

Appendix C

User Survey Data



APPENDIX C: 2010 USER SURVEY SUMMARY

In support of the 2010 Master Planning effort for Charlevoix Municipal Airport (CVX), an aviation airfield user survey was conducted to gain insight on the type of activity that occurs at the Airport. This survey gave regular and transient airport users a chance to give their input on amenities preferred and airport improvements that were important to them. Over 50 user surveys were mailed to organizations, businesses, and other regular airport users. Additional surveys were distributed at the airport terminal between July and September, 2010. Thirty-seven responses were collected and analyzed. Twenty-one of the responses were from corporate users, many of which regularly fly business jet type aircraft to and from CVX.

The majority of the corporate respondents desired a runway extension, ILS, improved approaches, executive hangars, meeting rooms, and pilot's lounge improvements. Nearly all of the corporate respondents desire a runway length of 5,000 feet or more for an added margin of safety. Common suggestions for improvements from the private respondents included a runway extension, executive and t-hangars, and lower fees and gas prices. Many of them cited the desire for a longer runway not only for their own use, but in order for the Airport to attract more users that would purchase fuel, thereby increasing revenues and supporting the sustainability of the Airport.

The respondents cited use of all aircraft types: single-engine piston (SE), multi-engine piston (ME), turbo-prop (TP), rotorcraft (ROTOR), and jets. Common aircraft by type included:

SE – Cirrus SR 22, Cessna 150/172/182, Piper PA-28, Lake LA4

ME – Piper PA-31/PA-23, Beech Baron 58

TP – Piper PA-42, King Air 90/200/350

ROTOR – Robinson R44

JET – Cessna Citation I/II/III, CJ1/CJ2/CJ3/Bravo/Excel/Sovereign/Conquest, Lear 45, Falcon 10/20, Gulfstream IV, Hawker 1000, BAe 125

Table C-1 on the following page provides a summary of the 2010 user survey responses. Please note that the respondents names were not included in this Appendix in order to keep their anonymity. Also attached at the end of this Appendix is the 2010 user survey that was distributed.

S U R V E Y

W E N E E D Y O U R H E L P

To make Charlevoix Municipal Airport a better airport for you.

The City of Charlevoix has embarked on a planning process to update the facility requirements and plans for the Charlevoix Municipal Airport. To successfully complete this process, we need your help in identifying what improvements may be needed at the Airport. Please take a few minutes to answer the following questions and return completed surveys to the Island Airways counter after completion.

Completed surveys may also be faxed or mailed to Aaron Lofurno at:

Attn: Aaron Lofurno
RW Armstrong
Washington, DC office
4080 Lafayette Center Dr.
Suite 210A
Chantilly, VA 20151

Fax: (703) 230 0299

If you have additional comments, feel free to attach a separate sheet of paper. The more detailed you are in your suggestions for the Airport, the better we will be able to satisfy your aviation needs in the future. If you have any questions please contact Aaron Lofurno with RW Armstrong, at (800) 321 6959 extension 388. Thank you!

1. Is this your first time using Charlevoix Municipal Airport?

- Yes (Go to Question 3)
- No (Go to Question 2)

2. Approximately how many times in the past year have you or your business utilized the airport's services at Charlevoix?

3. To/from which airports do you frequently operate?

4. Do you or your business rent or own an aircraft operated to/from Charlevoix Municipal Airport?

- Rent (Go to Question 5)
- Own (Go to Question 6)

5. From which FBO(s) do you rent?

(Go to Question 7 after answering)

6. Do you currently base an aircraft at Charlevoix Municipal Airport?

- Yes
- No

7. For what purpose do you use Charlevoix Municipal Airport?

- Business (Go to Question 8)
- Personal (Go to Question 10)

8. What do your business needs of aviation involve?

- Transportation to satellite operations
- Shipping of parts and supplies
- Transportation of suppliers/clients to business facility
- Other: _____

9. Please provide the following information:

(Go to Question 11 after answering)

Business name: _____

Business location: _____

Business description: _____

No.	Aircraft Make	Aircraft Model	Tail Number	Airport Base (Name or Identifier)	Approx. flown hours/week	Approx. landings/week
<i>i.e.</i>	<i>Cessna</i>	<i>182</i>	<i>N 3552 D</i>	<i>Charlevoix Municipal Airport (CVX)</i>	<i>4</i>	<i>2</i>
1			N			
2			N			
3			N			
4			N			
5			N			

Please include information for any additional aircraft that your business owns or operates on the back of this sheet.

10. Please provide the following information:

Name: _____

Address: _____

City, State, and Zip: _____

No.	Aircraft Make	Aircraft Model	Tail Number	Airport Base (Name or Identifier)	Approx. flown hours/week	Approx. landings/week
<i>i.e.</i>	<i>Cessna</i>	<i>182</i>	<i>N 3552 D</i>	<i>Charlevoix Municipal Airport (CVX)</i>	<i>4</i>	<i>2</i>
1			N			
2			N			
3			N			
4			N			
5			N			

Please include information for any additional aircraft that you personally operate on the back of this sheet.

11. Select the range of annual operations reflecting you or your business's usage of Charlevoix Municipal Airport.

(Note that one operation is a takeoff or a landing. For example a landing and subsequent takeoff is equivalent to two operations.)

- Less than 100 (1 flight per week)
- 100 - 300 (2-3 flights per week)
- 300 - 500 (4-5 flights per week)
- 500 - 1,000 (6-10 flights per week)
- More than 1,000 (Please specify) _____

12. Do you conduct business with companies that use Charlevoix Municipal Airport or other local airports?

- Yes No

If yes, please indicate the name and address of the company(ies) so that we can send them this survey. Additional information on other companies may be submitted on a separate sheet.

Business 1 name: _____

Address: _____

City, State, and Zip: _____

Business 2 name: _____

Address: _____

City, State, and Zip: _____

If no, do you believe improvements to Charlevoix Municipal Airport would allow/encourage your business partners to use Charlevoix Municipal Airport?

- Yes No

Why? _____

13. Do you have specific runway length requirements that are dictated by insurance restrictions or company policy? Yes No

If yes, what is the minimum runway length required to operate your aircraft? _____ feet.

14. Do you have other requirements dictated by insurance restrictions or company policy such as available instrument approaches or other airport facilities?

- Yes No

If yes, please indicate the nature of the requirement(s)/restriction(s).

15. What length of runway is required to use your aircraft in the following scenarios?

Fully loaded takeoff in the summer on dry pavement _____ feet.

Fully loaded takeoff in the summer on wet pavement _____ feet.

Landing with poor braking action due to rain, snow, or ice _____ feet.

Other (worst case conditions) _____ feet.

16. If the runway length available at Charlevoix Municipal Airport were to be increased, what would be your ideal length? _____ feet.

Why? _____

17. Please specify which of the following improvements to the Airport you think are necessary or would better serve your aviation needs.

Aircraft hangar facilities:

Enclosed T-hangar: _____

Executive hangar: _____

Community style: _____

Business facilities on site:

Meeting Room _____

Other facilities on site:

Pilots' Lounge _____ Passenger Area _____

Preferred navigational aids and/or approach procedures:

(Comments may be illustrated on diagram, below, if helpful.)

Instrument landing system (ILS): _____

Very high frequency omni-directional range (VOR): _____

VOR/distance measuring equipment: _____

Non-directional beacon (NDB): _____

Global position system (GPS): _____

Localizer (LOC): _____

Other (Specify): _____

Airport lighting systems:

Precision approach path indicator (PAPI): _____

Runway end identifier lighting (REIL): _____

Approach lighting system (ALS): _____

Other (Specify): _____

18. Please identify any other concerns that you feel should be addressed in future airport developments.

- Improved accessibility
- Improved airfield facilities
- Improved hangar facilities
- Improved customer service
- Other _____

19. If Charlevoix Municipal Airport implemented your improvements suggested in the previous questions, would you increase your use of this facility?

- Yes (Go to Question 20)
- No (Go to Question 21)

20. Approximately how many annual operations would be performed by you or your business if your suggested improvements were implemented?

- Less than 100 (1 flight per week)
- 100 - 300 (2-3 flights per week)
- 300 - 500 (4-5 flights per week)
- 500 - 1,000 (6-10 flights per week)
- More than 1,000 (please specify) _____

21. Please rank the services that the Airport currently provides or should provide in order of importance to you.

(with 1 being the most important and 15 being the least important)

- | | |
|---------------------------------------|---|
| ___ Charter air service | ___ Aircraft rental |
| ___ Aircraft maintenance service | ___ Avionics shop |
| ___ Aircraft sales | ___ Pilots recreation/waiting area |
| ___ Quality line service (fuel, etc.) | ___ Pilots' briefing/flight planning area |
| ___ Flight instruction | ___ Food and snacks |
| ___ Courtesy car | ___ Lodging information |
| ___ Public lounge area | ___ Internet access |
| ___ Public Telephone | |

22. Please provide any additional comments you have pertaining to your use of the Airport or its future development.

If you any questions regarding this survey, please feel free to contact Aaron Lofurno, Planner with RW Armstrong, at (800) 321 6959 extension 388.

Please return completed surveys to Island Airways or mail to:

Attn: Aaron Lofurno
RW Armstrong
Washington, DC office
4080 Lafayette Center Dr.
Suite 210A
Chantilly, VA 20151

Thank you for your support of the Charlevoix Municipal Airport.

W E N E E D Y O U R H E L P
To make Charlevoix Municipal Airport a better airport for you.

S U R V E Y



CHARLEVOIX MUNICIPAL AIRPORT

Charlevoix, Michigan

Airport Users' Survey

May 29, 2007

Prepared BY:

RW Armstrong
4100 Capital City Blvd.
Lansing, MI 48906



Charlevoix Municipal Airport

Airport Users' Survey

BACKGROUND AND PURPOSE

Charlevoix Municipal Airport, located in Charlevoix, Michigan, is a commercial service airport providing air service between mainland Michigan and Beaver Island. Additionally, the airport accommodates general aviation for uses associated with both recreation (vacationing) and business.

The airport consists of a paved east-west runway (9-27 – 4,550' x 75') with a parallel taxiway and a northeast-southwest turf runway (4-22 – 1,280' x 200'). Runway 9-27 includes medium intensity runway lights (MIRL), precision approach path indicator systems (PAPI) and runway end identifier light systems (REIL). There is no lighting or landing aids on runway 4-22.

Airport Management has received requests by various airport users as to whether the primary runway could be extended. A longer runway would enable takeoffs with greater load which affords two advantages:

- Additional fuel for longer haul distance
- Additional cargo for more efficient operations

To determine the level of interest and need for a longer runway, the City commissioned this Users' Survey. This Survey polled over forty airport users that fly high end B-II type aircraft, where B-II is defined by FAA as aircraft having:

- Approach Speed ≥ 91 kts, but < 121 kts
- Wingspan ≥ 49 ft, but < 79 ft
- Tail Height: $\geq 20'$, but < 30 ft

The purpose of the Users' Survey is to determine whether there is sufficient justification to lengthen runway 9-27. Justification, typically, is in the form of data provided by existing or potential airport users stating that a specific longer runway length will provide them greater airport utility. The 'greater airport utility' is generally the ability to depart (take off) with a greater load (either more fuel enabling a longer haul length or more passenger/cargo for more efficient aircraft usage).

SURVEY DEVELOPMENT, DISTRIBUTION AND POSTING

Because User Surveys are not, generally, conducted on a regular basis, this was considered an opportune time to solicit user input in areas additional to runway length requirements. The User Survey was developed to solicit information regarding several areas:

- Who is using the airport and is it a business or personal
- Type of aircraft flown into/out of the airport
- Runway length requirements
- Other improvements could the airport use

Two forms of the survey were prepared – a six page full survey and a four page abbreviated survey. The main difference between the surveys is that the abbreviated survey focused solely on runway length needs, whereas the full survey included other airport needs. Both surveys are included in **Attachment 1** of this report.

The survey distribution was keyed on those flying high end, B-II aircraft in and out of Charlevoix. Charlevoix Municipal Airport, since the early 1990's, has been developed to ARC B-II standards with not lower than 3/4-statute mile approach visibility minimums. Those standards include:

- Runway width – 75'
- Runway to taxiway separation – 240'
- Runway safety area – 150'w x 300'l
- Runway object free area – 500'w x 300'l
- Runway Protection Zone (RPZ) – 500'w x 1,000'l x 700'w
- Approach slope – 20:1

The site has tight constraints on its ability to expand or to meet higher ARC category standards. The next ARC category, ARC C-II, standards include:

- Runway width – 100'
- Runway to taxiway separation – 300'
- Runway safety area – 500'w x 600'l
- Runway object free area – 800'w x 1,000'l
- Runway Protection Zone (RPZ) – 500'w x 1,700'l x 1,010'w
- Approach slope – 34:1

It would be difficult for this site to accommodate the ARC C-II standards without significant relocations/disruption to the existing taxiway system and shifting the runway to the east to accommodate the larger clear areas at the west end associated with the C-II category. Therefore, the intent of this Users' Survey and any resultant runway lengthening is to maintain the B-II ARC classification.

RW Armstrong started with a list of key users provided by Island Airways (local FBO). RW Armstrong also reviewed the airport's pilot log to develop a list of N-numbers for high performance aircraft. The N-numbers were then checked against registration data on file with the FAA to obtain owner names and mailing addresses. The Survey was distributed to forty-three (43) airport users flying high performance turboprop and jet B-II aircraft, such as Beech King Air B200/300, Falcon 50 and Cessna 500 series jets. These aircraft represent the most likely candidates of needing a longer runway, especially for takeoff. The distribution list is included in **Attachment 2**.

The Survey was also made available through the City's website, www.cityofcharlevoix.org, where it could be accessed through the City Manager's web page.

Because runway 9-27 is currently 4,550' long, which is ample length for all small single engine and most twin engine propeller planes, those flying these types of airplanes were not included in the survey.

SURVEY RESULTS

Surveys were mailed out on November 6 and 7, 2006, including stamped self-addressed envelopes in which to return the surveys to RW Armstrong. A survey return date of November 30, 2006 was stipulated. By November 30 only eight completed surveys had been returned (18.6%). To increase the return rate, numerous follow-up calls and contacts were made to those not responding and the survey due date was extended to February 15, 2007. Additionally, at this point, the Survey was modified (reduced) to a simpler form.

The final Survey response amounted to ten surveys returned or completed on-line (23.3%). While this is not an overwhelming percentage, it is the results that were obtained and what will be worked with in determining the airport's runway length needs. The following table summarizes the returned responses.

TABLE 1**USER SURVEY RESULTS - SUMMARY**

AIRPORT USER	AIRCRAFT	ARC CATEGORY AIRCRAFT	NUMBER YEARLY OPERATIONS*	RUNWAY LENGTH DESIRED**
USA Jet	Falcon 20; Beech King Air	B-II	52	6,500'
Vee Jay Equipment	Dassault Falcon 50	B-II	52	5,000'
Toy Air	Cessna Citation II	B-II	52	5,500'
Tradewinds Aviation	King Air 200; Hawker 700	B-II	104 – 156	5,500'
Corporate Flite, Inc.	Cessna Citation 500 series jets	B-II	52	7,000'
Air Services, Inc.	Light Jet; Turboprop	B-II	52	6,000'
Super Valu, Inc.	Cessna Citation 650	B-II	52	6,000'+
Superior Aviation	Cessna Conquest II	B-II	52	5,000'
Ariel Corporation	King Air 350	B-II	52	5,500'
Citation Shares	Cessna Citation CJ1, CJ3	C-II	104 – 156	6,000'
TOTALS (including only B-II)		B-II	520 – 572	5,830' (avg.)
TOTALS (including B-II & C-II):		B-II/C-II	624 – 728	5,850' (avg.)

* 'Number Yearly Operations' represents estimated increase in operations over current operations if the runway were lengthened.

** 'Runway Length Desired' represents, according to the User, the ideal runway length needed to optimize their operations.

Those companies showing '52' yearly operations, had indicated in their survey response that they would increase their annual operations at Charlevoix by 'less than 100' (1 flight per week). An average of one flight per week could result in as many as 104 annual operations. However, so as to not overstate the increased airport usage, an average of 52 annual operations was used for each company that indicated an increase in use of 'less than 100'. This same logic was used with Tradewinds Aviation and

Citation Shares, who both responded with increased airport usage of 100 – 300 annual operations.

The Users' Survey results show approximately 550 additional operations per year by ARC B-II aircraft if the runway were lengthened. Because the minimum number of operations needed to consider a runway extension is 500, the survey results show that number to be met.

The average desirable runway length is 5,830', or about 1,280' longer than the current runway length. Updating the **Airport Layout Plan (ALP)** will evaluate what runway length could be supported on the existing site (see "Recommendation and Conclusion" below).

RECOMMENDATION AND CONCLUSION

The Users' Survey provides justification for lengthening runway 9-27 (more than 500 operations by aircraft requiring a longer runway length). In order to be prepared for the advent of the possible future lengthening of runway 9-27, **it is recommended an Airport Layout Plan (ALP) Update be prepared** to depict the maximum length runway that could be accommodated on the existing site using the following criteria:

- Critical Aircraft: B-II, small ($\leq 12,500$ pounds GAW), 20:1 approach
- Critical Aircraft: B-II, large ($> 12,500$ pounds GAW), 34:1 approach
- Airport Geometrics: based on B-II criteria
- Apply 'Declared Distance Concept' to maximize runway takeoff length

Both versions of the B-II critical aircraft (small vs. large) should be evaluated to determine a relative comparison of the impacts that would be created. The main impact of using a critical aircraft of B-II, large (vs. B-II, small) is that the approach slope would be 34:1, in lieu of the 20:1 approach slope that is included in the airport's current ALP. It will be important to look closely at the impact the shallower 34:1 approach will have in the runway's east approach area. How are existing aviation easements impacted? What will be the clearance over trees and buildings in the approach? These are two of the critical questions that will have to be addressed.

Completion of an ALP update will provide the planning tool and give the City of Charlevoix the direction needed in developing Charlevoix Municipal Airport over the next five to ten years.

ATTACHMENT 1

SURVEY FORMS

S U R V E Y

W E N E E D Y O U R H E L P

to make Charlevoix Municipal Airport a better airport for you.

The City of Charlevoix has embarked on a planning process to update the facility requirements and plans for the Charlevoix Municipal Airport. To successfully complete this process, we need your help in identifying what improvements are needed at Charlevoix Municipal Airport. Please take a few minutes to answer the following questions and return the completed survey in the attached self-addressed stamped envelope enclosed by **November 30, 2006**.

If you would like to complete the survey online, please go to the following website:
<http://www.surveymonkey.com/s.asp?u=117792718644>

The survey can also be accessed via the City of Charlevoix website: www.cityofcharlevoix.org, then click on "City Hall", then click on "City Manager". Completed surveys may also be faxed to Michael Borta at 517-327-1982.

- 1. If you have additional comments, feel free to attach a separate sheet of paper. The more detailed you are in your suggestions for the Airport, the better we will be able to satisfy your aviation needs in the future. If you have any questions please contact Michael Borta at 800-321-6959, ext. 860. Do you or your business currently use Charlevoix Municipal Airport (the Airport), in Charlevoix, Michigan?**

- Yes (Go to Question 4)
 No (Go to Question 2)

- 2. Do you currently utilize air transportation for any purpose?**

- Yes (Go Question 3)
 No (Answer Question 12 and stop)

- 3. What airports do you use?**

(Go to Question 12 after answering)

- 4. Do you or your business rent or own the aircraft used at Charlevoix Municipal Airport?**

- Rent (Go to Question 5)
 Own (Go to Question 6)

- 5. Which FBO(s) do you rent from?**

(Go to Question 7 after answering)

6. Do you currently base an aircraft at Charlevoix Municipal Airport?

- Yes
- No

7. For what purpose do you use Charlevoix Municipal Airport?

- Business (Go to Question 8)
- Personal (Go to Question 10)

8. Please provide the following information about your business:

Business name: _____

Business location: _____

Business description: _____

Type of aircraft: _____

Tail number: _____

Airport where aircraft is based: _____

Approximate annual number of hours flown: _____

Approximate annual number of landings: _____

9. What does your business use of aviation involve?

(Go to Question 11 after answering)

- Transportation to satellite operations
- Shipping of parts and supplies
- Transportation of suppliers/clients to business facility
- Other: _____

10. Please provide the following information:

Name: _____

Address: _____

City, State, and Zip: _____

Type of aircraft used: _____

Tail number: _____

Airport where aircraft is based: _____

Approximate annual number of hours flown: _____

Approximate annual number of landings: _____

11. Select the range of annual operations that reflects your or your business's usage of Charlevoix Municipal Airport.

(Note that one operation is a takeoff or a landing. For example a landing and subsequent takeoff is equivalent to two operations.)

- Less than 100 (1 flight per week)
- 100 - 300 (2-3 flights per week)
- 300 - 500 (4-5 flights per week)
- 500 - 1,000 (6-10 flights per week)
- More than 1,000 (Please specify) _____

12. Do you conduct business with companies that use Charlevoix Municipal Airport or other local airports?

- Yes No

If yes, please indicate the name and address of the company(ies) so that we can send them this survey. Additional information on other companies may be submitted on a separate sheet.

Business 1 name: _____

Address: _____

City, State, and Zip: _____

Business 2 name: _____

Address: _____

City, State, and Zip: _____

If no, do you believe improvements to Charlevoix Municipal Airport would allow/encourage your business partners to use Charlevoix Municipal Airport?

- Yes No

Why? _____

13. Do you have specific runway length requirements that are dictated by insurance restrictions or company policy?

- Yes No

If yes, what is the minimum runway length required to operate your aircraft? _____ feet.

14. Do you have other requirements dictated by insurance restrictions or company policy such as available instrument approaches or other airport facilities?

- Yes No

If yes, please indicate the nature of the requirement(s)/restriction(s).

15. What length of runway is required to use your aircraft in the following scenarios?

Fully loaded takeoff in the summer on dry pavement _____ feet.

Fully loaded takeoff in the summer on wet pavement _____ feet.

Landing with poor braking action due to rain, snow, or ice _____ feet.

Other (worst case conditions) _____ feet.

16. If the runway at Charlevoix Municipal Airport were to be lengthened, what would be your ideal length?

_____ feet.

17. Please specify which of the following improvements to the Airport you think are necessary or would better serve your aviation needs.

Aircraft hangar facilities:

Enclosed T-hangar: _____

Executive hangar: _____

Community style: _____

Business facilities on site:

Meeting Room _____

Other facilities on site:

Pilots' Lounge _____ Passenger Area _____

Preferred navigational aids and/or approach procedures:

(Comments may be illustrated on diagram, below, if helpful.)

Instrument landing system (ILS): _____

Very high frequency omni-directional range (VOR): _____

VOR/distance measuring equipment: _____

Non-directional beacon (NDB): _____

Global position system (GPS): _____

Localizer (LOC): _____

Other (Specify): _____

Airport lighting systems:

Precision approach path indicator (PAPI): _____

Runway end identifier lighting (REIL): _____

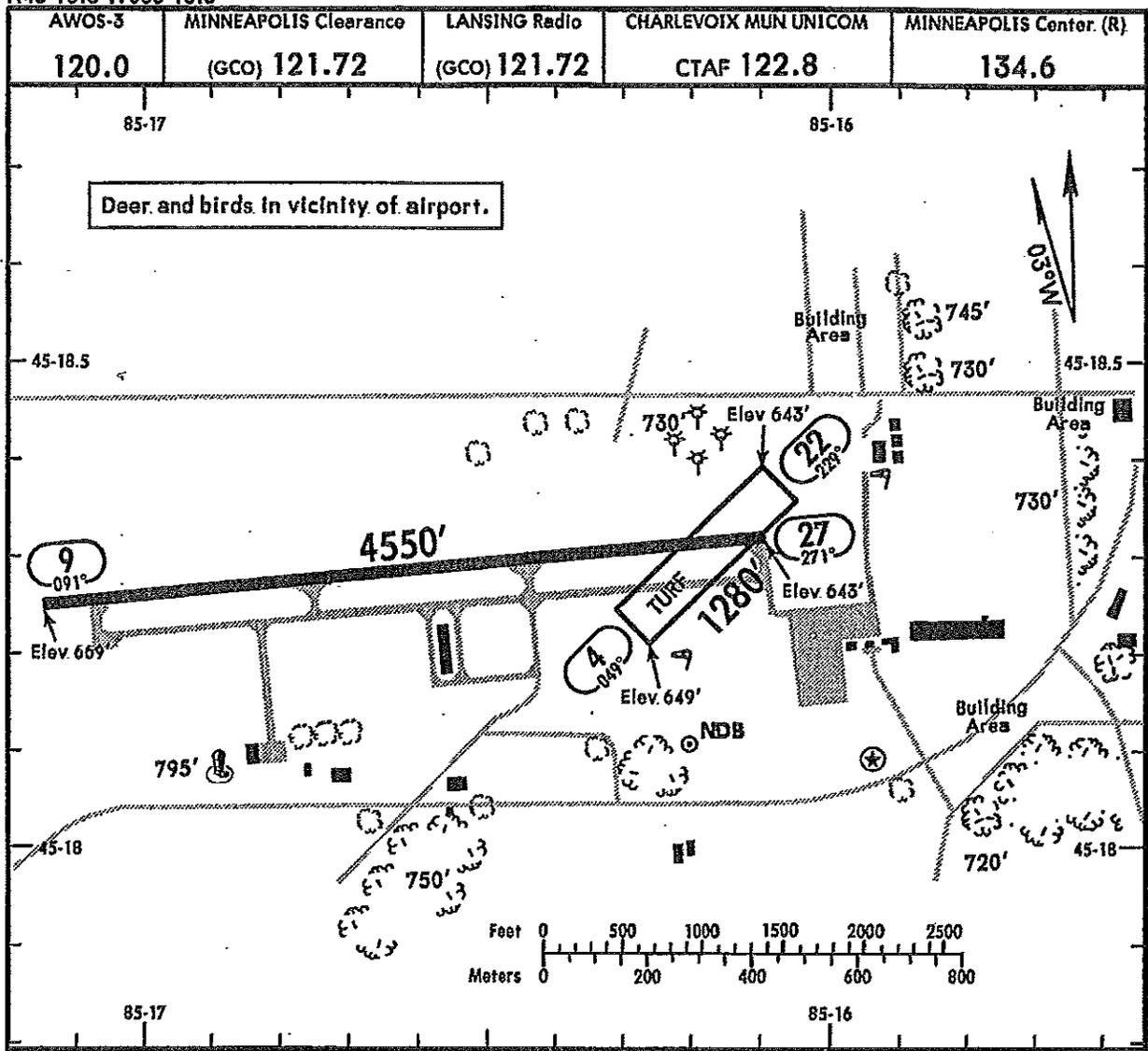
Approach lighting system (ALS): _____

Other (Specify): _____

KCVX
 Apt Elev **669'**
 N45 18.3 W085 16.5

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CHARLEVOIX MUN



18. Please identify any other concerns that you feel should be addressed in future airport developments.

- Improved accessibility
- Improved airfield facilities
- Improved hangar facilities
- Improved customer service
- Other _____

19. If Charlevoix Municipal Airport implemented your improvements suggested in the previous questions, would you increase your use of this facility?

- Yes (Go to Question 20)
- No (Go to Question 21)

20. Approximately how many annual operations would be performed by you or your business if your suggested improvements were implemented?

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21. Please rank the services that the Airport currently provides or should provide in order of importance to you.

(with 1 being the most important and 15 being the least important)

- | | |
|---------------------------------------|---|
| ___ Charter air service | ___ Aircraft rental |
| ___ Aircraft maintenance service | ___ Avionics shop |
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| ___ Quality line service (fuel, etc.) | ___ Pilots' briefing/flight planning area |
| ___ Flight instruction | ___ Food and snacks |
| ___ Courtesy car | ___ Lodging information |
| ___ Public lounge area | ___ Internet access |
| ___ Public Telephone | |

22. Please provide any additional comments you have pertaining to your use of the Airport or its future development.

Please return completed surveys in the enclosed self-addressed stamped envelope by **November 30, 2006** and send to:

R.W. Armstrong & Associates, Inc.
Attn: Michael Borta
4100 Capital City Blvd.
Lansing, MI 48906

Thank you for your support of the Charlevoix Municipal Airport.

W E N E E D Y O U R H E L P
to make Charlevoix Municipal Airport a better airport for you.

S U R V E Y

S U R V E Y

W E N E E D Y O U R H E L P

to make Charlevoix Municipal Airport a better airport for you.

The City of Charlevoix has embarked on a planning process to update the facility requirements and plans for the **Charlevoix Municipal Airport**. To successfully complete this process, we need your help in identifying what improvements are needed at **Charlevoix Municipal Airport**. Please take a few minutes to answer the following questions and return the completed survey in the attached self-addressed stamped envelope enclosed by **February 15, 2007**.

If you would like to complete the full survey online, please go to the following website:
<http://www.surveymonkey.com/s.asp?u=117792718644>

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- 1. If you have additional comments, feel free to attach a separate sheet of paper. The more detailed you are in your suggestions for the Airport, the better we will be able to satisfy your aviation needs in the future. If you have any questions please contact Michael Borta at 800-321-6959, ext. 860.**

Do you or your business currently use Charlevoix Municipal Airport (the Airport), in Charlevoix, Michigan?

Yes

No

- 2. Please provide the following information about your business:**

Business name: _____

Business location: _____

Business description: _____

Type of aircraft: _____

Tail number: _____

Airport where aircraft is based: _____

Approximate annual number of hours flown: _____

Approximate annual number of landings: _____

- 3. Do you or your business rent or own the aircraft used at Charlevoix Municipal Airport?**

Rent

Own

4. Which FBO(s) do you rent from (if you are a renter)?

5. Do you currently base an aircraft at Charlevoix Municipal Airport?

Yes No

6. For what purpose do you use Charlevoix Municipal Airport?

Business Personal

7. Select the range of annual operations that reflects your or your business's usage of Charlevoix Municipal Airport.

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8. Do you have specific runway length requirements that are dictated by insurance restrictions or company policy?

Yes No

If yes, what is the minimum runway length required to operate your aircraft? _____ feet.

9. Do you have other requirements dictated by insurance restrictions or company policy such as available instrument approaches or other airport facilities?

Yes No

If yes, please indicate the nature of the requirement(s)/restriction(s).

10. What length of runway is required to use your aircraft in the following scenarios?

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Landing with poor braking action due to rain, snow, or ice _____ feet.

Other (worst case conditions) _____ feet.

11. If the runway at Charlevoix Municipal Airport were to be lengthened, what would be your ideal length?

_____ feet.

KCVX

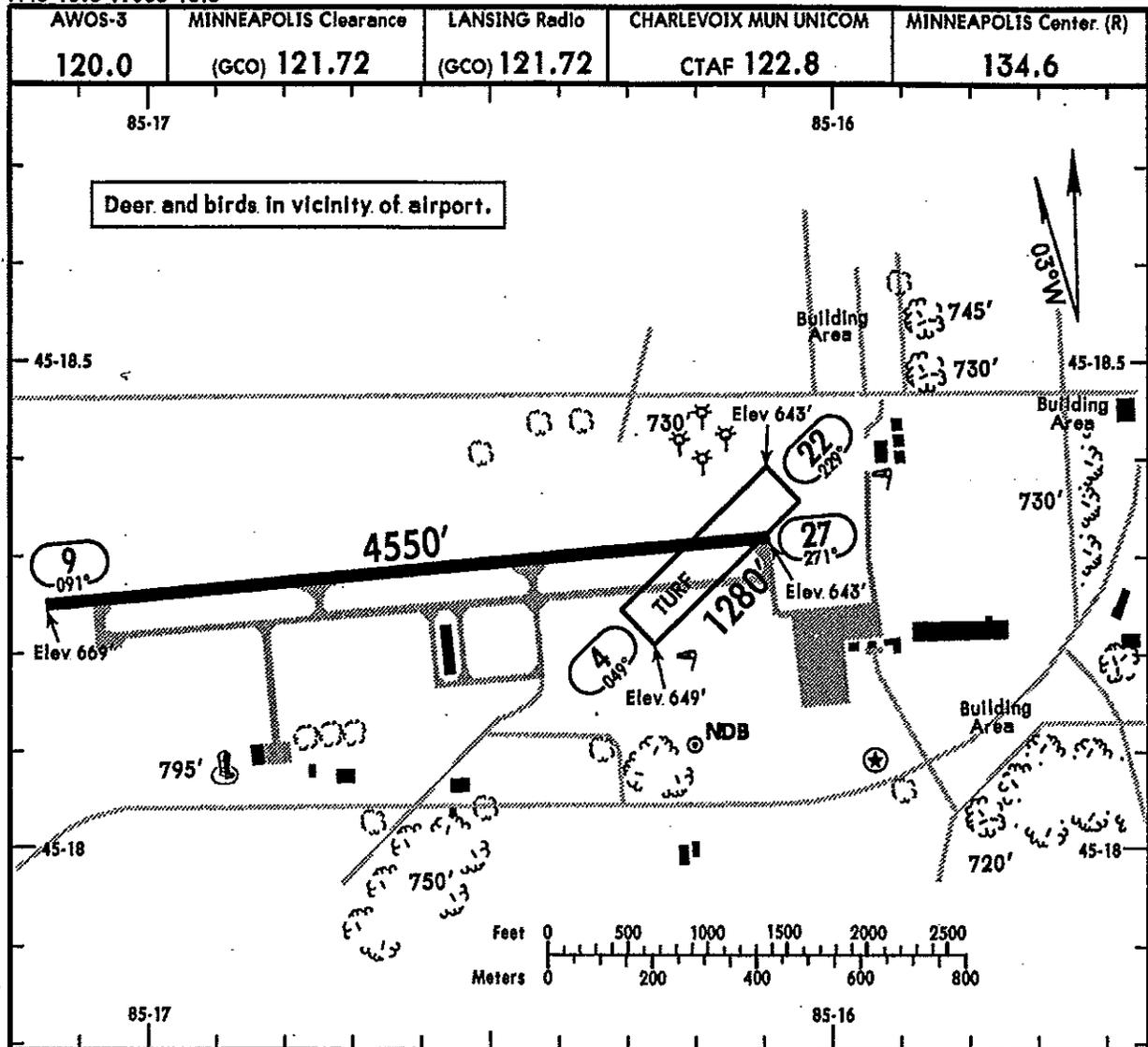
Apt Elev **669'**
N45 18.3 W085 16.5

JEPPESEN

6 MAY 05 (10-9)

CHARLEVOIX, MICH

CHARLEVOIX MUN



12. If Charlevoix Municipal Airport implemented your runway length improvements suggested in the previous questions, would you increase your use of this facility?

Yes

No

13. Approximately how many annual operations would be performed by you or your business if the runway were lengthened to your optimum length?

Less than 100 (1 flight per week)

100 - 300 (2-3 flights per week)

300 - 500 (4-5 flights per week)

500 - 1,000 (6-10 flights per week)

More than 1,000 (please specify) _____

14. Please provide any additional comments you have pertaining to your use of the Airport or its future development.

Please return completed surveys in the enclosed self-addressed stamped envelope by **April 15, 2007** and send to:

R.W. Armstrong & Associates, Inc.
Attn: Michael Borta
4100 Capital City Blvd.
2nd Floor
Lansing, MI 48906

Thank you for your support of the Charlevoix Municipal Airport.

W E N E E D Y O U R H E L P

to make Charlevoix Municipal Airport a better airport for you.

S U R V E Y



July 9, 2007

Mr. Rick Brandi
Acting City Manager
City of Charlevoix
210 State Street
Charlevoix, MI 49720

Re: Charlevoix Municipal Airport
Charlevoix, MI
Airport Users' Survey

Dear Mr. Brandi:

I am in receipt of and have reviewed Mr. Brad Davidson's Users' Survey review letter of June 25, 2007. He raises some interesting points and I would like to respond. (Note: for convenience, Brad's letter is appended for reference.)

1. Brad's first comment pertains to the fact the survey was limited to only those parties who fly high end B-II aircraft and that the survey should have been more all encompassing of anyone who might use the airport. Indeed, the survey very much was aimed at limiting responses to those flying B-II aircraft. I appreciate Brad's comment and, in most instances, would very much agree with it. However, in the case of Charlevoix Municipal Airport, due to the well known site constraints (quarry at the west end, State St. and US-131 at the east end) and the increased safety areas and much shallower approach zone required for a C-II critical aircraft, the impacts of having a C-II critical aircraft were considered to be too great. Consequently, to maintain the safety areas and the 20:1 approach as currently exist, the survey was limited to B-II aircraft (RW Armstrong Planning Agreement, Attachment "E", Element 3, Task 3.1).

Now, this is not to say a more detailed, in depth User Survey couldn't be done and a more in-depth look at C-II impacts undertaken. But, this evaluation would be beyond the scope of the relatively simple User Survey/ALP Update that is currently being worked on.

2. I agree fully with Brad's second comment – that the C-II design standards stipulate a runway safety area (RSA) that is 500'w x 1,000'l. It is precisely because of this large increase in RSA from that required for a B-II scenario (i.e. 150'w x 300'l and currently in effect at CVX) that the User Survey and ALP update had the limitation of dealing only with the B-II aircraft. Additionally, the C-II approach slope is 34:1, versus the existing 20:1 (much shallower, much more impact in the east approach).



Mr. Rick Brandi
July 9, 2007

3. Brad's several comments listed as '3.' are all well taken and raise valid questions. From the RW Armstrong Planning Agreement, Attachment "E", Workslope – "The goal of this ALP Update is to determine the runway length needed by current and potential airport users that would enable the users to attain efficient aircraft operations while maintaining an Airport Reference Code (ARC) of B-II". Toward this end, the role of the Users' Survey was to determine whether there is sufficient potential use by B-II aircraft needing a runway longer than is currently available at CVX. The ALP update would then look at what maximum length runway could fit onto the CVX site.

Again, I agree with Brad that one responder did indicate that they fly to CVX one time per year. Certainly, weighting this to 26 flights per year (52 operations) slants the total. But, in the same vein, there were some 35 other users whom we were unable to obtain responses from. Again, staying conservative, I believe that, had we been successful in getting a better return on responses, we would more than make up for the estimated 52 operations that we drop from the one user.

The 'Desired Runway Length' was not intended to be a precise, by the book runway length requirement. Again, I think Brad is right on the money when he notes that runway length requirements in the POH (Pilot Operating Handbook) would vary from the 'Runway Length Desired' stated by the responders. However, the pilot-in-command (PIC) has the final say on what runway length should be the 'desired' length based on the PIC's experience flying the plane and the PIC's level of comfort and safety going into and out of the airport. Runway length data provided in the POH is the starting point for operating a particular aircraft, not the final say and end point.

Finally, Brad notes there had been no evaluation of actual haul lengths. This is very true. But, that detail of user analysis is beyond the scope of this initial Users' Survey. This type analysis would be, perhaps, more apropos to a master plan study.

The goal of this Users' Survey was to determine whether there was sufficient justification to undertake an ALP update for a longer runway, with the intent being to determine, and depict, the maximum runway length that could fit on the existing airport site without having a major impact in the east approach. Maximizing the runway length could be accomplished by physical lengthening of the runway and moving the RPZ/approach zones, applying the declared distance concept or a combination of the two. While questions can be raised concerning the details of the Users' Survey data, to me it is clear there is sufficient justification to move forward with the ALP update.

Because an ALP is a planning document it can, in actuality, depict most any development an airport sponsor would like to show. After all, the adage 'if it's on the ALP it might be



Mr. Rick Brandi
July 9, 2007

built, if it's not on the ALP it will never be built' very much applies. In other words, showing the maximum length runway attainable on the existing site is only the first step. The actuality of building it is a multi-step process requiring solid documentation for need, environmental considerations, possibly land (fee or easement) acquisition and the backing of the community.

Continuing this opportunity for the Users' Survey and an ALP update to determine the maximum length runway the existing site can accommodate will provide planning information for the City to base future decisions as to when or whether to move forward with a runway extension.

While I agree with Brad's review comments and appreciate his input, I also believe completing the ALP update is an important cog in the wheel of evolution for Charlevoix Municipal Airport.

Sincerely,

RW ARMSTRONG

A handwritten signature in cursive script that reads "Michael L. Borta".

Michael L. Borta, P.E.
Vice President

Cc: Brad Davidson, FAA-ADO
John Pierce, MDOT-AERO



U.S. Department
of Transportation
**Federal Aviation
Administration**

Detroit Airports District Office
Metro Airport Center
11677 S. Wayne Road, Ste. 107
Romulus, MI 48174

June 25, 2007

Mr. Richard Brandi, Acting City Manager
Charlevoix Municipal Airport
City of Charlevoix
210 State Street
Charlevoix, Michigan 49720

Dear Mr. Brandi:

Airport Users' Survey
Charlevoix Municipal Airport (CVX)

The Detroit Airports District Office received an Airport Users' Survey on June 18, 2007 from the Michigan Department of Transportation – Bureau of Aeronautics and Freight Services. We have completed an initial review of the document and provide the following comments:

1. The validity of the data is questionable on several fronts. It is clearly stated in the findings of the report that the questionnaires were forwarded to those parties who fly high-end B-II aircraft. This appears to be an attempt to limit the amount of relevant data that may be obtained for potential design group C aircraft users. The stated goal of remaining a B-II airport with the associated design standards may be an influencing parameter when evaluating the aviation users at CVX. It is important for the survey to include users beyond those that are known B-II users.
2. The required standard runway safety area (RSA) for C-II design standards is 500' wide x 1,000' long. Page 2 of the report incorrectly identifies this requirement as being 600' in length. While there are some very limited applications for undershoot requirements being 600' in length while using a declared distance lighting and marking plan incorporated into other airports, it is evaluated on a case-by-case basis and is of last resort when all other alternatives have been eliminated. It should also be noted that there continues to be an equivalent to a 1,000' long RSA required for overrun protection.
3. There are several fatal flaws in the survey and/or the interpretation of the survey results.
 - For example, when a user identified less than 100 annual operations at CVX, it was assumed that the user conducts 52 annual operations. Review of the individual surveys included in the study identified each of the responders as based at an alternative airport. Additionally, one responder actually indicated that they fly to CVX one time per year. The margin of error for the assumption of 52 operations per year is not justified and puts into question the validity of the conclusions presented.
 - The desired runway length does not appear to correlate to, or even have been compared to, the required runway lengths as published in the operating manuals of the specific aircraft being evaluated. Additionally, many of the

responses identify either insurance requirements or runway length requirements far less than what is desired.

- There has been no evaluation of actual haul lengths that are occurring from CVX. Many of the users are based in southeast Michigan, if not closer to CVX, and it has not been demonstrated that they would require operations at full takeoff weight to get to their destinations.

At this time, the ADO is not convinced that there are actually 500 annual operations at CVX requiring a runway length greater than what currently exists (4,550'). In the event that further data clarification is obtained and additional runway length is justified, there appears to be adequate room to expand to the east. Based on the information contained in the Airport User's Survey, it is the ADO's opinion, that an update to the ALP (most recently approved by the FAA on May 2, 2004) for the purposes of an extension to runway 9/27 is not warranted at this time.

If you desire further clarification of these comments, please contact Brad Davidson, of this office, at (734) 229-2916.

Sincerely,



Brad N. Davidson, P.E.
Detroit Airports District Office

cc: MDOT-Bureau of Aeronautics and Freight Services: c/o John Pierce
RW Armstrong: c/o Michael Borta