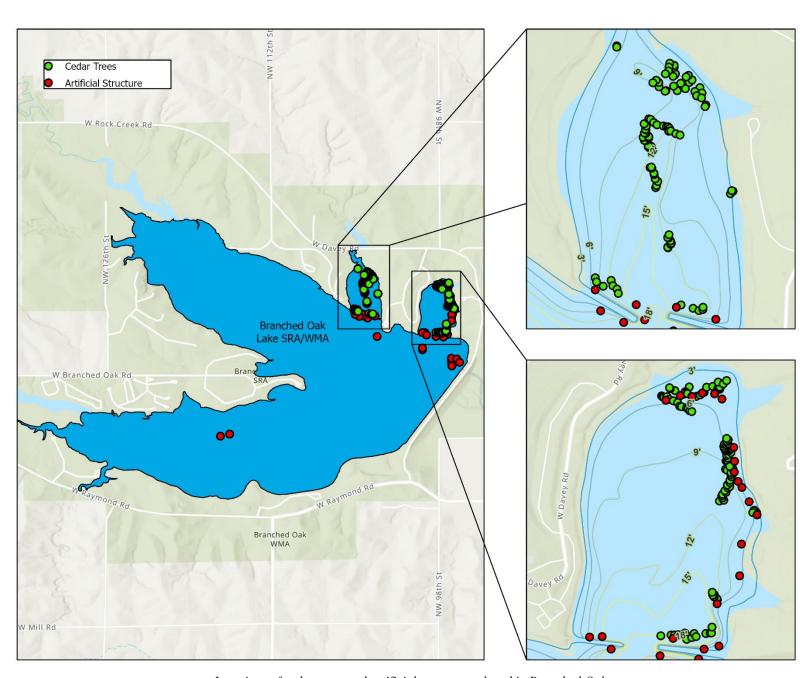
Branched Oak Brushing Projects Update

Jehnsen Lebsock, Aaron Blank, Jake Werner, Matthew Perrion
Southeast District, Fisheries Division
Nebraska Game and Parks Commission

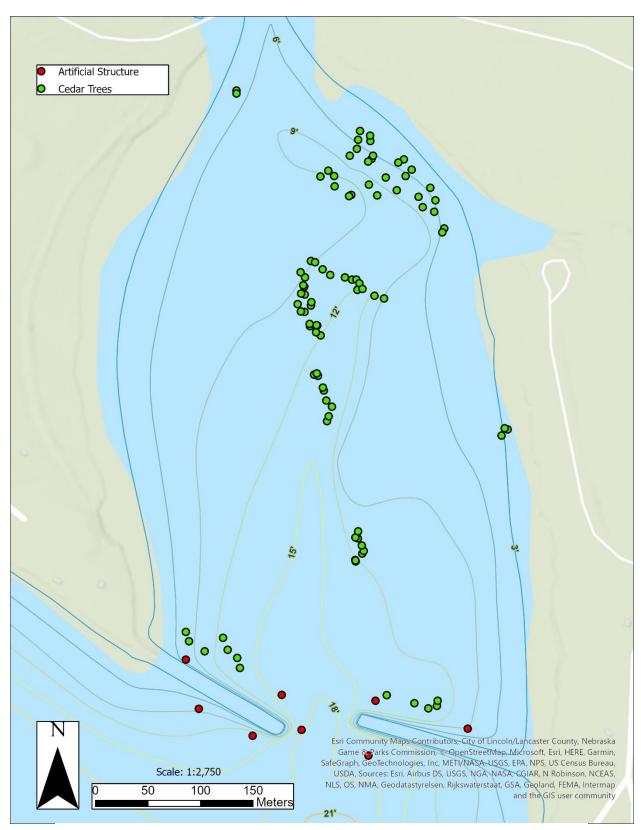
In the summer of 2022, NGPC district biologists along with a group of volunteers constructed and placed 171 artificial tree structures in Branched Oak Lake. These structures were constructed using 5-gallon buckets, concrete, and donated PVC tubing and included both "short" (placed in less than 6 feet of water) and "tall" (placed in greater than 6 feet of water). In February of 2023, NGPC district biologist and a group of volunteers were able to cut and place 246 Cedar trees in the two north bays at Branched Oak Lake. Below is an overview of the projects including pictures from the project, map locations of the structures, and GIS coordinates where structures were placed.



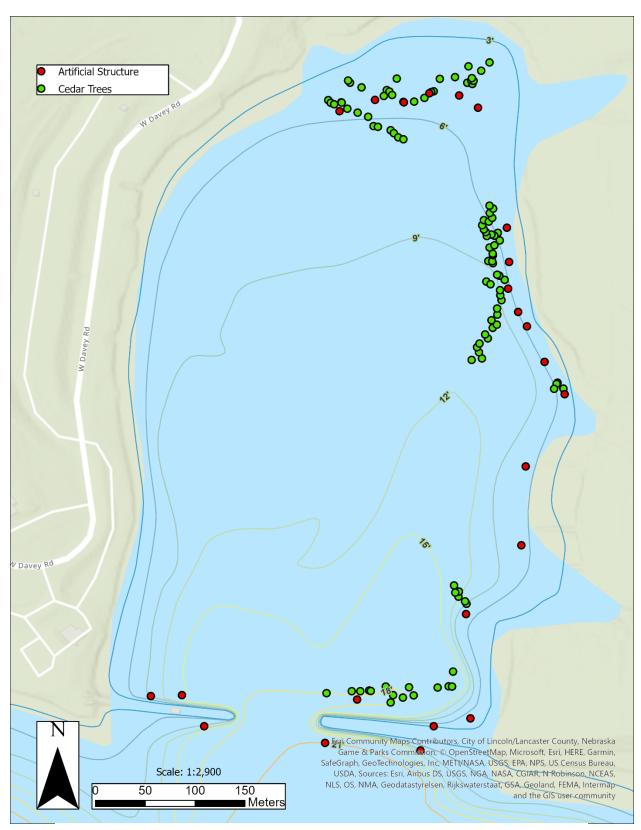
Completed artificial structures ready to be placed in Branched Oak



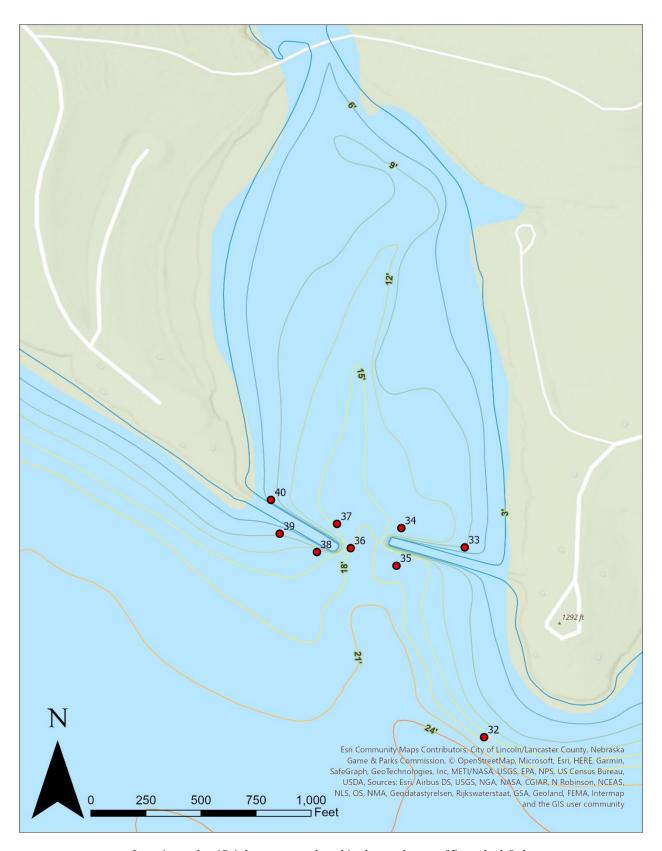
Locations of cedar trees and artificial structures placed in Branched Oak



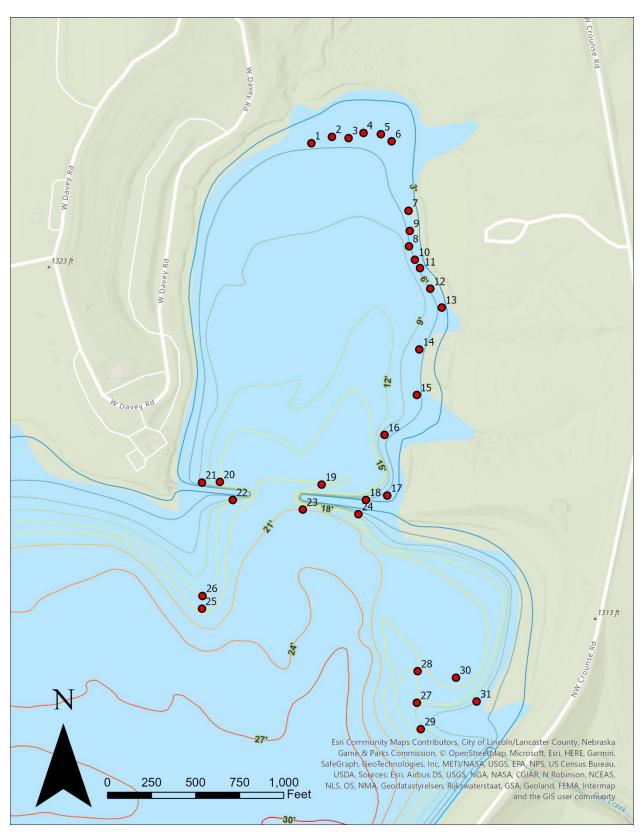
Locations of cedar trees and artificial structures placed in the north arm of Branched Oak



Locations of cedar trees and artificial structures placed in the northeast arm of Branched Oak



 $Locations\ of\ artificial\ structures\ placed\ in\ the\ north\ arm\ of\ Branched\ Oak$



Locations of artificial structures placed in the northeast arm of Branched Oak



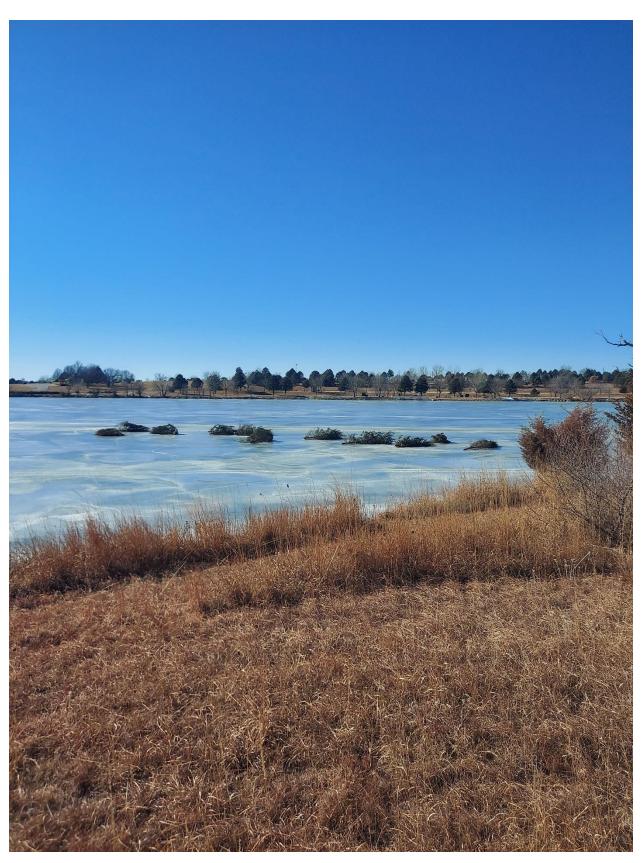
Cedar tree piles placed on top of the ice with blocks attached



NGPC staff and volunteers attach blocks and tow ropes to trees



Cedar tree piles placed on top of the ice with blocks attached



Cedar tree piles placed on top of the ice with blocks attached

Cedar Tree Locations

| Latitude | Longitude | Trees | | |
|-----------|------------|-------|--|--|
| 40.978296 | -96.853487 | 1 | | |
| 40.978314 | -96.853258 | 2 | | |
| 40.978357 | -96.852952 | 3 | | |
| 40.978315 | -96.853182 | 1 | | |
| 40.978321 | -96.853103 | 1 | | |
| 40.978279 | -96.852886 | 1 | | |
| 40.978317 | -96.853086 | 1 | | |
| 40.978214 | -96.852909 | 2 | | |
| 40.978256 | -96.852797 | 1 | | |
| 40.978349 | -96.852744 | 1 | | |
| 40.978277 | -96.852700 | 1 | | |
| 40.978347 | -96.852484 | 1 | | |
| 40.978358 | -96.852385 | 1 | | |
| 40.978357 | -96.852355 | 1 | | |
| 40.978490 | -96.852346 | 1 | | |
| 40.979102 | -96.852225 | 2 | | |
| 40.979123 | -96.852237 | 1 | | |
| 40.979165 | -96.852298 | 1 | | |
| 40.979212 | -96.852293 | 1 | | |
| 40.979203 | -96.852327 | 1 | | |
| 40.979267 | -96.852337 | 1 | | |
| 40.982170 | -96.851987 | 1 | | |
| 40.982189 | -96.852029 | 2 | | |
| 40.981040 | -96.851352 | 1 | | |
| 40.981094 | -96.851405 | 1 | | |
| 40.981082 | -96.851414 | 2 | | |
| 40.981038 | -96.851436 | 2 | | |
| 40.982187 | -96.851994 | 2 | | |
| 40.981298 | -96.852178 | 1 | | |
| 40.981312 | -96.852085 | 2 | | |
| 40.982243 | -96.851986 | 2 | | |
| 40.981366 | -96.852113 | 1 | | |
| 40.981413 | -96.852129 | 2 | | |
| 40.982257 | -96.851989 | 1 | | |
| 40.981447 | -96.852108 | 1 | | |
| 40.982311 | -96.852012 | 2 | | |
| 40.981493 | -96.852033 | 1 | | |
| 40.981527 | -96.852057 | 1 | | |
| 40.982312 | -96.852018 | 1 | | |
| 40.981588 | -96.851988 | 1 | | |
| 40.982331 | -96.851973 | 2 | | |
| 40.981617 | -96.851951 | 1 | | |
| 40.982376 | -96.851924 | 2 | | |

| 40.091657 | 06.852000 | 1 |
|------------------------|--------------------------|---------------|
| 40.981657 40.981706 | -96.852000 -96.851947 | 1 |
| 40.981700 | -96.851947 -96.851943 | 1 |
| 40.981761 | -96.851948 | 1 |
| 40.982416 | -96.851974 | 1 |
| 40.981837 | -96.851909 | 1 |
| 40.982427 | -96.851999 | 1 |
| 40.981882 | -96.851921 | 2 |
| 40.982414 | -96.852042 | 1 |
| 40.982449 | -96.852050 | 1 |
| 40.982474 | -96.852068 | 1 |
| 40.982005 | -96.852045 | <u>.</u> 1 |
| 40.982512 | -96.852083 | 1 |
| 40.981981 | -96.852008 | <u>.</u> 1 |
| 40.982559 | -96.852068 | 2 |
| 40.981928 | -96.851922 | 1 |
| 40.982545 | -96.852024 | 1 |
| 40.982021 | -96.851881 | 1 |
| 40.982577 | -96.851992 | 1 |
| 40.982058 | -96.851930 | 1 |
| 40.982621 | -96.852016 | 2 |
| 40.982066 | -96.851950 | |
| 40.982662 | -96.851985 | 1 |
| 40.982689 | -96.852018 | 2 |
| 40.983834 | -96.852853 | 2 |
| 40.983729 | -96.852944 | 1 |
| 40.983716 | -96.852920 | 2 |
| 40.983754 | -96.853170 | 1 |
| 40.983676 | -96.852970 | 2 |
| 40.983796 | -96.853275 | 1 |
| 40.983816 | -96.853293 | 2 |
| 40.983685 | -96.852895 | 3 |
| 40.983624 | -96.852793 | 1 |
| 40.983638 | -96.853471 | 1 |
| 40.983625 | -96.852697 | 1 |
| 40.983614 | -96.853448 | 1 |
| 40.983659 | -96.852605 | 1 |
| 40.983602 | -96.853418 | 1 |
| 40.983620 | -96.853354 | 1 |
| 40.983718 | -96.852521 | 1 |
| 40.983616 | -96.853349 | 1 |
| 40.983562 | -96.853299 | 1 |
| 40.983711 | -96.852543 | 3 |
| 40.983526 | -96.853207 | 1 |
| 40.983830 | -96.852465 | 1 |
| 40.983489 | -96.853111 | 1 |
| 40.983406 | -96.853062 | 1 |
| 40.983847 | -96.852329 | 1 |

| 40.983398 | -96.853024 | 1 |
|-----------|------------|---|
| 40.983796 | -96.852217 | 2 |
| 40.983367 | -96.852908 | 1 |
| 40.983342 | -96.852880 | 1 |
| 40.983784 | -96.852171 | 1 |
| 40.983304 | -96.852841 | 1 |
| 40.983818 | -96.852182 | 1 |
| 40.983814 | -96.852161 | 1 |
| 40.983287 | -96.852794 | 1 |
| 40.983838 | -96.852175 | 3 |
| 40.983944 | -96.852206 | 2 |
| 40.983904 | -96.852093 | 1 |
| 40.983978 | -96.852017 | 3 |
| 40.985641 | -96.862488 | 1 |
| 40.985616 | -96.862488 | 1 |
| 40.982695 | -96.860222 | 2 |
| 40.982747 | -96.860170 | 1 |
| 40.982756 | -96.860194 | 1 |
| 40.981017 | -96.862920 | 1 |
| 40.980938 | -96.862893 | 1 |
| 40.980852 | -96.862760 | 1 |
| 40.980967 | -96.862603 | 1 |
| 40.980863 | -96.862563 | 1 |
| 40.980794 | -96.862482 | 1 |
| 40.980709 | -96.862459 | 1 |
| 40.980478 | -96.861204 | 2 |
| 40.981619 | -96.861469 | 1 |
| 40.980409 | -96.860966 | 1 |
| 40.981631 | -96.861472 | 1 |
| 40.981627 | -96.861471 | 1 |
| 40.980364 | -96.860848 | 2 |
| 40.981686 | -96.861412 | 1 |
| 40.980385 | -96.860774 | 1 |
| 40.981710 | -96.861399 | 1 |
| 40.981755 | -96.861416 | 1 |
| 40.980430 | -96.860769 | 1 |
| 40.981815 | -96.861450 | 1 |
| 40.981823 | -96.861470 | 2 |
| 40.981877 | -96.861448 | 3 |
| 40.983549 | -96.861767 | 1 |
| 40.983577 | -96.861807 | 2 |
| 40.983630 | -96.861860 | 1 |
| 40.983635 | -96.861797 | 1 |
| 40.983638 | -96.861804 | 1 |
| 40.983648 | -96.861861 | 1 |
| 40.982817 | -96.861713 | 1 |
| 40.983750 | -96.861905 | 1 |
| 40.982859 | -96.861698 | 1 |

| 40.983755 | -96.861937 | 1 |
|-----------|------------|---|
| 40.982940 | -96.861672 | 1 |
| 40.983818 | -96.861965 | 1 |
| 40.983804 | -96.861852 | 1 |
| 40.982993 | -96.861720 | 3 |
| 40.983835 | -96.861848 | 1 |
| 40.983899 | -96.861904 | 1 |
| 40.983078 | -96.861741 | 2 |
| 40.983908 | -96.861936 | 1 |
| 40.983104 | -96.861748 | 1 |
| 40.983966 | -96.861907 | 1 |
| 40.983204 | -96.861791 | 2 |
| 40.983978 | -96.861916 | 1 |
| 40.984045 | -96.861902 | 1 |
| 40.983215 | -96.861825 | 2 |
| 40.984089 | -96.861940 | 1 |
| 40.983225 | -96.861801 | 1 |
| 40.984186 | -96.861851 | 1 |
| 40.984174 | -96.861816 | 1 |
| 40.984115 | -96.861751 | 1 |
| 40.984067 | -96.861686 | 1 |
| 40.984046 | -96.861561 | 1 |
| 40.984027 | -96.861500 | 1 |
| 40.984027 | -96.861463 | 1 |
| 40.983996 | -96.861438 | 1 |
| 40.983939 | -96.861454 | 1 |
| 40.983947 | -96.861410 | 1 |
| 40.983889 | -96.861308 | 1 |
| 40.983865 | -96.861226 | 1 |
| 40.984912 | -96.861042 | 1 |
| 40.984789 | -96.861118 | 1 |
| 40.984965 | -96.860989 | 2 |
| 40.984811 | -96.860830 | 1 |
| 40.985053 | -96.861056 | 1 |
| 40.984733 | -96.860932 | 1 |
| 40.985026 | -96.861104 | 1 |
| 40.984704 | -96.860786 | 1 |
| 40.984898 | -96.861212 | 1 |
| 40.984645 | -96.860895 | 1 |
| 40.984606 | -96.860798 | 1 |
| 40.984464 | -96.860711 | 1 |
| 40.985058 | -96.861332 | 3 |
| 40.984431 | -96.860728 | 1 |
| 40.985084 | -96.861321 | 1 |
| 40.985034 | -96.861363 | 1 |
| 40.984746 | -96.861285 | 1 |
| 40.984838 | -96.861356 | 1 |
| 40.985211 | -96.861344 | 1 |

| 40.985256 | -96.861346 | 1 |
|-----------|------------|---|
| 40.985297 | -96.861432 | 1 |
| 40.984750 | -96.861506 | 1 |
| 40.985221 | -96.861448 | 1 |
| 40.984739 | -96.861525 | 1 |
| 40.985143 | -96.861458 | 1 |
| 40.984824 | -96.861648 | 1 |
| 40.985084 | -96.861518 | 1 |
| 40.984912 | -96.861652 | 1 |
| 40.984957 | -96.861703 | 1 |
| 40.984908 | -96.861769 | 1 |

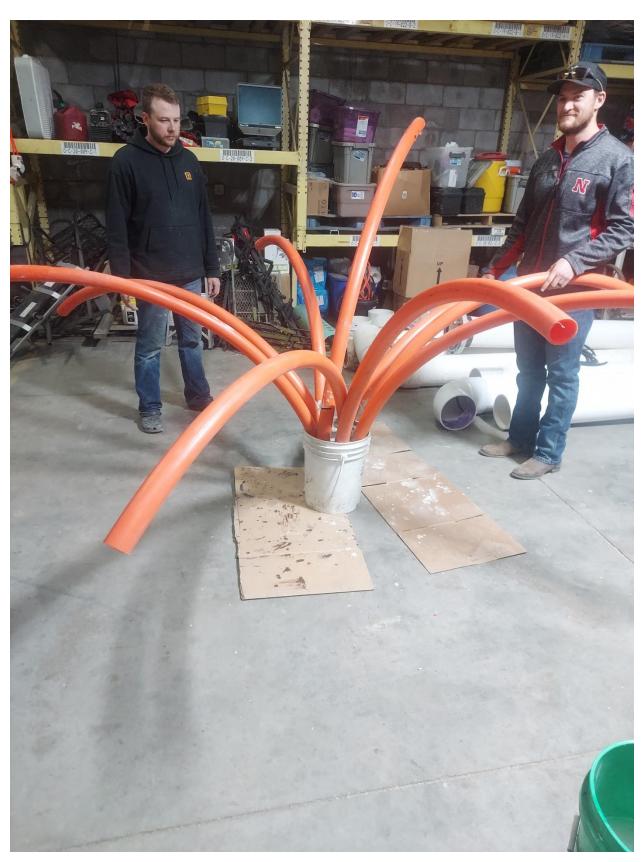
Artificial Habitat Locations

| Latitude | Longitude | Name | Number Placed | Type of Artificial Structure |
|-----------|------------|------|---------------|------------------------------|
| 40.983540 | -96.853370 | 1 | 4 | Short |
| 40.983640 | -96.853050 | 2 | 4 | Short |
| 40.983620 | -96.852790 | 3 | 4 | Short |
| 40.983700 | -96.852560 | 4 | 4 | Short |
| 40.983680 | -96.852290 | 5 | 4 | Short |
| 40.983570 | -96.852120 | 6 | 4 | Short |
| 40.982490 | -96.851860 | 7 | 4 | Short |
| 40.981940 | -96.851850 | 8 | 4 | Short |
| 40.982180 | -96.851840 | 9 | 4 | Short |
| 40.981730 | -96.851760 | 10 | 4 | Short |
| 40.981600 | -96.851680 | 11 | 4 | Short |
| 40.981280 | -96.851520 | 12 | 4 | Short |
| 40.980990 | -96.851340 | 13 | 2 | Short |
| 40.980340 | -96.851690 | 14 | 2 | Short |
| 40.979630 | -96.851730 | 15 | 6 | Short |
| 40.979010 | -96.852230 | 16 | 3 | Short |
| 40.978070 | -96.852190 | 17 | 4 | Short |
| 40.978000 | -96.852520 | 18 | 2 | Short |
| 40.978240 | -96.853210 | 19 | 4 | Tall |
| 40.978280 | -96.854790 | 20 | 4 | Tall |
| 40.978270 | -96.855070 | 21 | 4 | Short |
| 40.978000 | -96.854590 | 22 | 4 | Tall |
| 40.977850 | -96.853500 | 23 | 4 | Tall |

| 40.977780 | -96.852640 | 24 | 5 | Tall |
|-----------|------------|----|---|-------|
| 40.976310 | -96.855070 | 25 | 4 | Tall |
| 40.976510 | -96.855060 | 26 | 4 | Tall |
| 40.974850 | -96.851730 | 27 | 4 | Tall |
| 40.975340 | -96.851720 | 28 | 4 | Tall |
| 40.974440 | -96.851670 | 29 | 5 | Tall |
| 40.975240 | -96.851120 | 30 | 4 | Tall |
| 40.974870 | -96.850800 | 31 | 4 | Tall |
| 40.977830 | -96.860270 | 32 | 4 | Tall |
| 40.980190 | -96.860510 | 33 | 8 | Short |
| 40.980430 | -96.861300 | 34 | 4 | Tall |
| 40.979960 | -96.861360 | 35 | 4 | Tall |
| 40.980180 | -96.861930 | 36 | 2 | Tall |
| 40.980480 | -96.862100 | 37 | 4 | Tall |
| 40.980130 | -96.862350 | 38 | 4 | Tall |
| 40.980360 | -96.862810 | 39 | 4 | Tall |
| 40.966620 | -96.877240 | 42 | 4 | Tall |
| 40.966390 | -96.878310 | 41 | 4 | Tall |
| 40.980780 | -96.862920 | 40 | 8 | Short |



An example of a "short" artificial structure



An example of a "tall" artificial structure