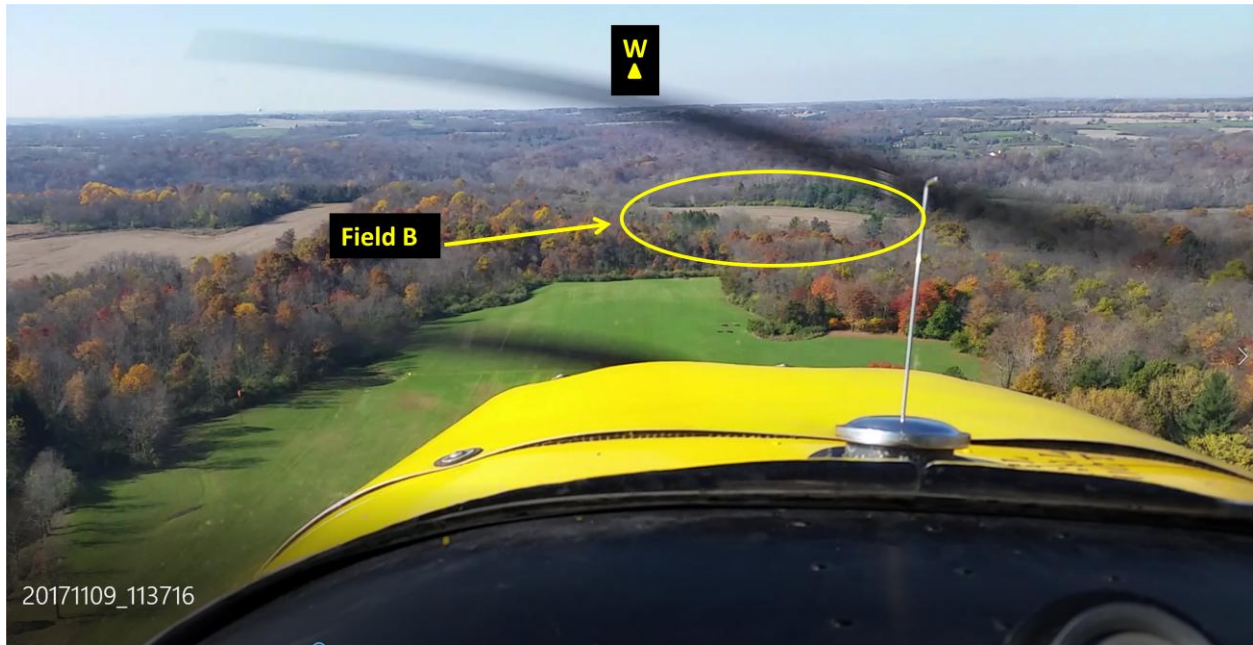


I drove around and through Field A just after harvest. I found it to be quite flat and, with one notable exception, free of any obstacles or features that would complicate landing. The exception is a lone tree in the center of the field about 1/2 way down its length (visible in the picture above). The tree is located on an east/west dividing access lane. Of course you would want to avoid the tree, but you also should not pass within approximately 100' on either side of the tree due to an embankment that quickly rises 3 feet or so up to the access lane. Beyond about 100' though on either side of the tree it is relatively flat. See below:



## FIELD B

Field B, oriented northeast/southwest, lies immediately past the big glen of trees off the departure end of runway 27. The field has a power line on the northeast end leaving about 1400' for a potential landing to the southwest. If you were to just continue straight ahead, Field B is about 650' wide which would make for quite a challenging landing. Due to its limited length, very close proximity to the field, angle to runway 27, and the surrounding trees, I do not know if this field provides a viable landing option. Below is the field as seen from an airplane at 1250' MSL:



## FIELD C

I have serious doubts that Field C would provide a viable landing option with a rope break just after takeoff. Field C is further away than Field A or Field B. Even at 1250' MSL the field is not visible from the departure end of runway 27. You have to continue west for a bit before the field comes into view due to trees. Field C would also require more than a 90 degree turn to align with the field during a landing. However, if you can make it to Field C, it is flat and appears to be free of any obstacles or features that would complicate landing.

Below is a view of Field C from the ground. I could not walk the whole field as I was quickly intercepted by someone who did not appreciate (at first) that I had ignored the No Trespassing sign. After some explanation he allowed me to take a quick picture. From what I could see though and from what I learned from him it seems that this field could be a viable option for an emergency landing. (Not sure when or if it actually happened, but a neighbor said a glider landed in this field back around 2008.)





**Field C**



## **FIELD D**

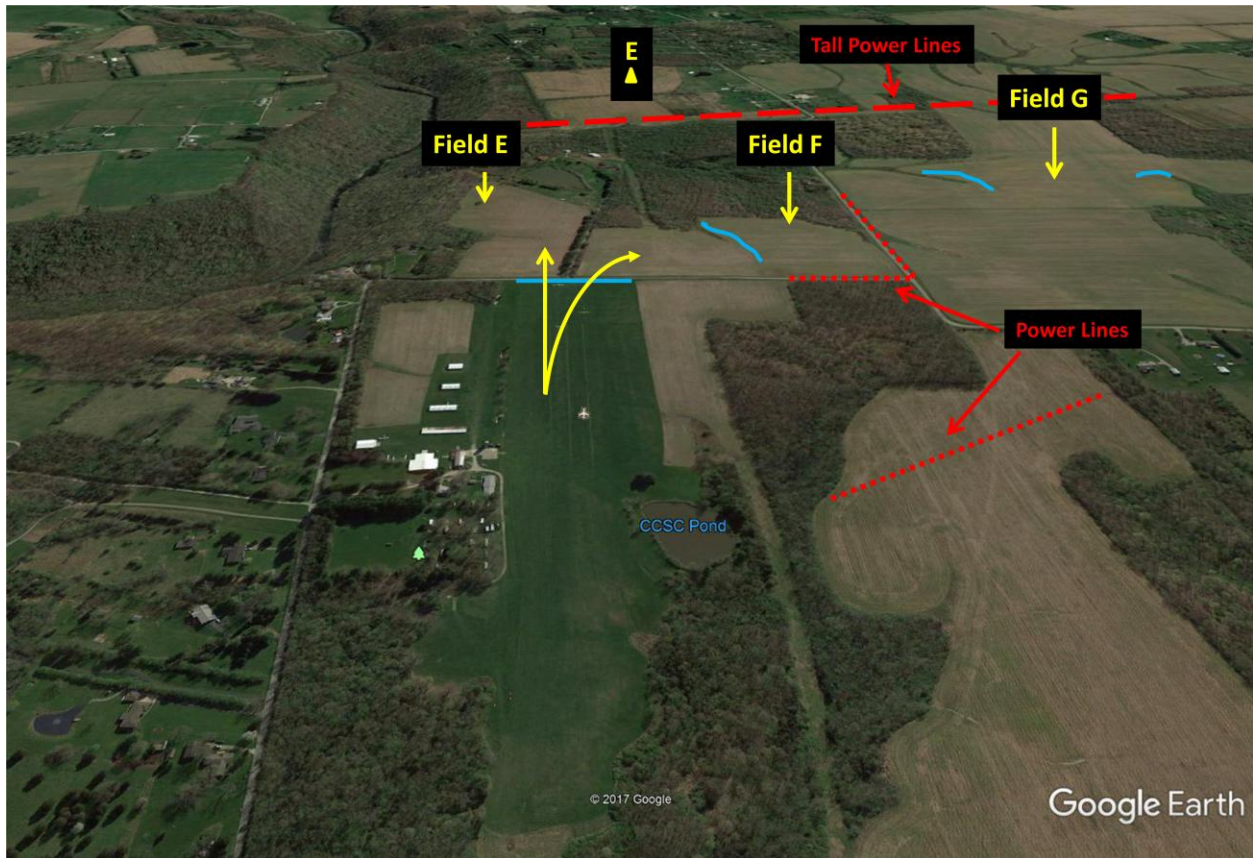
Field D does not provide a straight ahead landing option when departing runway 27. However, if you turn back to CCSC and find you do not have enough altitude to make the runway, Field D may be an option for you. Several landings have been made into Field D over the years. In the Big Picture view map at the beginning I highlighted in a green rectangle a possible landing zone (and likely the only realistic one if you are returning to the field after a rope break on a runway 27 takeoff). Other options for other circumstances also exist in this field. Be aware though of the power lines that run across the east end of the field as shown in the Big Picture map.





## **RUNWAY 09**

There are more and safer options for landing just after takeoff on 09 than what there are for 27. See below for 3 fields, labeled E, F, and G, which may provide you with landing options just after takeoff:



Be aware, however, that there is ***a very significant hazard*** when departing 09. At the end of runway 09 and running along its entire width is a ditch. See the picture below:



**Ditch, Runway 09 Departure End**



For runway 09 operations, we typically have a little less runway available than for 27 due to how we position the aircraft for takeoff because of various constraints. Having a little less runway obviously can complicate your ability to get stopped before the end of the runway. If you have a rope break immediately after takeoff and you are unsure if you can get stopped in the remaining runway, energy permitting, you may want to consider overflying Elbon Road and continuing straight ahead into Field E ...while also avoiding any vehicle traffic. You would not want to run off the end of runway 09 with any significant speed as the ditch may result in a very abrupt stop that could flip you over.

If the break happens just after the turn to the southeast, Field F and Field G provide potential landing options. These fields appear to be relatively flat and free of obstacles with the obvious exception of the power lines that run along Elbon Road and Gard Road Field. See below for the power line locations:





I will now discuss each field individually.

#### **FIELD E**

Field E is approximately 1100' long and lies directly in line with our normal takeoff path for runway 09 operations. The field appears to be relatively flat and free from obstacles that would complicate landing.

#### **FIELD F**

Field F offers about 1400' before you encounter the power line. Plan on stopping before the power line, underflying it (good luck with that), or, if your energy allows, overflying the power line and landing in Field G. There is also a ditch that crosses most of Field F in the middle. It is approximately 2-3 feet wide in most parts and if your ground roll would take you over it the aircraft may (just may) continue on across it. Some places though are pretty rough. See the picture below:



Field F



## FIELD G

Field G provides several possible landing options. The field appears to be relatively flat and generally free from obstacles that would complicate landing. However, there are a few ditches and low areas of which you should be aware. Study the Big Picture map at the beginning of this article. I have outlined in a green rectangle what appears to be a good landing lane about 1800' long that runs parallel to a field access lane that runs north/south. The ~ 1500' long access lane itself may also provide a landing option, but if crops are in the field it is likely you'd catch a wing on one side or the other and risk ground looping the aircraft. With some study you can see some other possible landing options. Be especially mindful of the power lines on the north side of this field.

## CONSIDERATIONS FOR TURNING BACK

If you decide to turn back to the field versus continuing straight ahead, make sure you do not get too slow or perform an overly aggressive turn (steep bank, excessive g). Under the stress of the moment, it would be very easy to over control or improperly control the aircraft, bleed off precious airspeed, and find yourself in a stall/spin. Many pilots, especially in powered aircraft, have died attempting to return to the field immediately after takeoff. Better to roll out and continue straight ahead into what is in front of you versus entering a stall and spin.

### AND IF YOU CAN'T MAKE ANY FIELD...

If you can't make it to any field and you are going to go into trees, keep in mind what Bob Hoover, famed WWII, Flight Test, and airshow pilot had to say: "If you're faced with a forced landing, fly the thing as far into the crash as possible." So, if you are going into the trees, put your nose between 2 trees and let the wings impacting the trees help dissipate your kinetic energy. Fly until you come to a stop. And then...

