Scheduled hearing times are Central Time

WATER MANAGEMENT BOARD
September 11, 2019
Floyd Matthew Training Center
Joe Foss Building
523 E Capitol Avenue
Pierre SD

AGENDA

Scheduled times are estimates only. Agenda items may be delayed due to prior scheduled items.

Live audio of the meeting can be heard at http://www.sd.net/mtc

11:00 AM Call to Order
Adopt Final Agenda
Conflicts Disclosures and Requests for State Board Waivers
Administer Oath to Department of Environment and Natural Resources Staff

Public comment period in accordance with SDCL 1-25-1

Consider Motion for Expedited Hearing on the Motion to Allow Maintenance of Lake Thompson Outlet

Consider Motion to Allow Maintenance of Lake Thompson Outlet

The Board will recess for breaks and lunch at their discretion.

ADJOURN

Board members are reminded they are subject to SDCL 3–23-1 to 3-23-5 (Disclosure Laws) which address the disclosure of any conflicts of interest a member may have regarding contracts with the State of South Dakota. Board members should report any potential conflicts to the board and seek a waiver where appropriate.

Notice is given to individuals with disabilities that this meeting is being held in a physically accessible location. Please notify the Department of Environment and Natural Resources at (605) 773-3352 at least 48 hours before the meeting if you have a disability for which special arrangement must be made.

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

August 27, 2019

NOTICE

TO : Gregg A Gass, Gass Law Office, PO Box 35, DeSmet SD 57231
E John Bruner, 22289 422nd Ave, Winfred SD 57076
Merrill Nelson, 628 3rd Street NE, Lake Preston SD 57249
Dr. Stephen Noding, 21340 439th Avenue, Lake Preston SD 57249
Wendy Kloeppner, Lake County State's Attorney, 200 East Center Street, Madison SD 57042
Gregory A Protsch, Miner County State's Attorney, PO Box 189, Howard SD 57349
Mike C Fink, McCook County State's Attorney, PO Box 444, Bridgewater SD 57319
Alexis Tracy, Clay County State's Attorney, 211 W Main St, Suite 204, Vermillion SD 57069
Katelynn Hoffman, Turner County State's Attorney, PO Box 700, Parker SD 57053
John Kotilnek, Attorney, Dept. Game, Fish & Parks, 523 E Capitol Avenue, Pierre SD 57501
Ann Mines Bailey, Assistant Attorney General, George S Mickelson Criminal Justice Center
1302 E Hwy 14, Suite 1, Pierre SD 57501

FROM: Jeanne Goodman, Chief Engineer
Water Rights Program

SUBJECT: Scheduling of Hearing on Kingsbury County's Motion to Allow Maintenance of Lake Thompson Outlet

Kingsbury County filed a motion to allow maintenance of Lake Thompson outlet and a motion for expedited hearing In the Matter of the Establishment of the Outlet Elevation for Lake Thompson and Validation of Vested Water Right No. 707-3 held by the South Dakota Department of Game, Fish and Parks. In 2013, the Water Management Board established the outlet elevation and validated Vested Water Right No. 707-3. In doing so, the Board stated that approval by the Board must be obtained before any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

The Water Management Board will consider the motion at 11:00 AM, Wednesday, September 11, 2019, in the Floyd Matthew Training Center, Joe Foss Building, 523 E. Capitol Avenue, Pierre SD. Enclosed is the meeting agenda.

This hearing is an adversarial proceeding. Parties have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

Applicable provisions of the notice of hearing published in area newspapers the weeks of February 4 and 11, 2013, and the hearings held before the Water Management Board on May 1 and July 10, 2013, will still apply at the hearing.

The Water Management Board is being provided the following in advance of the hearing.

- The two motions filed by Kingsbury County including Exhibit A entitled "Lake Thompson Outlet Maintenance Evaluation";
- Finding of Fact, Conclusions of Law and Final Decision from the Water Management Board's 2013 decision including Attachment 2 of Beck's 2013 report;
- Stipulation among several parties;
- Validated Vested Right No. 707-3;
- Lynn Beck's 2013 report.

Questions regarding the hearing process may be directed to Ann Mines Bailey, Assistant Attorney General at (605) 773-3215. In addition, please notify the Department of Environment and Natural Resources at least 48 hours before the hearing if you have a disability for which special arrangements must be made at the hearing.

enclosure

c: David McVey, Assistant Attorney General

Scheduled hearing times are Central Time

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Motion for Expedited Hearing on the Motion to Allow Maintenance of Lake Thompson Outlet

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ADJOURN

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STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON	)	FILE # 707-3
IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	)	MOTION FOR EXPEDITED HEARING

Comes now Gregg A. Gass, attorney for Kingsbury County, and moves that the South Dakota Water Management Board authorize an Expedited Hearing on the Motion to Allow Maintenance of the Lake Thompson Outlet based on the following:

1. Flood conditions exist on Lake Thompson which risk damaging property surrounding the lake.
2. Risk of damage will increase if lake levels remain at or near their current status into the winter, given anticipated spring thawing and the anticipated movement of ice onto adjoining properties.
3. Some improvement and risk reduction, as set forth in your Movant's Motion to Allow Maintenance of Lake Thompson Outlet, may be provided as set forth in the DCI Engineering report which is attached to said Motion.
4. That accordingly your Movant seeks an expedited hearing to allow the Board to consider your Movant's request, as soon as possible.

Respectfully submitted this 21 day of August, 2019.

Gregg A. Gass
Attorney at Law
202 Calumet Ave. S.E.
PO Box 35
De Smet, SD 57231
(605) 854-3224

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON	)	FILE # 707-3
IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	)	MOTION TO ALLOW MAINTENANCE OF LAKE THOMPSON OUTLET

Comes now Gregg A. Gass, attorney for Kingsbury County, and moves that the South Dakota Water Management Board authorize maintenance of the Lake Thompson outlet based on the following:

1. In 2012, Kingsbury County requested that the Water Management Board establish the official outlet elevation for Lake Thompson. The Department of Game, Fish and Parks also asked for the validation of vested Water Right #707-3 as part of the same hearing.
2. The Water Management Board on October 3, 2013 entered Findings of Fact, Conclusions of Law and Final Order wherein it approved and incorporated by reference thereto in its final Order, a Stipulation entered into by several of the parties involved wherein the outlet elevation was declared to be 1687.5 fmsl and acknowledged that there exists within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl. The Board further found that "based on the unique circumstances of this particular matter as well as a configuration of the outlet and it's location, neither Game, Fish and Parks or anyone else may construct any outlet structure at 1687.5 or any other elevation unless approval is granted by this Board. Further, the entire outlet configuration must be analyzed and approval of this Board must be obtained before any structural changes, excavation of the hard bottom of this channel, or change in the location of the outlet is undertaken that would impact the ordinary high water mark, if one is established, or would otherwise effect the stage, level, or flow of Lake Thompson or the waters of the State".
3. The Board retained jurisdiction over this matter to address any proposed changes that would affect the OHWM or otherwise affect the stage, level or flow of waters of the State. The Stipulation which was incorporated in the Order also provided that maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed, subject to jurisdiction of the Board.
4. Extraordinary flooding conditions during the spring and summer of 2019 have resulted in record lake levels on Lake Thompson of approximately 1694.2 feet. Kingsbury County arranged for an engineering study of current lake conditions that was prepared by Civil Design, Inc. and Jason Peterson of that firm. A copy of his report entitled "Lake Thompson Outlet Maintenance Evaluation", marked Exhibit "A", is attached hereto and incorporated by reference.

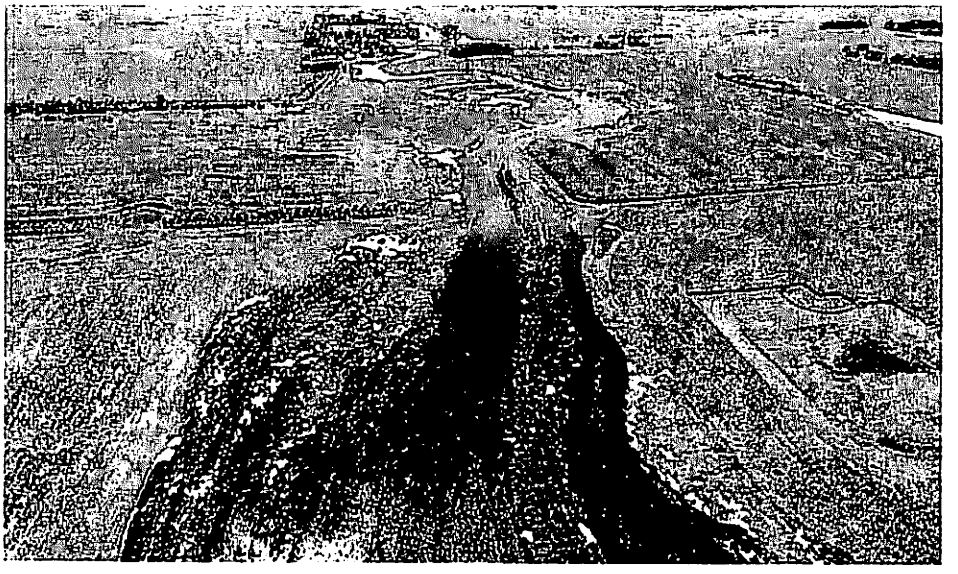
5. In summary, that report concludes that the elimination of vegetation at the area of the outlet would have a minimal impact on reducing the lake's water level and would also have minimal impact on downstream areas. Considering the amount of time and money involved, and constructability issues, removing only the vegetation is not recommended by Mr. Peterson.
6. The second option in the engineer's report considered removing silt to reestablish the 50-60 width of the outlet cross section shown in the South Dakota DENR report dated January 9, 2013. The DENR report indicated that sediment exists in the bottom 1.5 feet of the channel which is about 50-60 feet wide above the established outlet elevation. Mr. Peterson's report (as shown in Appendix A of the report) concludes that removal of the silt to the outlet hard bottom will have little effect either on the lake water levels or on the effect downstream. However, the removal of additional water may benefit both upstream properties and downstream properties dependent on future weather conditions including ice break up and spring runoff. Mr. Petersen's report calls for continued monitoring during the maintenance project.
7. If the State Water Management Board approves the request, cost of anticipated contracting would need to be evaluated by interested parties or those whose property is affected by the flooding.

Respectfully submitted this 21 day of August, 2019.

Gregg A. Gass
Attorney at Law
202 Calumet Ave. S.E.
PO Box 35
De Smet, SD 57231
(605) 854-3224

Exhibit"A"

LAKE THOMPSON OUTLET MAINTENANCE EVALUATION



PREPARED FOR: KINGSBURY COUNTY BOARD OF COUNTY COMMISSIONERS

CDI PROJECT #2019-150
AUGUST 16, 2019

CDI CIVIL DESIGN INC Civil Engineers & Land Surveyors

info@civildes.com // www.civildes.com

609 South Main Ave // Brookings, SD 57006 // Phone: 605.696.3200 // Fax: 605.696.3220

AUGUST 16, 2019

PREPARED BY:

CIVIL DESIGN INC

BROOKINGS, SOUTH DAKOTA

I HEREBY CERTIFY THAT THESE PROJECT DOCUMENTS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF SOUTH DAKOTA.

DATE: AUGUST 16, 2019
REGISTRATION NO.: 10136

CDI PROJECT #2019-150
LAKE THOMPSON OUTLET MAINTENANCE EVALUATION

TABLE OF CONTENTS

APPENDICES

PROJECT DESCRIPTION

On July 19, 2019, Civil Design Inc (CDI) was contacted by the Kingsbury County Commissioners to investigate the outlet at Lake Thompson to review possible emergency maintenance options that would allow water to natural flow downstream unimpeded.

This report is being completed to review maintenance options along with hydraulic evaluation of the effects to downstream peak flows and anticipated lake levels.

PROJECT INFORMATION AND CURRENT CONDITIONS

Lake Thompson is located in Kingsbury and Minor Counties in South Dakota and is a variable level lake that currently covers approximately 18,000 acres. The levels have been known to fluctuate and will continue fluctuation with dry and wet periods of weather. The watershed consists of 492.13 square miles, and includes Spirit Lake, Lake Preston, Lake Henry, Lake Whitewood as well as Lake Thompson. During drying periods, the natural ground slopes from 224th Street north into the lake. As the lake levels increase, backwater fills the area from 221st Street to the outlet south of 224th Street near the center of the section, where the natural channel bottom begins to slope south toward 225th Street. Review of aerial photos from 1991 shows open water ending at 221st Street. Currently, the roads between 221st Street through 224th Street are flooded.

Lake Thompson has recently observed the lake levels remain near record high elevations for an extended period of time. In October 2013, the outlet elevation was established by the Water Management Board to be 1687.5 (NGVD 29). The outlet consists of a natural bottom channel section located at the approximate center of the West ½ of Section 25, Township 108N Range 55W, Minor County, South Dakota. The approximate location is at the existing fence along the quarter line through the East Fork Vermillion River. The ordinary high-water mark and ordinary low water mark for Lake Thompson have not been set.

In reviewing possible maintenance options, landowners and county representatives noticed an abundance of cattails near the outlet, which appeared to be increasing throughout the summer. Visual evaluation found slower moving water in the cattails and increased velocities in the other parts of the outlet channel. It was thought that maintenance could be completed that may include removal of excess vegetation or sediment near the outlet. In accordance with the "Stipulation", item 6 allowed for *"Maintenance to the depth of the hard bottom elevation within the outlet cross-section should be allowed, subject to jurisdiction of the board."* This report is being completed to provide information regarding the proposed maintenance and the results to peak flows and elevations downstream of the outlet.

The main concern is lake levels remaining high during the winter months and increasing damage with ice. Based on the approximate size of the lake (18,000 acres) and the depth of water above the outlet (6.5 feet), there is over 5 billion cubic feet of water above the outlet elevation. This volume of water will naturally be routed downstream under current conditions. However, if maintenance could be done at the outlet to remove the water prior to winter freeze up, it could be considered a benefit for the following reasons.

1. Reduced damage from ice.
2. The roads currently under water could be serviced and available during winter months.
3. Reduced downstream ice issues and ice jams in spring 2020.

4. Reduced flows downstream of the lake during spring snow melt in 2020.

It can safely be stated that none of the individuals, both upstream and downstream of the lake, benefit from the lake levels remaining elevated to current levels.

FIELD DATA COLLECTED

On August 1, 2019, CDI survey crews completed a topographic survey that included cross-sections upstream and downstream of the outlet. The data collection was completed using GPS equipment from a boat. Water levels in the channel were approaching 6-feet in the deepest section. Therefore, some inaccuracies may be found in the cross-sections due to the inability to visually see the ground level. The elevation datum used was NAVD88, and the conversion to NGVD29 was completed by subtracting 0.97-feet. Light detecting and ranging (LiDAR) data was utilized as supplementary information outside of the survey limits.

The survey crew gathered elevation shots on the downstream structure on 225th Street to determine the box culvert invert elevations. Current water levels were also collected with the survey at each cross-section and the downstream structure. On August 1st, the lake level at the north end of the lake was 1694.13 (NGVD29).

ADDITIONAL DATA COLLECTION

1. Information from Dr. Jim Knight
    a. Report titled: Emergency Maintenance of Lake Thompson Outlet (DRAFT)
    b. Report titled: High Water Measurements at Lake Thompson – 2019: Potential Solutions to Flooding
    c. 2019 Measured Lake Levels – Note: Elevation datum is not consistent with NGVD29 or NAVD88
2. Contacted Minor County Highway Superintendent regarding culverts / storm structures under streets.
    a. Received information on structures and roadway section at 224th Street
    b. Received Bridge Inspection Report for bridge at 226th Street (Structure: 49-232-060) No hydraulic data sheet or plans available.
    c. Was not provided with any information at 221st Street, 440th Avenue, 222nd Street, or 223rd Street
3. Contacted Jay Gilbertson – East Dakota Water Development District
    a. Received lake elevations from 06/13/2019, which are the same that were included in Dr. Knight's report on high water measurements.
    b. Received Lake Thomson inflow and outflow measurements taken on 07/03/2019
4. Reviewed Victor Engineering report: Upper Vermillion River Watershed Study, Final Report, Volume 1
5. Contacted SD DOT Requesting Hydraulic Data Sheets for 225th Street and 226th Street Structures
    a. Hydraulic Data Sheet provided for box culvert at 225th Street
    b. No hydraulic data sheet available for bridge at 226th Street

ENVIRONMENTAL CONSIDERATIONS

It was noted in a letter from SD DENR that a US Army Corps of Engineers permit would be required for any disturbance or maintenance of the channel. The Kingsbury County attorney has contacted the Corps, and it was noted that a permit could be issued quickly, as long as sediment was being removed and not placed back into any stream, wetland or low-lying area. Therefore, any maintenance will require

that removed sediment be place in upland areas. Placement of removed vegetation and sediment in the channel, wetland or other water body is not acceptable and will be prohibited. A permit application will need to be completed, and the permit received prior to the commencement of maintenance activities.

FEMA INFORMATION

Lake Thompson is located entirely in an unmapped area, where a flood insurance study does not exist. No FEMA FIRM maps exist within the study area.

HYDROLOGY

The total watershed area and sub-basins were delineated using the USGS online tool StreamStats 4.0 (https://streamstats.usgs.gov/ss/). The StreamStats map of the entire watershed is shown in Figure 1. The 492.13 square mile watershed consists mostly of rural agricultural use typical of South Dakota. The cities of De Smet, Lake Preston, Oldham, Hetland, Erwin, and portions of Arlington and Ramona are located within the watershed.

Estimated peak flows for various sub-basins were determined using the regional regression equations found in *Techniques for Estimating Peak-Flow Magnitude and Frequency Relations for South Dakota Streams* (Steven K. Sando, 1998). At one time, there was a gaging station located at the outlet. However, the most recent data are field measurements that were collected in 1995. Gage height data was collected between Jan 1987 and May 1988, and the greatest height measurement was just over 4-feet. The limited gage data was ineffective in verifying estimated flows at the outlet.

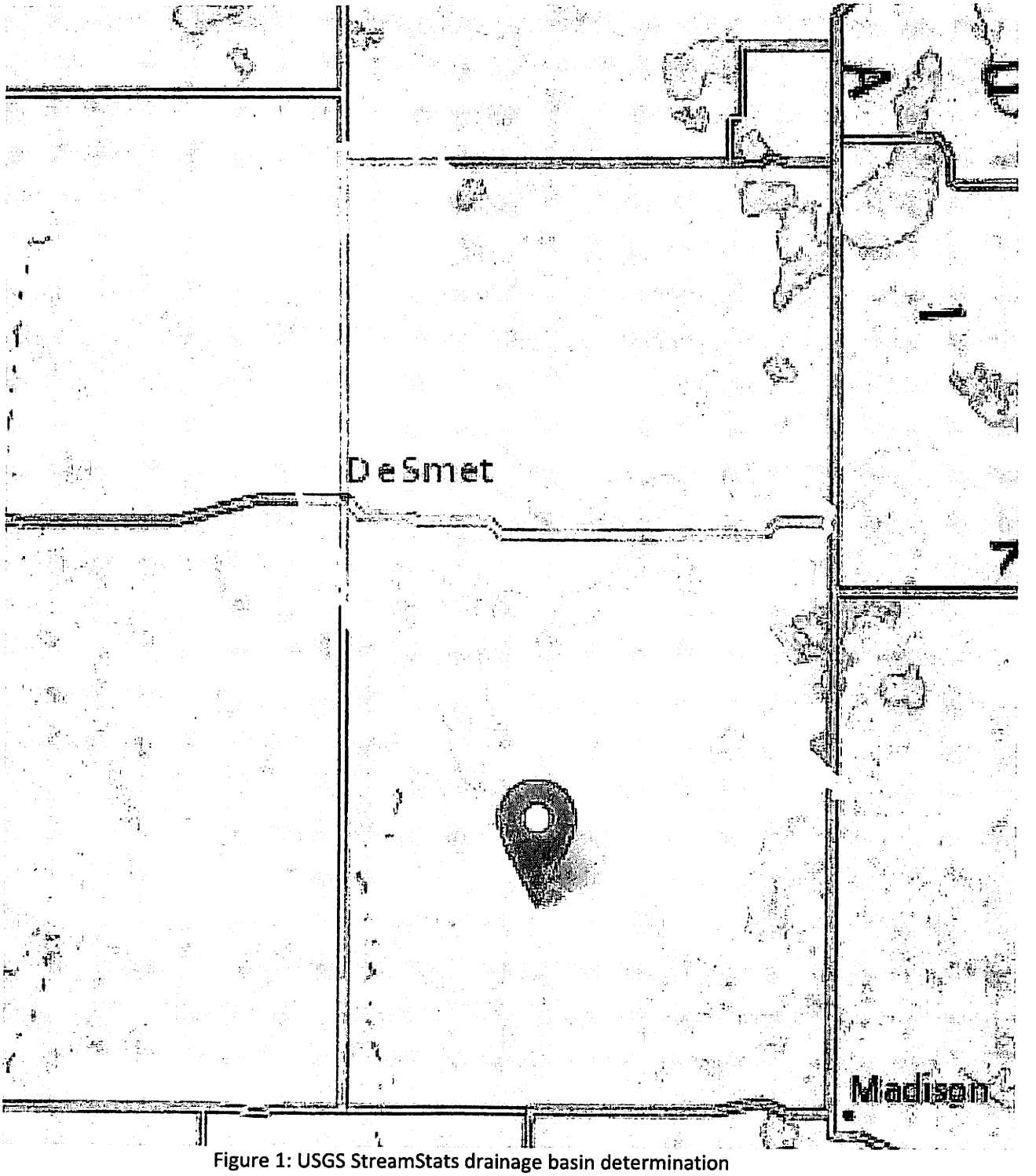


Figure 1: USGS StreamStats drainage basin determination

After delineation of sub-basins, the basin parameters were entered into the drainage model and then calibrated to approximately meet the peak flows estimated using the regional regression equations. Due to the number of lakes within the watershed, peak flows are highly variable depending on the lake levels at the time of the rain event. Therefore, some engineering judgment was used in determining the input

parameters to represent current conditions. Under low flow conditions, the model will be less accurate, because much more storage will be available in the lakes located upstream.

The total area of the 8 delineated sub-basins in the watershed was 314,963.2 acres (492.13 square miles) and is consistent with the total area provided by StreamStats and with previous estimates.

HYDRAULICS

HYDRAULIC MODELING METHODOLOGY

The hydraulic model was completed using the 2019 Version of Autodesk Storm and Sanitary Analysis. The model consisted of 8 sub-basins, storage nodes for Lake Henry, Lake Preston and Lake Thompson and cross-sectional data near the outlet as collected via site survey from just north of the outlet to the 225th Street culvert. Existing Manning's n values for the outlet reach were estimated to be 0.030 in the channel and 0.040 on the overbanks. The current water elevations collected with the site survey were helpful in verifying the accuracy of the model through the outlet channel.

To develop the storage capacities for Lake Thompson and Lake Whitewood, South Dakota Game, Fish and Parks contour maps and USGS quad maps were overlaid and scaled in an AutoCAD drawing to determine the lake area and depth relationships. Storage curves were entered into the model utilizing this information. A storage curve for Lake Henry was also approximated using aerial photos.

Spirit Lake is near the north end of the watershed and was considered to be outside of the primary focus of the report. This water body is currently filled to capacity, and no storage was included for Spirit Lake. There was no contour data readily available for Lake Preston, so storage on that lake was also excluded. Overall, the goal was to provide a feasible means of estimating the effects of proposed maintenance at the outlet would have on the overall level of Lake Thompson. Due to the time of year and time available to complete any maintenance, a detailed study throughout the watershed was not feasible.

Information had been collected by Dr. Jim Knight regarding lake levels and variability before and after rain events (See **Appendix F**). This information was utilized to verify that the drainage model was providing results that were consistent with recent observations. With this information, anticipated results should be accurate. However, as water levels decrease, it would be expected that the model may have reduced accuracy.

As an additional verification, the calculated flows at the 4-cell 12'x6' concrete box culvert at 225th Street (installed in 2003) were compared to the hydraulic data sheet provided by the SD DOT. In accordance with the hydraulic data sheet, the peak flow before overtopping is 1,679 cfs. Current estimated flows are 1,280 cfs with a water depth of 5.44 feet from the box culvert invert. This was quite consistent with the hydraulic data sheet, which showed a depth of 5.6 feet at a flow of 1,200 cfs.

PROPOSED MAINTENANCE OPTIONS

Two maintenance options were selected to be evaluated, with the goal of decreasing the amount of time that the lake will remain at levels that are disastrous to the lake property owners and possibly could negatively affect the downstream properties depending on the winter months and the conditions during spring melt in 2020.

Option 1: Remove the vegetation from the channel near the outlet location.

This was evaluated and determined to be ineffective in decreasing the lake levels. Assuming the vegetation was removed throughout the channel in the vicinity of the outlet, the results varied based on the storm event. However, the time required to reach target lake levels changed by no more than one day for any rain event evaluated. Considering the amount of time and money, and constructability issues in removing the vegetation, this option is not recommended.

Option 2: Removal of vegetation and underlying sediment to approximate hard bottom upstream and downstream of the outlet location.

This option included removal of the sediment upstream and downstream of the outlet. The cross-sections in the model were revised to include the excavation and the Manning's roughness coefficient was reduced to 0.020 as is the recommended value for a straight, clean uniform earthen channel. A table has been provided in **Attachment A** that indicates the results of the sediment removal analysis. Cross-sections are included in **Attachment B**. The proposed sediment removal was to re-establish the 50-60 feet width that is shown in cross-section in the SD DENR report dated January 9, 2013 included in **Attachment D**.

The sediment removal area started 400-feet north of the outlet and ended 400-feet south of the outlet. Proposed sediment removal extended no lower than 1687.48 and increased the channel bottom width by no more than 50-feet. In reviewing, the cross-section in the 2013 SD DENR report, the width at the outlet was nearly 60-feet, and no hard bottom located above 1687.48. Removal includes the vegetation and sediment in the lower portions of the channel, and the hard bottom will not be disturbed.

CONSTRUCTABILITY CONCERNS

Due to the high water, there are concerns with how the sediment will be removed. The cross-section of the hard bottom completed by the SD DENR indicated that sediment exists in the bottom 1.5' of the channel, which is about 50 to 60-feet wide. Water levels are approximately 5-feet near the center of the channel, and the channel width ranges from 200 feet to 550 feet in the areas of the maintenance. Work with an excavator would mean that the equipment would have to sit in the water to complete the work. There may be specialized equipment that could remove the sediment more effectively, but this will come at a cost.

Access may be difficult due to the location being in the center of the section. However, adjacent landowners may be quite agreeable in granting entry. Sediment removed from the channel must be placed in upland areas, so an acceptable waste location will need to be determined prior to starting any of the work. Lastly, the ability to visually inspect the final product while the water levels are high will be challenging.

MONITORING DURING CONSTRUCTION

Monitoring during maintenance operations should be completed at the downstream structures to verify that the estimated flow depths from this report are as anticipated. This can be done by marking the water level at the structures at 225th Street and 226th Street. At the end of each day, the water level should be observed by the engineer. Water levels in excess of the anticipated levels in this report should result in stoppage of the work.

FUTURE IMPROVEMENTS

In reviewing various alternatives, it was found that re-grading of the channel bottom from the box culvert at 225th Street to the outlet could provide significant improvement in the time required to reduce the lake levels, assuming that there were no flow restrictions from the lake north of the outlet. Prior to this occurring, a detailed survey should be completed of the channel bottom under low flow conditions. Surveying of the entire channel at this time is nearly impossible due to high stream velocities and inability to visually observe the channel flowline and features.

Any modifications to the channel or outlet must be brought to the Water Management Board for review prior to completion. A spillway or gated control structure may also be considered to control release rates and lake levels to acceptable conditions. This option was presented as Alternative 2 in the Victor Engineer report titled Upper Vermillion River Watershed Study, dated January 1997 and included in **Attachment I**. It appears that Victor Engineering is no longer in business and could not be reached for additional information.

Supplementary evaluation of roadway overtopping sections, culvert sizes and drainage modeling will be required to fully evaluate and determine the effectiveness of future improvements. Drainage structures at 221st Street, 440th Avenue, 222nd Street, 223rd Street and at the intersection of 224th Street and 441st Avenue should be surveyed and modeled to verify that the system will perform as anticipated and outflows from the lake will not be impeded by existing conditions. At the time this report was complete, all these roads and drainages structure were under water, and there was limited data available on them.

CONCLUSION

Prior to completing the proposed maintenance, the Water Management Board will need to approve the work to remove sediment and vegetation above the hard bottom near the outlet. A summary of the anticipated results of the proposed maintenance is included as **Attachment A**. It should be expected that the lake levels will remain highly controlled by the frequency and intensity of rain that occurs. The inability to cleanout the entire ditch bottom at this time will result in limited ability to improve the current conditions. It is highly recommended that a more detailed study be performed as indicated in this report to further evaluate outlet improvements that could be completed to help control the lake levels in the future. Without completing such improvements, it should be anticipated that the lake levels will continue to fluctuate and remain a concern in the future.

APPENDIX A
SUMMARY OF RESULTS

Lake Thompson Outlet Maintenance Evalulation

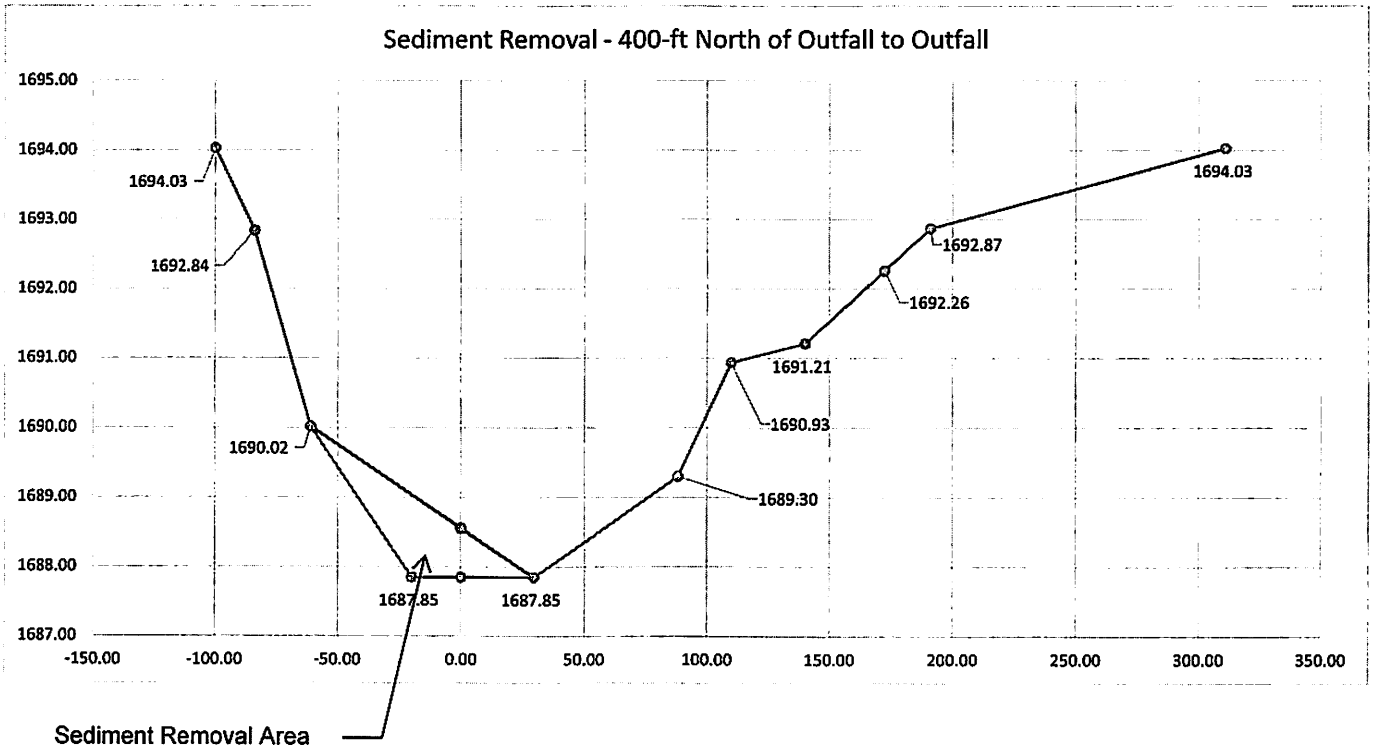
Date: 08/16/2019

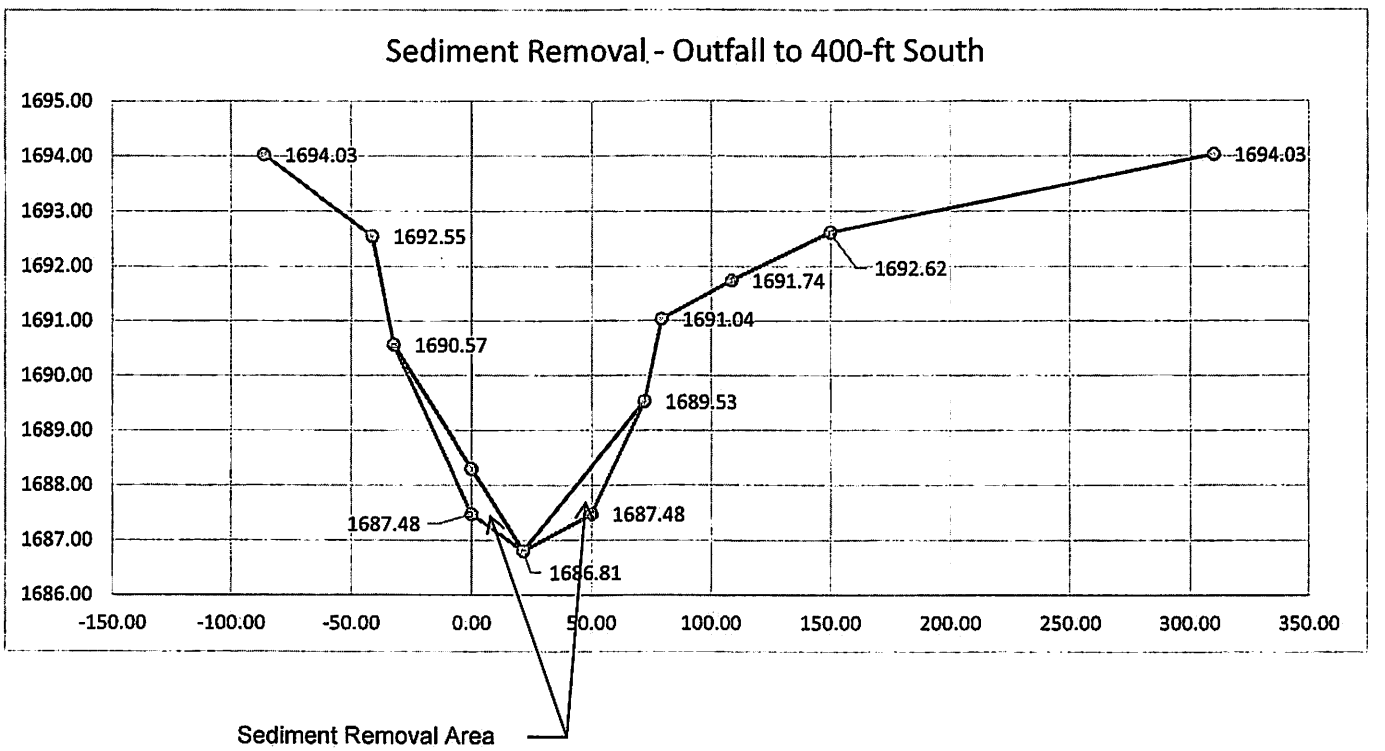
Starting Water Elevation @ Lake Thompson	1694.13 NGVD 1929	1695.10 NAVD 1988	(North End)
Starting Water Elevation @ Outlet	1692.87 NGVD 1929	1693.84 NAVD 1988	
Date of Data Collection	1-Aug-19		
Duration of Analysis	4 months 22 Days (144 days)		

	Existing Conditions	Sediment Removal	Existing Conditions	Sediment Removal	Existing Conditions	Sediment Removal	Existing Conditions	Sediment Removal	Existing Conditions	Sediment Removal
Rain Event	No Rain / Trace Amounts	No Rain / Trace Amounts	2-yr Rain Event	2-yr Rain Event	5-yr Rain Event	5-yr Rain Event	10-yr Rain Event	10-yr Rain Event	25-yr Rain Event	25-yr Rain Event
24-yr Rainfall Total	N/A	N/A	2.65"	2.65"	3.36"	3.36"	3.88"	3.88"	4.65"	4.65"
Estimated Increase in Lake Level	N/A	N/A	1/2"	1/4"	1-1/2"	1"	3"	2-1/2"	5-1/2"	5"
Peak Flow @ 225th Avenue (cfs)	1276	1356	1294	1367	1346	1418	1448	1523	1620	1699
Max. Water Elevation @ 225th St	1689.97	1690.11	1689.97	1690.11	1690.04	1690.16	1690.21	1690.31	1690.43	1690.53
Max. Water Elevation @ 226th St	1686.54	1686.66	1686.59	1686.71	1686.68	1686.79	1686.83	1686.94	1686.98	1687.03
Days:Hours to Reach 1692.13 (NGVD29)	39 days, 7 hours	37 days, 16 hours	41 Days, 22 hours	39 days, 20 hours	43 days, 13 hours	41 days, 10 hours	46 days, 13 hours	44 days, 8 hours	54 days	51 days, 6 hours
Days:Hours to Reach 1691.13 (NGVD29)	97 days, 7 hours	94 days, 16 hours	101 days, 7 hours	96 hours, 23 hours	103 days, 1 hour	98 days, 12 hours	107 days, 16 hours	103 days, 2 hours	123 days, 9 hours	118 days, 16 hours
Estimated Lake Level End of Analysis	1690.02	1690.00	1690.04	1690.01	1690.05	1690.02	1690.08	1690.05	1690.17	1690.15

Note: Sediment removal consists of removing sediment above the hard bottom for a width of 50-feet in accordance with the cross-section included in SD DENR report dated Jan. 9, 2013 (aka Lynn Beck Report) which indicated that the hard bottom was atleast 50-feet wide at the outlet. Sediment removal would start approximately 400-feet north of the defined outlet and end 400-feet south of the outlet. See cross-sections in the report.

APPENDIX B
CROSS-SECTIONS FOR SEDIMENT REMOVAL

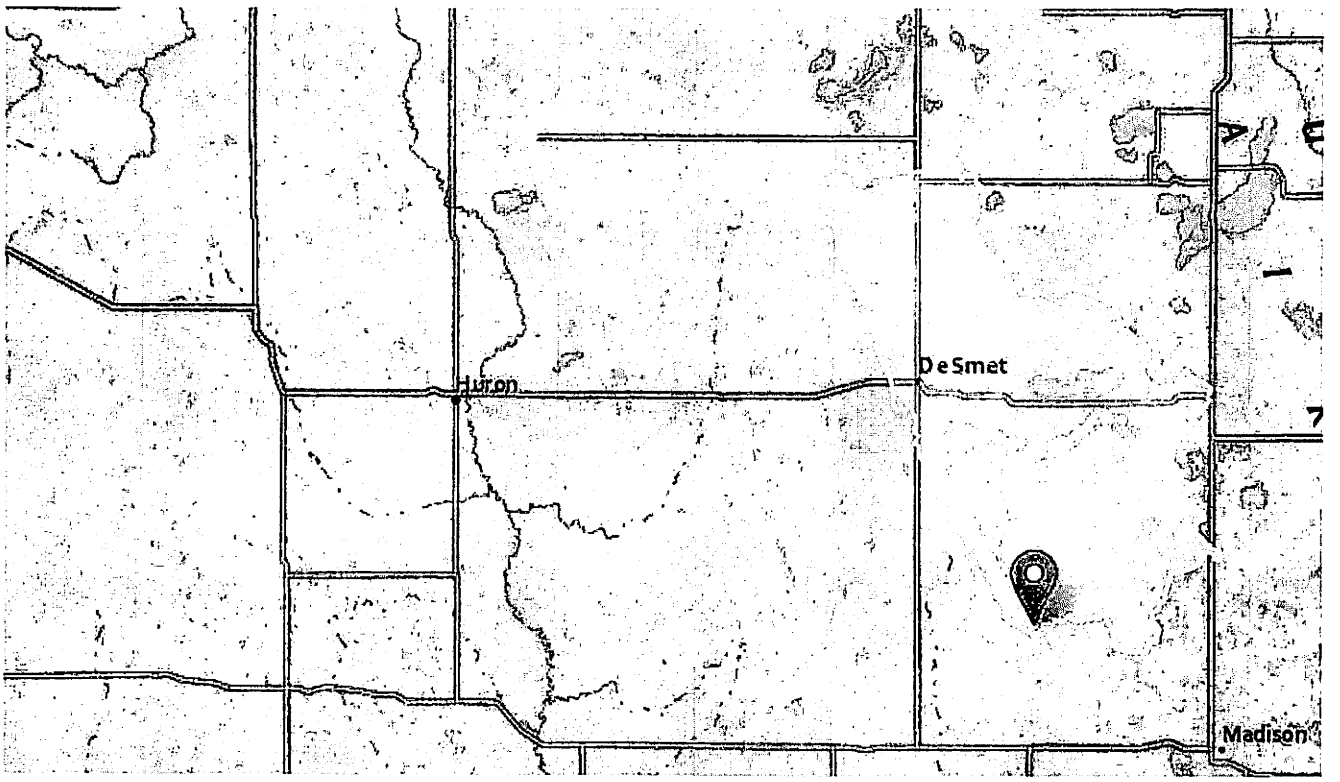

Sediment Removal - 400-ft North of Outfall to Outfall
1695.00
1694.00
1693.00
1692.00
1691.00
1690.00
1689.00
1688.00
1687.00
-150.00
-100.00
-50.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
1694.03
1692.84
1690.02
1687.85
1687.85
1689.30
1690.93
1691.21
1692.26
1692.87
1694.03
Sediment Removal Area


Sediment Removal - Outfall to 400-ft South
1695.00
1694.00
1693.00
1692.00
1691.00
1690.00
1689.00
1688.00
1687.00
1686.00
-150.00
-100.00
-50.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
1694.03
1692.55
1690.57
1687.48
1686.81
1687.48
1689.53
1691.04
1691.74
1692.62
1694.03
Sediment Removal Area

APPENDIX C
USGS STREAMSTATS 4.0 REPORT

StreamStats Report

Region ID: *SD*
Workspace ID: *SD20190729140439271000*
Clicked Point (Latitude, Longitude): *44.13222, -97.38605*
Time: *2019-07-29 09:04:59 -0500*



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	*Area that contributes flow to a point on a stream*	*14.12*	*square miles*
PII_SD	*Maximum 24-hour precipitation that occurs on average once in 2 years minus 1.5 inches*	*1.01*	*inches*
BASINPERIM	*Perimeter of the drainage basin as defined in SIR 2004-5262*	*194.82*	*miles*
BSLDEM10M	*Mean basin slope computed from 10 m DEM*	*2*	*percent*
COMPRAT	*A measure of basin shape related to basin perimeter and drainage area*	*2.48*	*dimensionless*

Parameter Code	Parameter Description	Value	Unit
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	2.29	feet per mi
DRNAREA	Area that drains to a point on a stream	492.13	square miles
ELEV	Mean Basin Elevation	1750	feet
ELEVMAX	Maximum basin elevation	1900	feet
LAKESNWI	Percent lakes and ponds as determined from the National Wetlands Inventory (2001)	2.546	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	18.4	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.35	percent
LFPLENGTH	Length of longest flow path	59.3	miles
LIME	Percentage of area of limestone geology	0	percent
MINBELEV	Minimum basin elevation	1684	feet
NONCONTDA	Area covered by noncontributing drainage area	478.01	square miles
OUTLETELEV	Elevation of the stream outlet in thousands of feet above NAVD88.	1684	feet
RELIEF	Maximum - minimum elevation	212	feet
RELRELF	Basin relief divided by basin perimeter	1.09	feet per mi
SD_AS	Percent Artesian Spring from Sando and others (2008)	0	percent
SD_ASLZ	Percent Loss Zone/Artesian Spring from Sando and others (2008)	0	percent
SD_BHEXT	Percent Black Hills Exterior from Sando and others (2008)	0	percent
SD_CC	Percent Crystalline Core from Sando and others (2008)	0	percent
SD_LSTHW	Percent Limestone Headwaters from Sando and others (2008)	0	percent
SD_LSTLZ	Percent Limestone Loss Zone from Sando and others (2008)	0	percent
SD_SNDHLS	Percent Sand Hills setting from Sando and others (2008)	0	percent

Parameter Code	Parameter Description	Value	Unit
SLOPERAT	Slope ratio computed as longest flow path (10-85) slope divided by basin slope	1.14	dimensionless
STORNWI	Percentage of storage (combined water bodies and wetlands) from the National Wetlands Inventory	15.952	percent
WETLNDNWI	Percent wetlands as determined from the National Wetlands Inventory (2001)	13.406	percent

Peak-Flow Statistics Parameters[92 Percent (452 square miles) Subregion A]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	14.12	square miles	0.14	983
PII_SD	S Dakota Precipitation Intensity Index	1.01	inches	0.79	1.3

Peak-Flow Statistics Parameters[8 Percent (40 square miles) Subregion B]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	14.12	square miles	0.22	670
PII_SD	S Dakota Precipitation Intensity Index	1.01	inches	0.6	1.21

Peak-Flow Statistics Flow Report[92 Percent (452 square miles) Subregion A]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	128	ft^3/s	52.2	313	59	59	4.5
5 Year Peak Flood	347	ft^3/s	152	793	54	54	6.1
10 Year Peak Flood	556	ft^3/s	244	1270	54	54	7.8
25 Year Peak Flood	889	ft^3/s	379	2080	56	56	9.8
50 Year Peak Flood	1180	ft^3/s	489	2850	58	58	11

Statistic	Value	Unit	PII	Plu	SE	SEp	Equiv. Yrs.
100 Year Peak Flood	1500	ft^3/s	601	3760	61	61	11.9
500 Year Peak Flood	2350	ft^3/s	857	6460	69	69	13

Peak-Flow Statistics Flow Report[8 Percent (40 square miles) Subregion B]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	57.9	ft^3/s	21.3	157	67	67	5.4
5 Year Peak Flood	200	ft^3/s	77.5	515	64	64	7.1
10 Year Peak Flood	371	ft^3/s	140	986	67	67	8.7
25 Year Peak Flood	700	ft^3/s	247	1980	72	72	10.6
50 Year Peak Flood	1030	ft^3/s	346	3080	76	76	11.6
100 Year Peak Flood	1450	ft^3/s	459	4580	81	81	12.4
500 Year Peak Flood	2780	ft^3/s	769	10100	93	93	13.6

Peak-Flow Statistics Flow Report[Area-Averaged]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	Equiv. Yrs.
2 Year Peak Flood	122	ft^3/s	49.7	300	9.9
5 Year Peak Flood	335	ft^3/s	146	770	13.2
10 Year Peak Flood	541	ft^3/s	235	1250	16.5
25 Year Peak Flood	874	ft^3/s	369	2080	20.4
50 Year Peak Flood	1170	ft^3/s	477	2870	22.6
100 Year Peak Flood	1500	ft^3/s	589	3830	24.3
500 Year Peak Flood	2390	ft^3/s	850	6750	26.6

Peak-Flow Statistics Citations

Sando, Steven K.,1998, A Method for Estimating Magnitude and Frequency of Floods in South Dakota: U.S. Geological Survey Water-Resources Investigations Report 98-4055, 48 p. (http://pubs.water.usgs.gov/wri98-4055/)

Application Version: 4.3.8

APPENDIX D
SD DENR REPORT DATED JANUARY 9, 2013
(AKA LYNN BECK REPORT)
INCLUDES CHANNEL CROSS-SECTION AT LAKE OUTLET

LAKE THOMPSON – KINGSBURY &HAMLIN COUNTIES

ESTABLISHMENT OF THE OUTLET ELEVATION

January 9, 2013

INTRODUCTION

On September 5, 2012, the Department of Environment and Natural Resources – Water Rights Program received a petition from Gass Law Office, Gregg A. Gass on behalf of the Kingsbury County Commission, which requested the Water Management Board to determine the outlet elevation for Lake Thompson. The Water Management Board has not set an Ordinary High Water Mark for Lake Thompson.

The Water Management Board has the authority to set the outlet elevation under the following:

74:02:01:50. Outlet elevation -- Inclusion in existing water rights or permits. When determining an ordinary high-water mark, the board may also set the outlet elevation consistent with the existing water rights or permits. The board may clarify or amend existing water rights or permits to include the outlet elevation consistent with chapter 46-2A.

46-1-14. Terms and conditions of permits and licenses--Amendment. The Water Management Board may issue any permit or license subject to terms, conditions, restrictions, qualifications, quantifications, or limitations on perpetuity consistent with this chapter which it considers necessary to protect the public interest and which are related to matters within the jurisdiction of the board. Water rights issued pursuant to this section may be amended by the board and priority is retained upon amendment. Upon amendment the board may alter terms, conditions, restrictions, qualifications, or quantifications consistent with this chapter.

46-2-5. Rules to establish procedures and practices of board. The Water Management Board may promulgate rules pursuant to chapter 1-26 to:

(1) Establish procedures for submitting applications;

(2) Establish procedures and criteria for issuing, amending, renewing, qualifying, inspecting, reinstating, suspending, and cancelling permits, rights, and licenses;

(3) Establish procedures and criteria for regulating water uses;

(4) Establish practice requirements and procedures for issuing declaratory rulings and conducting contested cases; and

(5) Establish procedures for determining ordinary high and low water marks and outlet elevations.

This report is based on the results of the field work and Global Positioning System (GPS) survey conducted October 30, 2012 by Jeremy Schelhaas and Lynn Beck engineering staff with the Department of Environment and Natural Resources. It is important to note that elevations in this report are in the National Geodetic Vertical Datum of 1929.

GENERAL INFORMATION

Lake Thompson is a natural lake located in Kingsbury and Hamlin counties. For many years the lake was approximately 5,000 surface acres and essentially dry. Since 1984, the lake has filled and presently convers approximately 18,000 acres and spills to the East Fork of the Vermillion River. The lake extends approximately15.5 miles from the north end to the outlet located at the south end of the lake in the approximate center of the W½ of Section 25, T108N, R55W. Lake Thompson is 5 miles east and 4 miles south of the town of DeSmet, SD. See map Attachment 1.

INVESTIGATION

The existing outlet for Lake Thompson is located in the approximate center of the W½ of Section 25, T108N, R55W.

The outlet is a natural ground elevation subject to both deposition and erosion. Several surveys have been performed at the outlet location since 1983 with varying results. Past surveyed elevations have ranged from 1686.7 to 1688.6 feet mean sea level (fmsl). In 1998 a survey was conducted resulting in the lowest noted elevation. The lowest elevation is the result of subtracting the sediment deposition noted in the area from the survey elevation resulting in a hard bottom elevation of 1686.7 fmsl.

On October 30, 2012, a GPS survey was conducted resulting in a hard bottom elevation at the outlet location of 1687.5 fmsl. The survey also included invert elevations of culverts located at channel crossings north of the outlet to Oldham Road (218th Street). An invert elevation was also taken at the box culvert immediately downstream of the outlet location. The resulting elevations and their locations show that the outlet is located at the approximate center of the W½ of Section 25, T108N, R55W at an elevation of 1687.5 fmsl. A majority of the hard bottom elevations taken in the flat channel bottom were at or near 1687.5 fmsl. A channel profile and the outlet cross section are shown in Attachments 2 and 3.

The cross section at the outlet location shows that the lowest hard bottom point surveyed is approximately one foot lower than the recommended outlet elevation of 1687.5 fmls. This does not represent the channel cross section as a whole as it represents a very small area of the channel. To construct an efficient outlet at the elevation of the lowest point in the cross section would affect the Ordinary High Water Mark. Even though an official OHWM has not been set by the Water Management Board one exists in nature.

All elevations in this report are referenced to a United States Department of the Interior, Geological Survey benchmark with a 1929 sea level datum described as follows:

> Base Station Benchmark – The benchmark is located 3 miles west and 8 miles south of the town of Oldham, SD; near the corner of Sections 25, 30, 31, and 36 T108N between R 54 and 55 W; 36 feet south and 34 feet east and 0.9 feet lower than the crossroads; 5

feet south of a power pole; in the top of a concrete post a standard plate stamped "26 BRL 1759" with a published elevation of 1759.316 fmsl.

The survey closed back on the base station with an elevation difference of less than 0.01 feet. The largest differences in elevation checks were 0.06 to 0.20 feet on benchmarks found 15 miles from the base station. The further from the base station the more error incurred. The outlet location is only a mile from the base station. These checks indicate that the survey is accurate.

WATER RIGHTS

Vested Water Right Claim No. 707-3 held by the South Dakota Department of Game, Fish and Parks is the only existing claim on file for water in Lake Thompson (Water Rights, 2013a). However, domestic uses (i.e. livestock watering, dams, dugouts, etc.) are present within the Lake Thompson drainage basin.

Vested Water Right Claim No. 707-3 claims an 1889 priority date, and approximately 27,500 acre-feet of water per year to fill Lake Thompson to the outlet level for recreational purposes. The locations of the points of diversion are as follows: SW¼ NW¼ Section 20, NE¼ SW¼ Section 22, and NE¼ SE¼ Section 28, all in T110N-R55W.

Pursuant to SDCL 46-2A-16 the validation of Vested Water Right Claim No. 707-3 was published June 22, and 29, 1988 in the DeSmet News. That notice stated the Chief Engineer's recommendation will be to validate the water right claim for sufficient water to fill the lake annually to the outlet elevation or to the elevation necessary to maintain the ordinary high water mark, whichever is lower. The only petition received opposing the validation was filed September 21, 1988 by the Chief Engineer of the Water Rights Division. The intent of the petition was to postpone validation for the following reasons.

1. Until the outlet elevation for the lake is surveyed and the outlet elevation is set by the Water Management Board.
2. To all the vested water right claim to be amended, if necessary, as follows:
   a) Included the outlet elevation;
   b) To correct the amount of water claimed;
   c) To add a qualification that a vested claim is subject where necessary to installation of a concrete outlet structure to assure retention of the outlet as the established elevation; and
   d) To add any amendments and qualifications necessary to clarify a vested right claim.

Vested Water Right Claim No. 707-3 can now be validated, stating that the amount of water claimed shall be "sufficient to fill Lake Thompson annually to the established outlet elevation of 1687.5 fmsl."

CONCLUSIONS

1. The Water Management Board has the authority to set the outlet elevation for Lake Thompson or any other water body.

2. A request has been received to set the outlet elevation for Lake Thompson.

3. The Department of Game, Fish, and Parks presently holds recognized Vested Water Right Claim No. 707-3 for Lake Thompson. However, the claim has not been validated pursuant to SDCL 46-2A-16 and SDCL 46-2A-17.

4. The outlet for Lake Thompson is in the W½ of Section 25, T108N, R55W at an elevation of 1687.5 feet mean sea level.

5. The Department of Game, Fish, and Parks Vested Water Right Claim No. 707-3 should be validated to allow storage of water to elevation 1687.5 feet mean sea level with a priority date of November 2, 1889 (date of statehood).

Lynn Beck
Natural Resources Engineer III
DENR – Water Rights Program

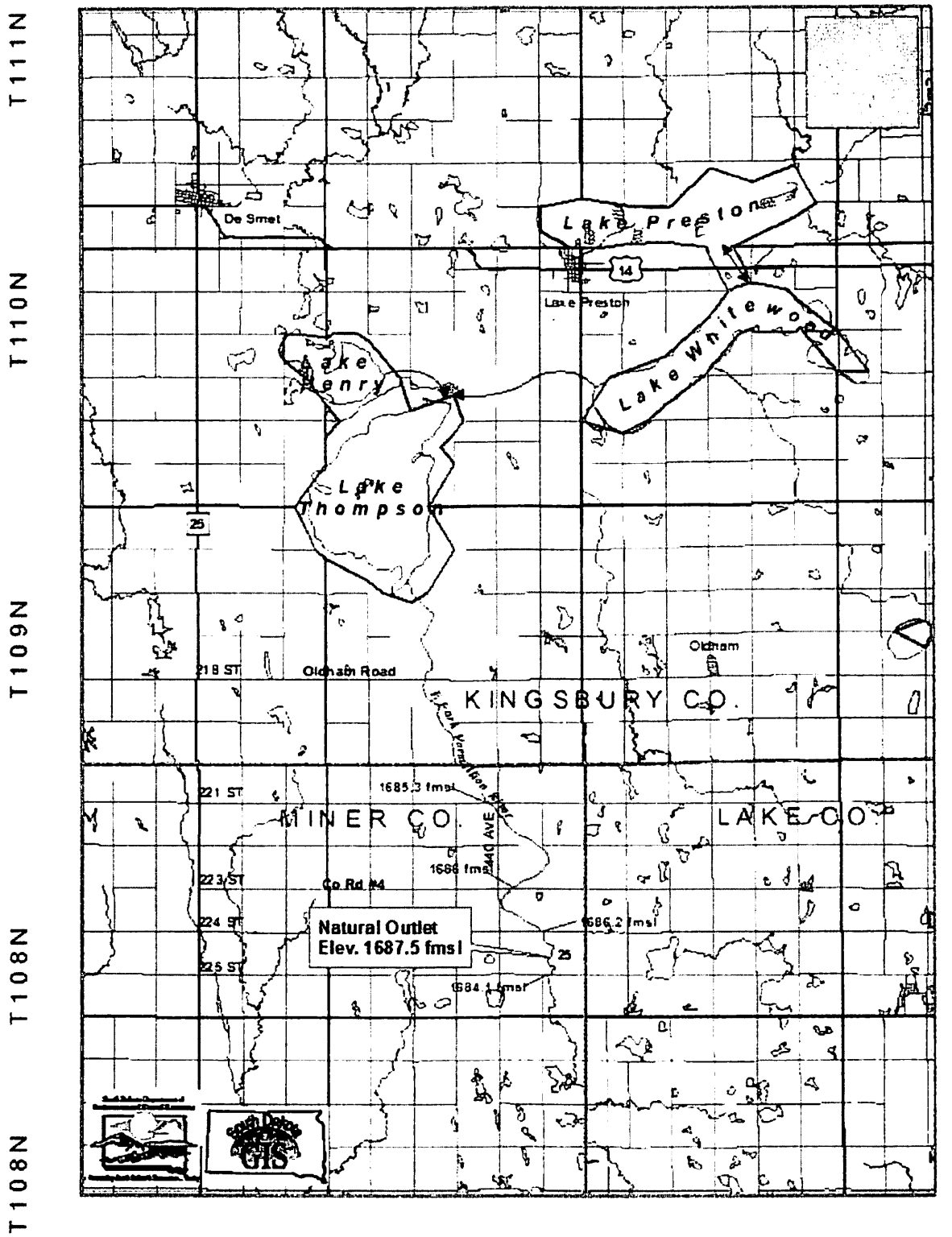
REFERENCES

Water Rights. 2013a. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

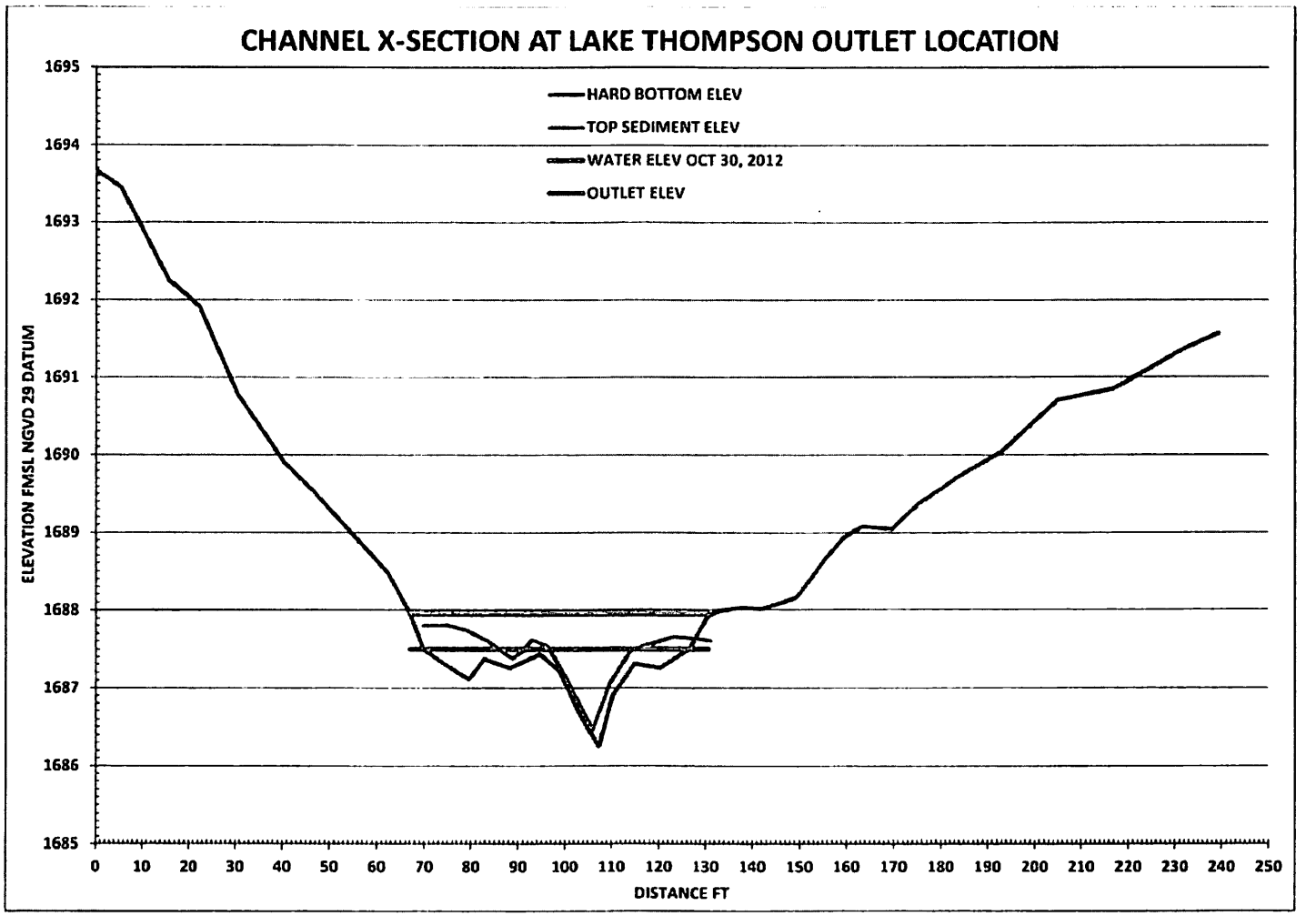
Water Rights. 2013b. Water General Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

ATTACHMENT NO. 1

LAKE THOMPSON OUTLET CHANNEL



ATTACHMENT NO. 2



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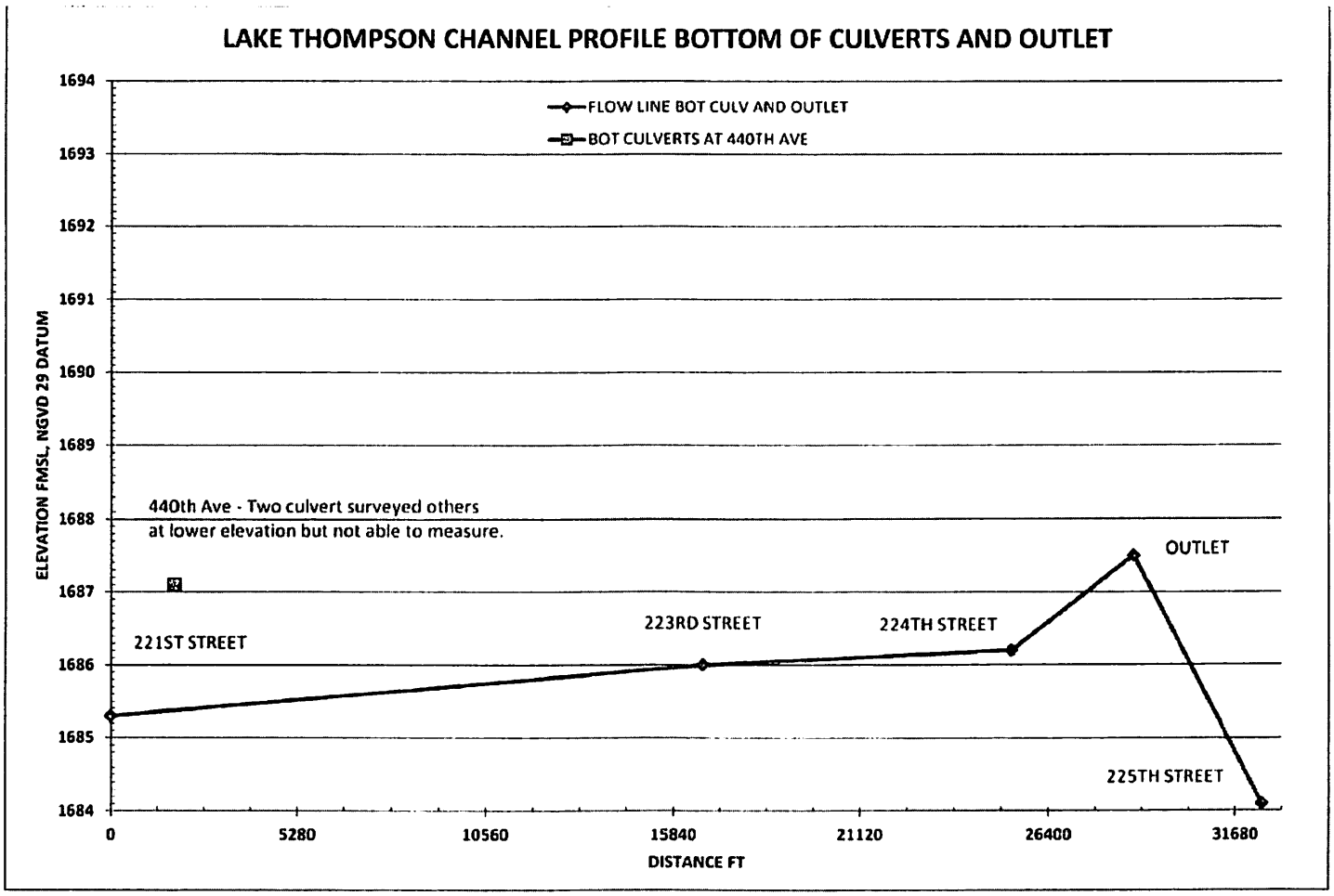
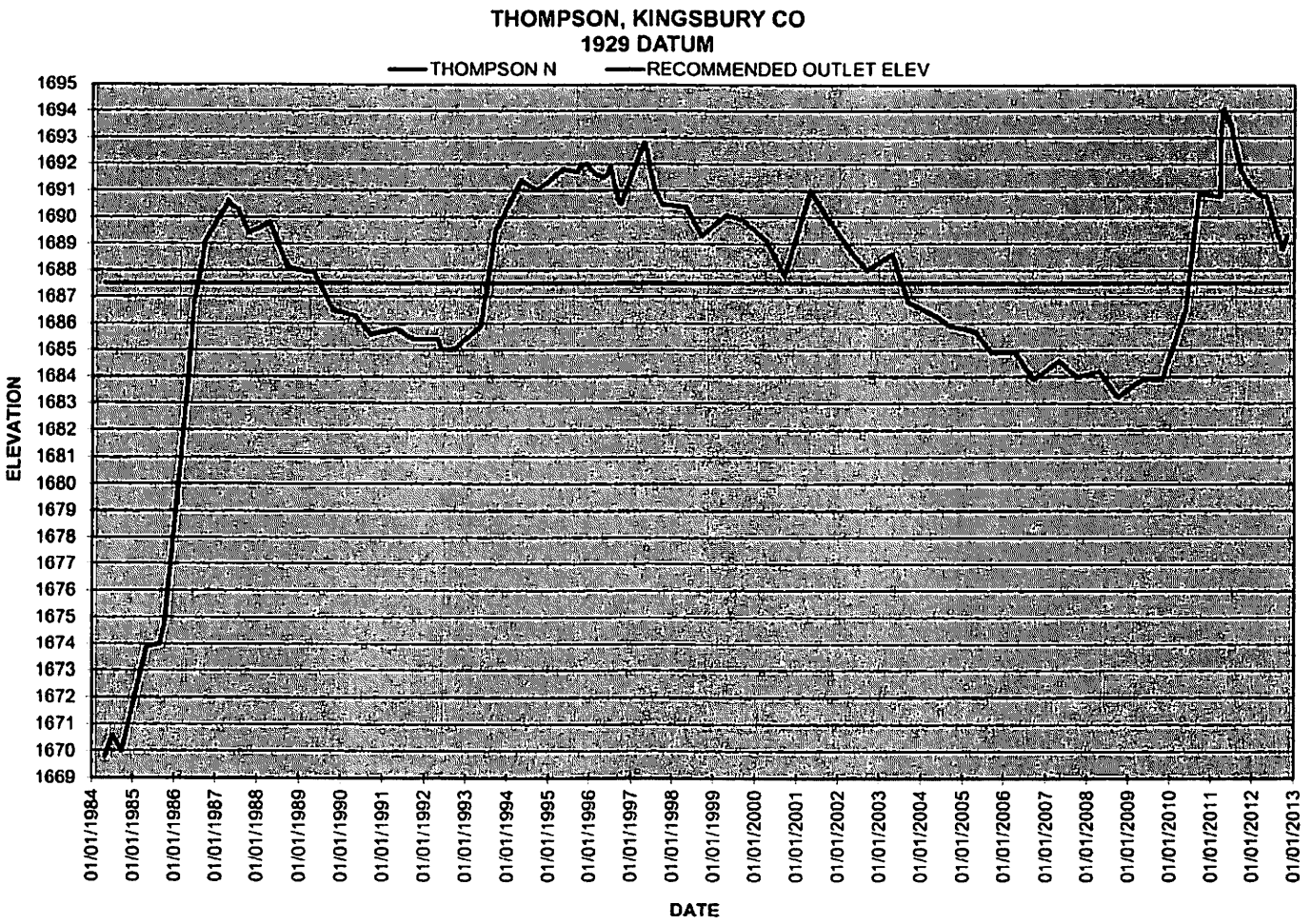
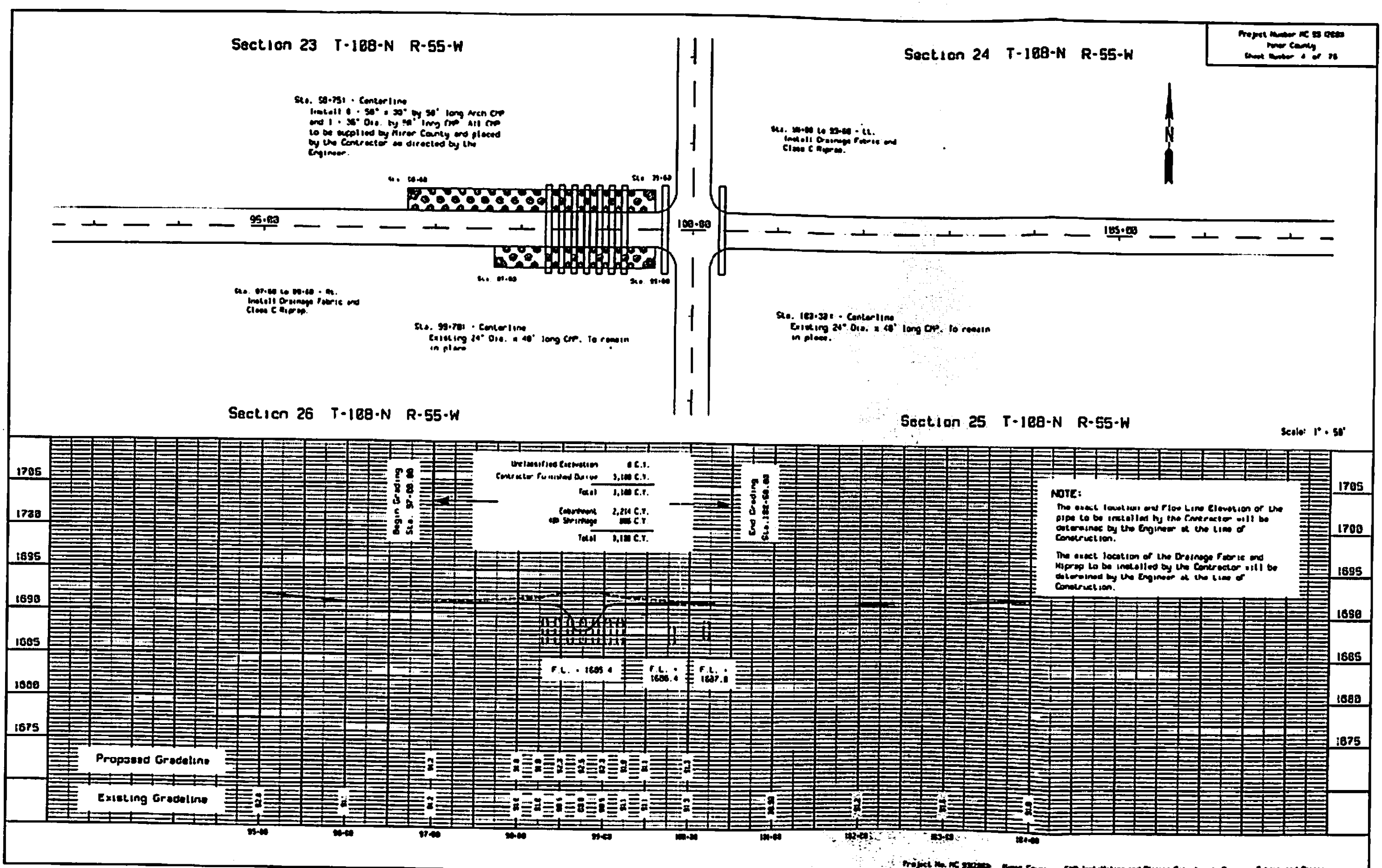


ATTACHMENT NO. 4



APPENDIX E
224TH STREET PLAN & PROFILE
(INCLUDES CULVERTS)


Project Number HC 93 [illegible]
Miner County
Sheet Number 4 of 76
Section 23 T-108-N R-55-W
Section 24 T-108-N R-55-W
Section 26 T-108-N R-55-W
Section 25 T-108-N R-55-W
Sta. 99+75± - Centerline
Install 6 - 58" x 36" by 50' long Arch CMP and 1 - 36" Dia. by 50' long CMP. All CMP to be supplied by Miner County and placed by the Contractor as directed by the Engineer.
Sta. 98+00 to 99+60 - Lt.
Install Drainage Fabric and Class C Riprap.
Sta. 98+00 to 99+60 - Rt.
Install Drainage Fabric and Class C Riprap.
Sta. 99+70± - Centerline
Existing 24" Dia. x 40' long CMP. To remain in place
Sta. 103+32± - Centerline
Existing 24" Dia. x 40' long CMP. To remain in place.
N
95+00
100+00
105+00
Scale: 1" = 50'
Begin Grading Sta. 97+00.00
End Grading Sta. 102+50.00
Unclassified Excavation 0 C.Y.
Contractor Furnished Borrow 3,100 C.Y.
Total 3,100 C.Y.
Embankment 2,214 C.Y.
40 Shrinkage 886 C.Y.
Total 3,100 C.Y.
NOTE:
The exact location and Flow Line Elevation of the pipe to be installed by the Contractor will be determined by the Engineer at the time of Construction.
The exact location of the Drainage Fabric and Riprap to be installed by the Contractor will be determined by the Engineer at the time of Construction.
F.L. = 1685.4
F.L. = 1686.4
F.L. = 1687.8
1705
1700
1695
1690
1685
1680
1675
Proposed Gradeline
Existing Gradeline
95+00
96+00
97+00
98+00
99+00
100+00
101+00
102+00
103+00
104+00
Project No. HC 93[illegible] Miner County CMP Installation and Placing Embankment, Drainage Fabric, and Riprap

APPENDIX F
2019 LAKE THOMPSON WATER LEVELS
(PROVIDED BY DR. KNIGHT ON UNKNOWN ELEVATION DATUM)

Lake Thompson Water Levels (fmsl) (NAVD88 Datum)

Date	N Lake Thompson	Change (inches)	Outlet Lake Thompson	Change (inches)	225th Culvert	Change (inches)
5-23-19	1697.22					
5-28	1697.47	+3				
6-4	1697.59	+1.5				
6-5	1697.63	+0.5				
6-9	1697.55	-1.0	1696.7		1693.6	
6-12	1697.51	-0.5				
6-15	1697.47	-0.5				
6-18	1697.47	0				
6-24	1697.55	+1.0				
7-1	1697.71	+2.0				
7-4					1693.1	-6
7-10	1697.96	+3.0				
7-11			1696.86	+2.0	1693.6	+6
7-15	1698.08	+1.5				
7-17	1698.08	0				
7-18					1693.19	-5
7-20	1698.16	+1				
7-22	1698.12	-0.5				
7-23	1698.08	-0.5				
7-26	1698.08	0				
7-27	1698.0	-1.0				
7-29	1698.08	+1.0				

APPENDIX G
HYDRAULIC DATA SHEETS: 4 CELL – 12'X6' BOX CULVERT AT 225TH STREET

CIVIL DESIGN INC

HYDRAULIC DATA SHEET

County Miner | Project No. BRO 8049(8) | PCEMS 5775 | Sec. 25/36 | Township 108N | Range 55W
Station 10+00 | Over East Fork Vermillion River | Drainage Area 505 sq. mi. | Direction of Flow South
Preliminary ____ Final X | Q-Design Yr. Frequency 10 Yr. | Observed H.W. Elev Note 1
Bridge No. 49-231-050 | Location 8.0 Mi. North and 7.1 Mi. East of Howard on 225th Street.

Cross Section	Q_d cfs	W.W. Area sq.ft.	V fps	So. ft./ft.	Bottom		H.W. ft.	Dn ft.	C.L. FL Elev.	D.H.W. Elev.		Ch Ch	Degree Skew
					Structure	Ch.				Culv. Inlet	Bridge		
Box	1,200	264*	5.3	0.003	4Box=48'		5.6		1,684.3	1,689.9		no	30° LHF

Type: RCBC skewed 30° LHF w/30° FWW's at the inlet and 0° FWW's at the outlet
Size: 4-12x6
Location: Center at Sta. 10+10
Notes or Remarks: Q_{10} = 1,200 cfs Q_{25} = 2,500 cfs Q_{100} = 6,000 cfs Q_{500} = 15,000 cfs
HW_{100} = 1,692.8 $Q_{OT} = Q_{10}$ = 1,679 cfs $V_{max} = V_{25}$ = 9.1 fps
Provide Class B riprap at the outlet 2.5 feet thick at the width of 3 feet beyond the edge of each wingwall.
Extend riprap 20 feet downstream from the end of the apron.
Provide riprap protection for the inlet wingwall on northwest corner of the structure.

The existing overflow occurs directly over the structure at elev. = 1,690.1 (H.W. = 6.9')
The proposed overflow occurs 215' west of the structure at elev. = 1,690.52 (H.W. = 6.2')

NOTE 1: No high water marks were observed
Miner County is classified as "no special flood hazard area" by FEMA
Discharge calculated from using the existing systematic record and developing peak-flow
Magnitude/frequency relations assuming that the chain of lakes system is full.

* Box culvert is a 4 barrel 12x6 with the bottom submerged 6" to protect the Topeka Shiner
Q_2 flow = 115 cfs, elev. = 1,687.2 (2.9')

Distribution	
Hydraulics	12/01
Foundations	12/01
Secondary	
Urban Sys.	
City	
County	12/01
Consultant	SJM
Region	
Area Engineer	
Checked	MDG
Reviewed	DJW
Central File	

402 Permit: Yes X No ____ FEMA Floodplain: Yes ____ No X
Aerial Photo No. ____ Flight ____ Erodible ____
Quad. Map No. OLDHAM NW, SD
In Place Concrete vertical abut. w/ timber deck

Revision No. ____ Date: ____
Supplement No. ____ Date: ____
Reviewed By: ____
Bridge Hydraulics Engineer
Date: ____

Prepared By: Donald J. Weigel, PE
Clark Engineering Corporation, Aberdeen
Clark Project No. 01002
Date: 12/06/2001

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5018
DONALD J. WEIGEL
SOUTH DAKOTA

HYDRAULIC SUMMARY FOR PLAN SHEET

Q_d	1,200	cfs		cfs
A_d	264	sq. ft.		sq. ft.
V_d	5.3	fps		fps
Q_F	1,200	cfs		cfs
Q_{100}	6,000	cfs		cfs
Q_{OTfr}	1,679	cfs		cfs
V_{Max}	9.1	fps		fps

Q_d = design discharge for the proposed culvert or bridge based on 10 year frequency. El. 1,689.9.
Q_{OTfr} = overtopping discharge and frequency 16 yr. recurrence interval. El. 1,690.52.
Location Sta. 7+85.
Q_F = designated peak discharge for the basin approaching proposed project based on 10 year frequency.
Q_{100} = computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1,692.8.
V_{max} = maximum computed outlet velocity for the proposed culvert or bridge, based on a 27 year frequency.

The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.

Hydraulic Data to be Included on Roadway Profile Sheet

Flow					Elev.
Q_d =	1,200			cfs	1,689.9
Q_{100} =	6,000			cfs	1,692.8
Q_{OT} = Q	16	=	1,679	cfs	1,690.5

APPENDIX H
STRUCTURE 49-232-060: 2018 BRIDGE INSPECTION REPORT
(33' LONG BRIDGE AT 226TH STREET)

2018 Miner County
Bridge Inspection Report

Structure Number 49-232-060

Ulteig

We listen. We solve.™

5701 S. Corporate Place, Suite 1
Sioux Falls, SD 57108
(605) 323-2306 Telephone

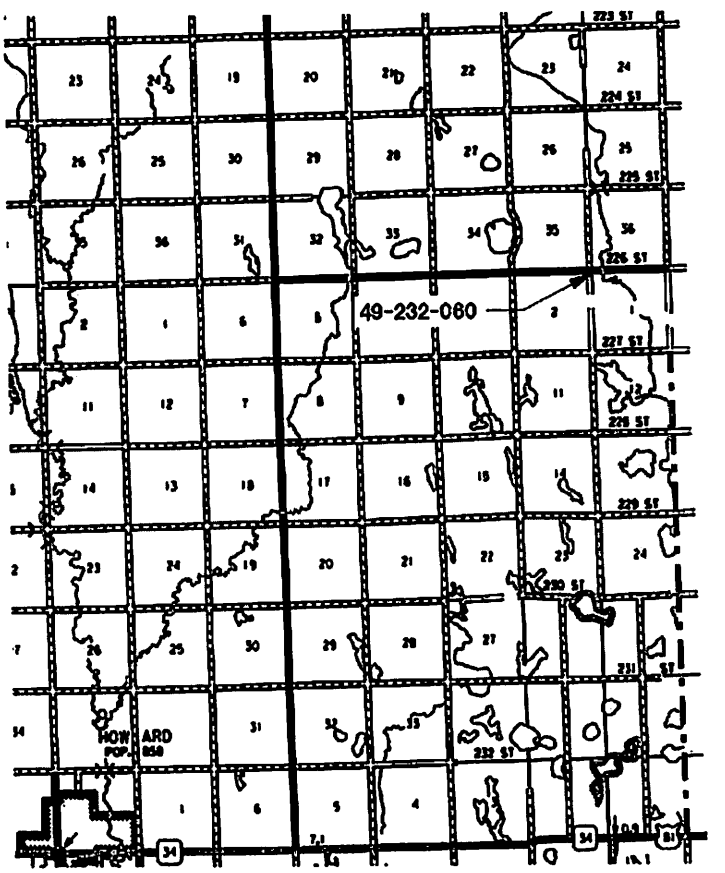
Structure Number: 49-232-060
County: Miner
FeatureCarried: 226 St.
Feature Crossed: East Fork Vermillion River
Location: 7.0 miles North and 7.2 miles East of Howard, SD
Bridge Description: 1 Span Precast, Prestressed, Concrete Double Tees, 33'-0" Long

Date Inspected: 18 June, 2018
Inspectors: BDS
Temperature: 75°
Crew Leaders Signature:

Repair Recommendations

1. Install Approach Rail.
2. Repaint Steel Abutment Cap

Location Map



Inspection Date: 18 June, 2018 49-232-060

Approach - Items 65.00 - 65.09

1. **Alignment**
   Approach roadways align well with structure both horizontally and vertically.

2. **Condition**
   Approach roadways are asphalt surfaced. They are smooth and in good overall condition.

3. **Joints**
   None

4. **Guard Rails**
   None

5. **Embankment**
   The bridge approach roadway embankments have inslopes of approximately 4:1. They are well grassed, stable, and in good condition.

6. **Drainage**
   Ditches drain adequately to the channel. (East Fork Vermillion River)

7. **Signing**
   Type II object marker and four delineators at all four corners.

Deck - Items 58.00 - 58.17

1. **Deck Condition**
   The deck is in fair condition with popouts and loose grout between deck units.
   - **A. Cracking**
     None.
   - **B. Scaling**
     None.
   - **C. Spalling**
     None.
   - **D. Delaminations**
     None.

2. **Overlay**
   None.

3. **Joints**
   None

4. **Drains**
   None

5. **Curbs and Median**
   None

6. **Sidewalks**
   None

7. **Railing or Barrier**
   There is W-Beam bridge rail attached to both sides of the structure on steel I-Beam rail posts. The bridge rails are in good condition.
   - **A. Railing Paint**
     None

8. **Lighting**
   None

9. **Utilities**
   None

Inspection Date: 18 June, 2018 49-232-060

Superstructure – Items 59.00 – 59.20

1. **Underside of Deck**
   The underside of the deck is in good condition.

2. **Bearing Devices**
   The deck units sit on neoprene bearing pads.

3. **Girders or Beams**
   There are nine (9) Double Tee deck units, all are in good condition.

4. **Diaphragms**
   The concrete diaphragms at the ends of the deck units have minor cracking and are in good condition.

5. **Trusses**
   None

7. **Rivets and Bolts**
   None

8. **Welds**
   None

9. **Paint**
   None

10. **Drainage System**
    None

11. **Utilities**
    None

12. **Reaction Under Load**
    There is normal reaction under load.

13. **Collision Damage**
    There has been no collision damage noted.

Inspection Date: 18 June, 2018 49-232-060

Substructure – Items 60.00 – 60.05

1. **Abutments**
   The abutments are constructed of steel H-Piles with corrugated metal backwalls.
   - **A. Wingwalls**
     Wingwalls are approximately 12' long and consist of (2) HP piles with steel backwall and a channel cap. Paint is peeling from cap.
   - **B. Backwalls**
     The backwall are constructed from 8 steel H-Piles, corrugated steel backwalls, and H-Pile caps with a channel welded to the front. The pile caps are rusting with section loss. Repainting is needed.
   - **C. Footings**
     None.

2. **Piers or Bents**
   None
   - **A. Caps**
     None
   - **B. Columns**
     None
   - **C. Footings**
     None

3. **Grout Pads**
   None

4. **Anchor Bolts**
   None

5. **Piles**
   All steel piles are in good condition.

6. **Bracing**
   None

7. **Paint**
   The paint is failing and the steel need repainting, especially the pile caps due to leakage on the cap.

8. **Movement**
   - **A. Plumbness**
     The structure has good plumbness.
   - **B. Settlement**
     There is no noted settlement.
   - **C. Horizontal**
     There is no noted horizontal movement.

Substructure – Items 60.00 – 60.05

Channel and Channel Protection – Items 61.00 – 61.09

1. **Channel**
   Channel is well established and in good condition.
   a. **Alignment**
      Channel aligns well with structure.
   b. **Vegetation**
      Channel and channel banks are adequately vegetated.
   c. **Scour**
      None.
   d. **Debris**
      None
   e. **Flow Line**
      Stable

2. **Embankment Erosion**
   There is no channel embankment erosion up or downstream.

3. **Waterway Adequacy**
   The structure opening is adequate for normal flows.

4. **Spur Dikes & Jetties**
   None.

5. **Wing Dams**
   None.

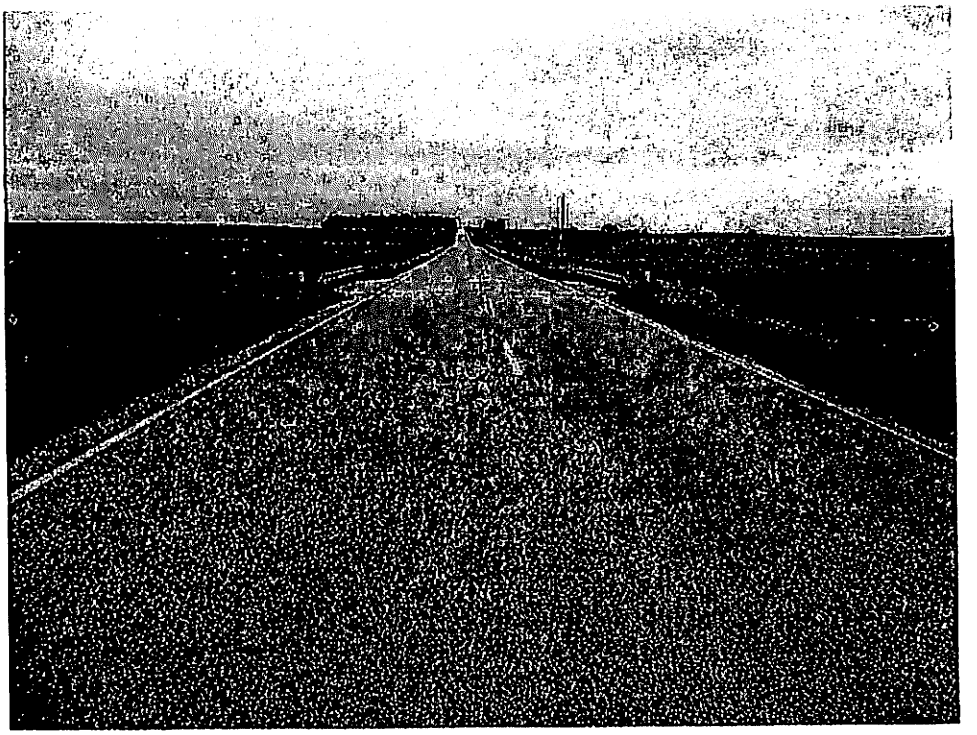
6. **Riprap**
   Rock Riprap at wingwalls and along abutments is in good condition.

7. **Observed High Water Elev.**
   No high water mark.

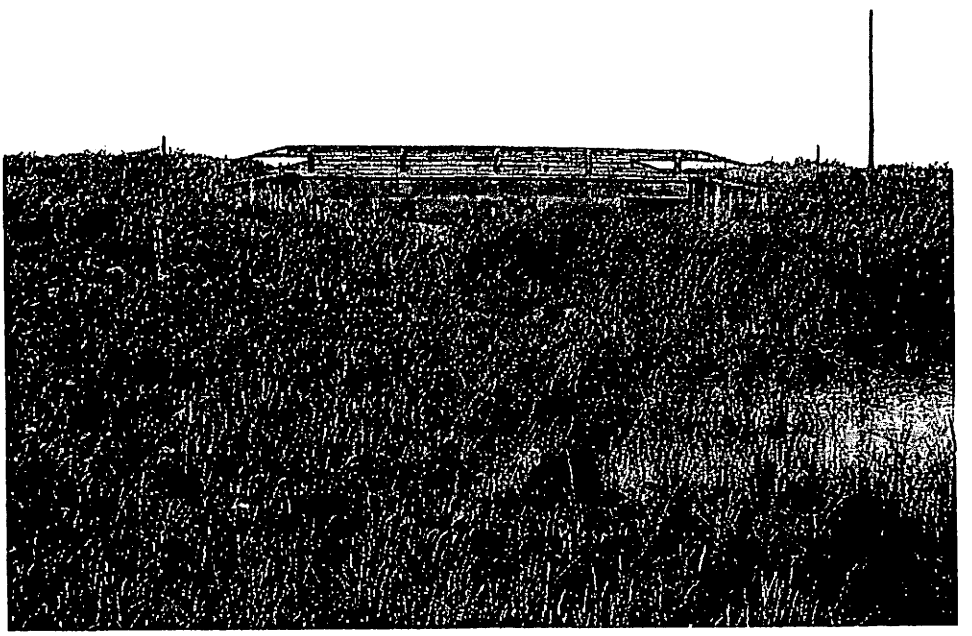
8. **Streambed**
   Stable

9. **Scour Cross Section (Upstream Side of Multispan Structures)**

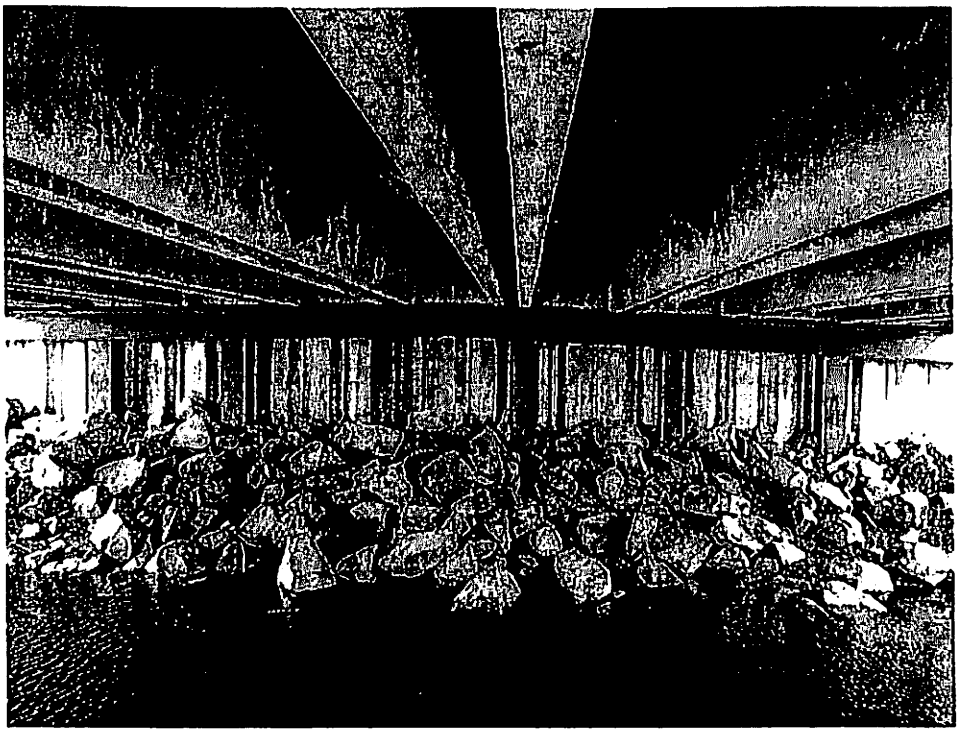
Sta.	-	-	-	-	-	-	-	-	-	-	-	-	-
Depth	-	-	-	-	-	-	-	-	-	-	-	-	-



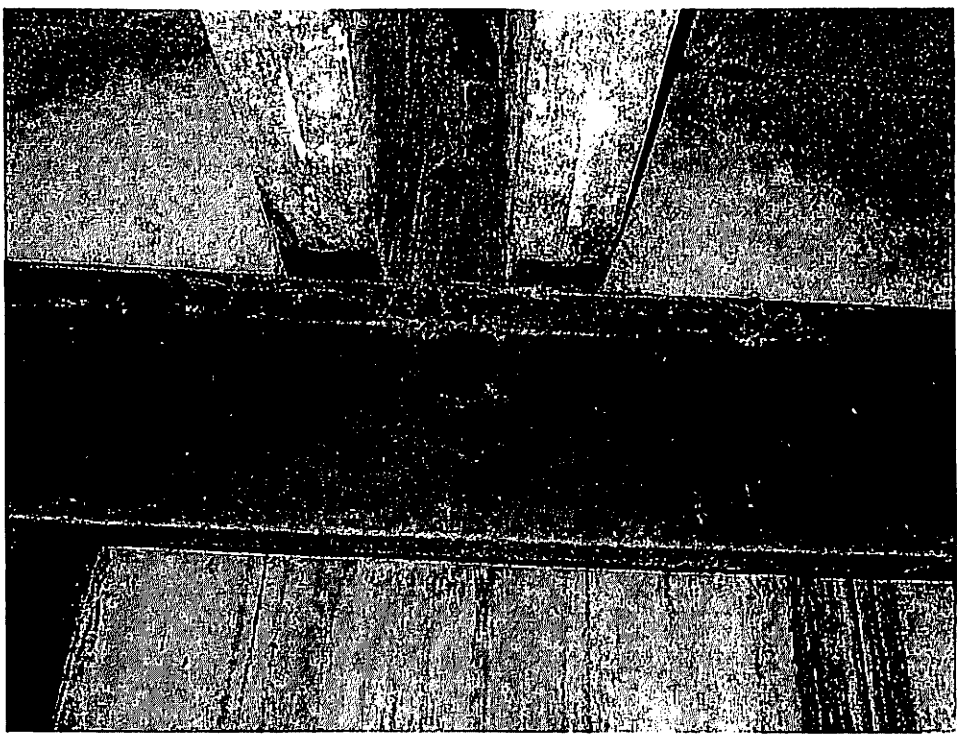
Roadway Facing East



Opening Facing South



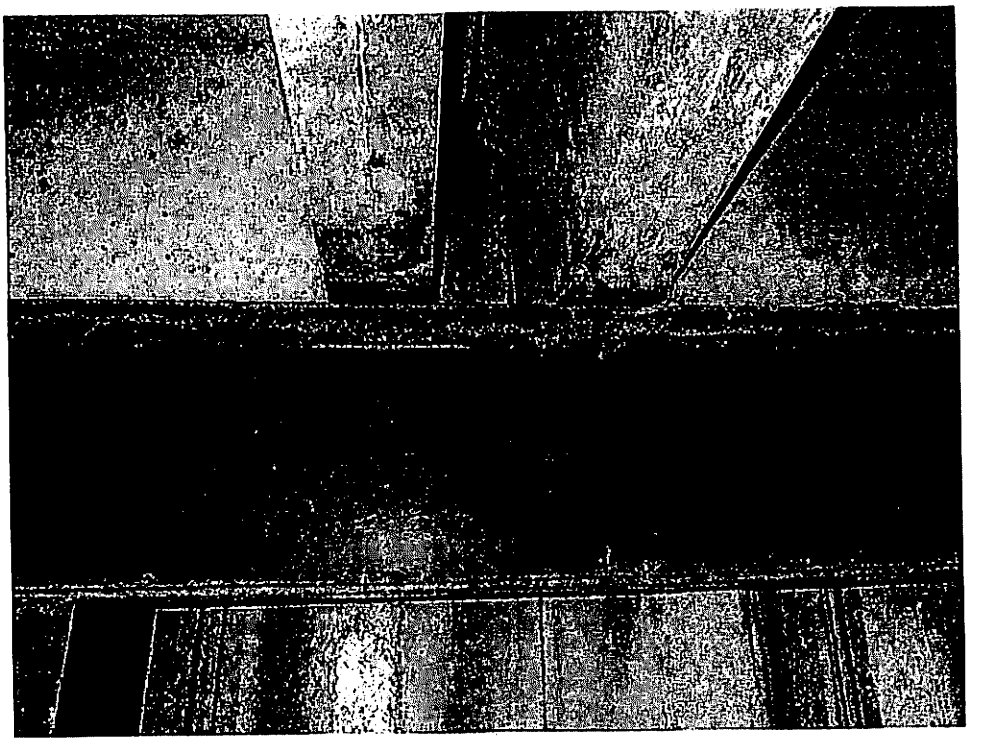
Underside of Deck Looking East



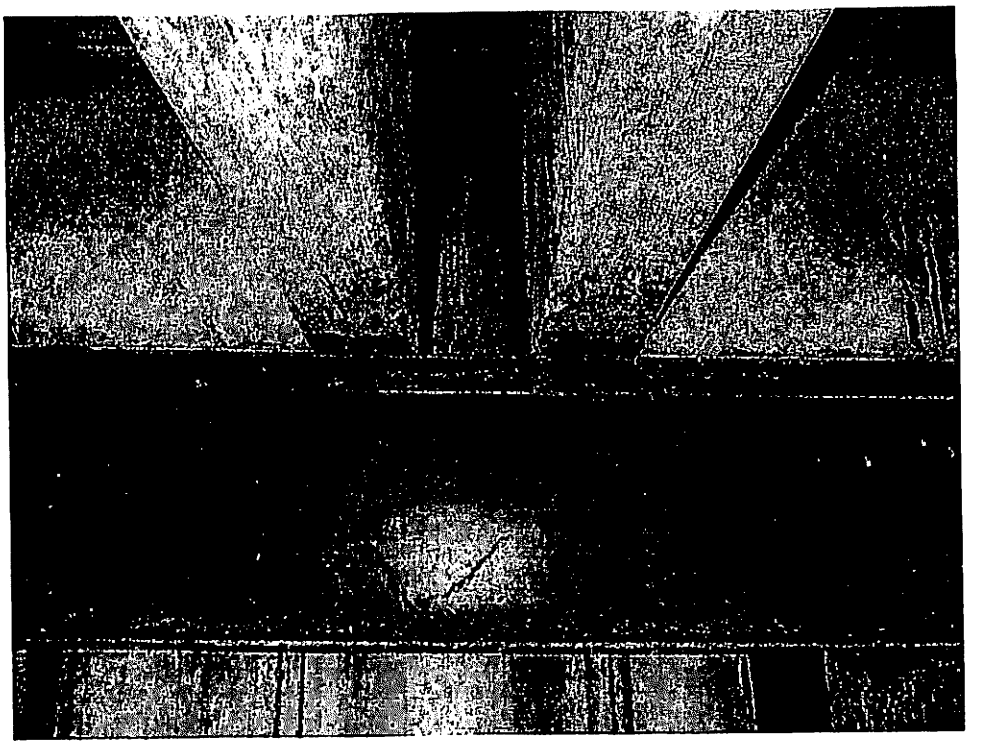
Unit 7, Abutment #2

Unit 6, Abutment #2

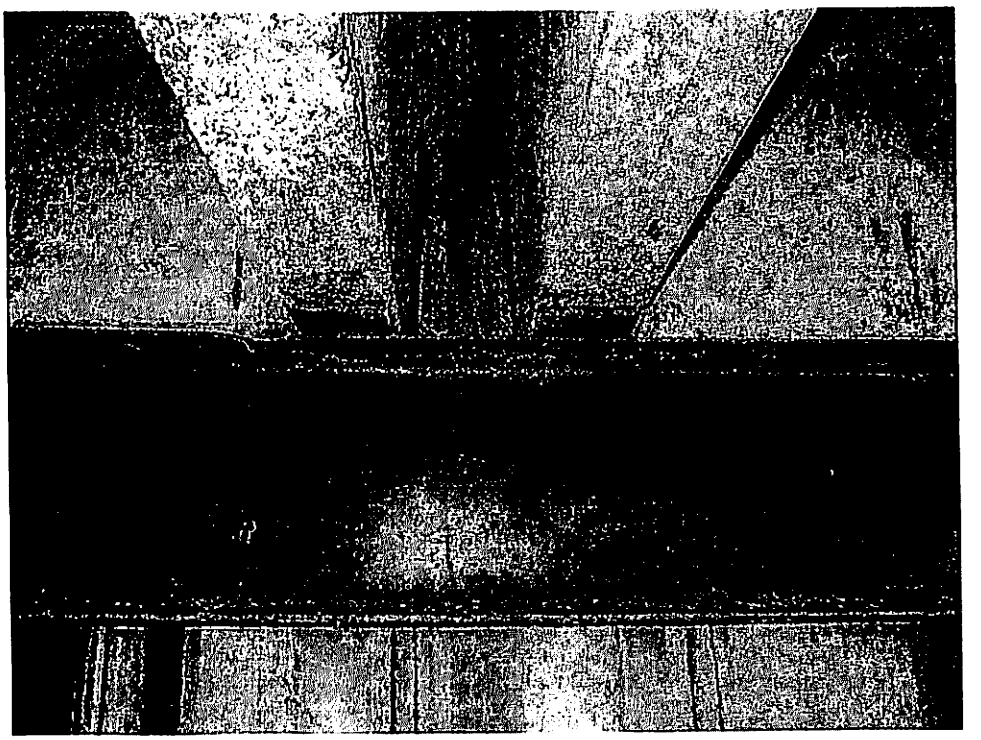
Unit 4, Abutment #2



Unit 2, Abutment #1



Unit 3, Abutment #1



Unit 8, Abutment #1

APPENDIX I
UPPER VERMILLION RIVER WATERSHED STUDY
PREPARED BY VICTOR ENGINEERING, JAN. 1997

STUDY AREA 1 - LAKE THOMPSON WATERSHED

AREA DESCRIPTION

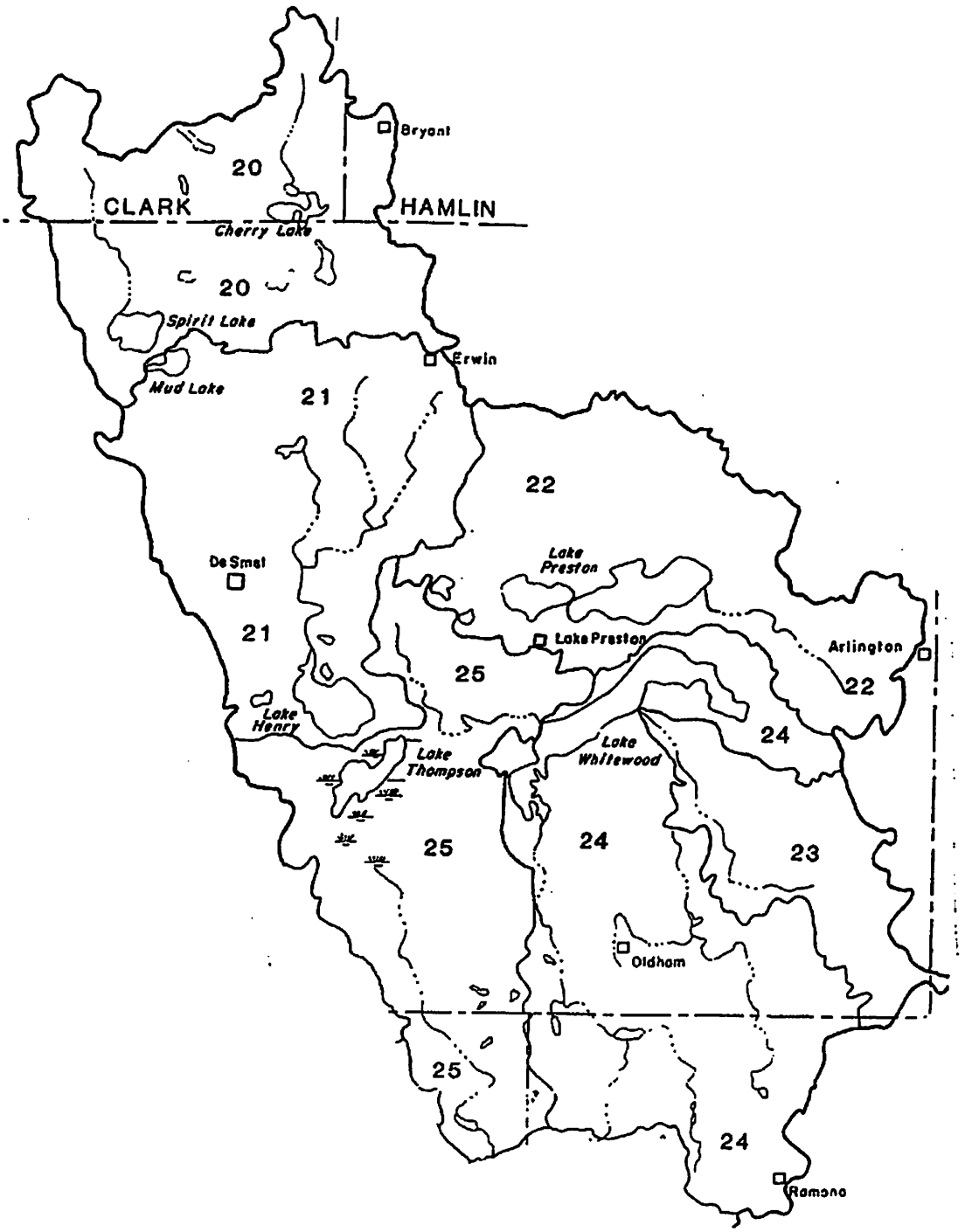
The Lake Thompson Watershed comprises approximately 494 square miles on the Prairie Coteau and covers much of Kingsbury County and parts of Lake, Miner, Clark, Brookings and Hamlin counties. (See figure 2) Lake Thompson is the receiving waters for all the lakes within this watershed with the overflow from Lake Thompson entering into the East Fork of the Vermillion River. The Prairie Coteau was formed during the Wisconsin glacial action. The depressions that resulted from the melting of the glacier formed the wetlands that presently exist. A survey done by US Fish and Wildlife Service reports that at least 30% of the original wetland acres in the Vermillion River Watershed have been drained partially or totally and that the percentage in the Lake Thompson Watershed was probably higher. Ducks Unlimited digitized wetlands from LANDSAT imagery and identified 8,655 existing wetlands totaling 76,000 acres (see table 1) in the Lake Thompson Watershed.[1]

Table 1 - Lake Thompson Watershed Wetlands

Wetland Size	Number of Wetlands	% of Total	Acres of Wetlands	% of Total
Less than 1 acre	6,606	75%	3,738	5%
1 acre or Larger	2,049	25%	72,262	95%
Totals	8,655	100%	76,000	100%
Less than 5 acres	7,604	88%	11,445	15%
5 acres or Larger	1,051	12%	64,555	85%
Totals	8,655	100%	76,000	100%

[1] Information obtained from Lake Thompson Watershed Protection Plan - 1991

Figure 2 - Lake Thompson Watershed



PREVIOUS STUDIES

In 1997, Governor George Michelson commissioned by executive order #87-8 the Lake Thompson/Eastern South Dakota Task Force to examine current problems and identify short and long range goals, work with governmental agencies to provide relief where possible and make recommendations for the improvement of wildlife habitat. After several meetings, the task force concluded that mechanical draining of flooded areas was not an immediate or cost effective option. This conclusion was based on the following information:

1. U.S. Corp. of Engineers estimated that dredging a channel to the East Fork of the Vermillion River would range from $16-$20 million, excluding the cost of the likely downstream damage the project would cause.

2. The South Dakota Department of Water and Natural Resources estimated the construction cost of a channel to Rock Creek, which could lower the lake level by three-quarters of a foot per month, at $4-$8.5 million, excluding damages to property owners along Rock Creek and the James River.

3. South Dakota Department of Water and Natural Resources estimated that dredging an outlet channel could run $1million excluding the cost of the control structure, easements, and damages.

Short term goals of this task force included alleviation of the impact of flooding by allowing people to retain ownership of their land and to study alternate routes for roadways which were partially or fully under water. Long range goals consisted of adaptation to the situation since lowering the water level in Lake Thompson was not economically feasible and to develop a wetland restoration plan for the watershed. It pointed out that restoration of wetlands would not alleviate the current hardships but would create storage for excess rainfall in the upper watershed and somewhat provide relief to Lake Thompson.

Upon receipt of the task force report, Governor Michelson instructed the secretary of the Game, Fish and Parks to provide technical expertise, and to identify programs and funding sources for wetland restoration. This brought about the development of the Lake Thompson Watershed Protection Plan published in 1991 by the South Dakota Game, Fish and Parks. This watershed plan involved three phases of restoration. Phase I focuses on protecting and restoring wetlands throughout the watershed and enhancing adjacent uplands. Phase II of the plan involved acquisition and management of the lands in and adjacent to the Lake Thompson Basin. Phase III consists of management of small wetland complexes to maximize production of waterfowl and other species of flora and fauna.

PROBLEMS AND CHARACTERISTICS

The water level of Lake Thompson increased from an elevation of 1668.2 in 1983 to 1690.1 in 1986 following above normal rainfall from a period of 1984 to 1986. The area of Lake Thompson grew to an 18,000 acre lake over 20 foot in depth due to this rainfall runoff. Lake Thompson was not the only area affected by this excessive rainfall. Small watersheds throughout the Lake Thompson Watershed Basin spilled out onto adjacent farm fields and roads incurring extensive damage when the wetlands within the watershed reached their overflow levels. Many roads within the area were totally closed due to the inundation of surface waters of expanded wetland lakes. As previously described, the Lake Thompson watershed basin is basically a closed system with overflow from Lake Thompson flowing into the East Fork of the Vermillion River. The natural outlet for the Lake Thompson Watershed Basin was established at an elevation of 1688.6. This outlet elevation corresponds to the high point dividing the Lake Thompson Watershed Basin with the East Vermillion River in Section 25 - Township 108 North - Range 55 West in Miner county.

DATA ACQUISITION

General

The first step in the study was the review of existing data, reports and flood related mapping. It also included a site survey confirming results of previous studies.

Data

Basic characteristics of the Lake Thompson Watershed Basin were developed using USGS 7.5' quadrangle maps and aerial photography along with site investigations. Other sources of information included national wetland inventory maps, lake level elevations furnished by the Department of Natural Resources and Soil Conservation Service Soil Classification maps.

Lake Levels vs. Precipitation

Precipitation records were obtained from the South Dakota Weather Service for recording stations located near or adjacent to the Lake Thompson Watershed Basin. These precipitation records were then plotted against lake level readings obtained by the Department of Natural Resources. This data is graphically presented in figure 3 to show the effects of precipitation amounts versus lake level elevations.

OUTLET CHARACTERISTICS - MINER CO. ROAD #4

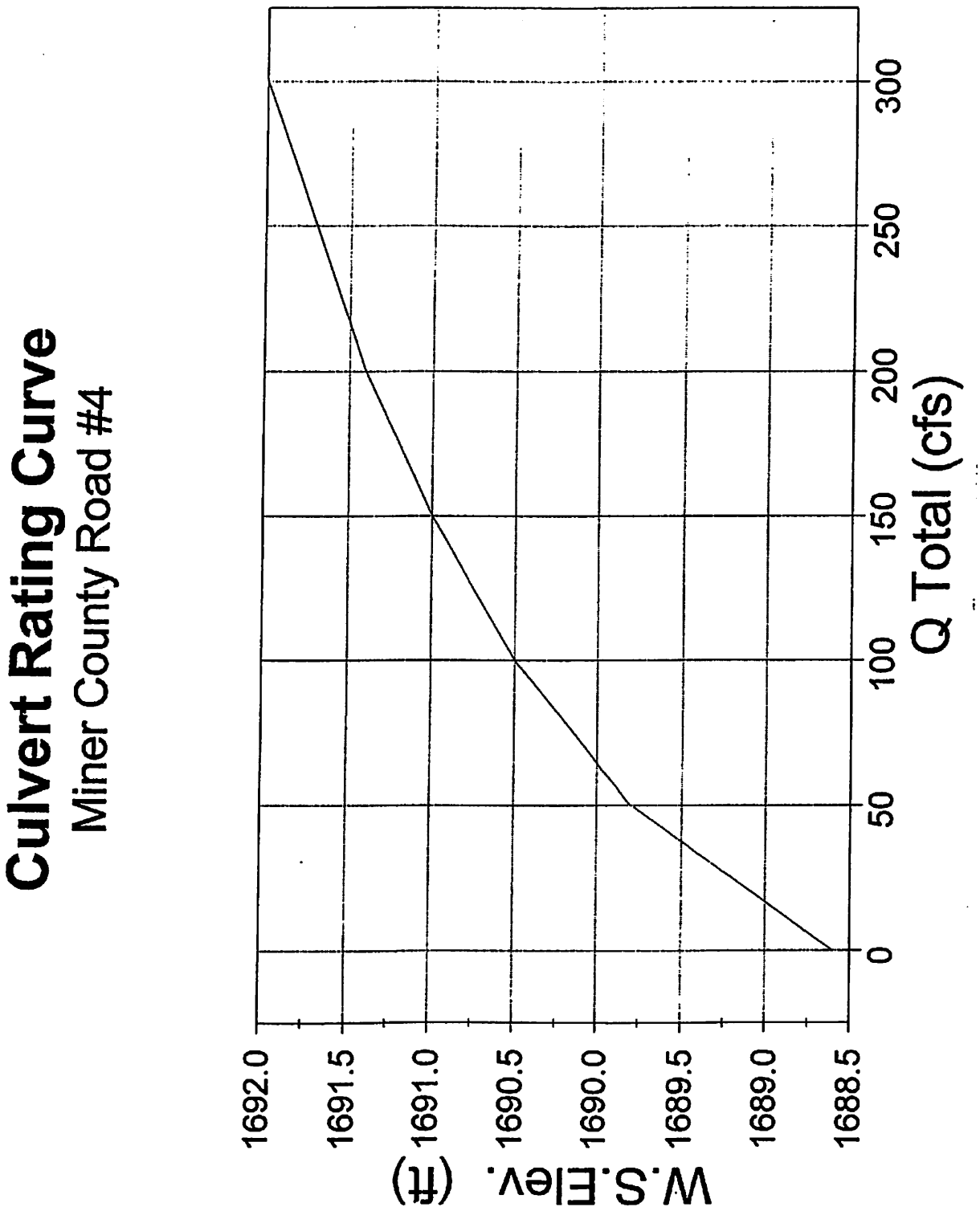
Characteristics of the Vermillion River from Miner County Road #4 to the Ramona gaging station were modeled for existing conditions. Elevations for the model were supplied by data furnished from previous surveying information along with recorded flows from the gaging station located along the south line of Section 36, Township 108 North, Range 55 West. This model set a basis for comparison of alternatives utilizing the computed flow

through Miner County Road #4 and Section 25 into the East Fork of the Vermillion River from Lake Thompson. Figure 4 represents the calculated rating curve under existing conditions at Miner County Road #4. Weir effects over Miner County Road #4 are not represented.

PROPOSED ALTERNATIVES.

Primary emphasis of the study for area #1 was to evaluate alternatives to manage the lake level of Lake Thompson and provide storage capacity for the Lake Thompson Watershed Basin. Various alternative were reviewed for managing lake levels on Lake Thompson. Preliminary calculations were made to analyze the effects of the township road along the north line of Section 25, Township 108 North, Range 55 West, the high point in Section 25, Township 108 North, Range 55 West and a rock field crossing located in Section 36, Township 108 North, Range 55 West. Results of this preliminary investigation showed that removal of the rock crossing in Section 36, Township 108 North, Range 55 West provided the most economical short-term means of increasing the flow from Lake Thompson's Watershed Basin into the East Fork the of the Vermillion River. As a result of these preliminary findings, the Vermillion Basin Watershed Management Advisory Board authorized the removal of this rock crossing in December of 1996.

This study investigated five possible alternatives for controlling the lake levels on Lake Thompson to provide maximized storage for rainfall events while minimizing negative impacts on environmental and natural wildlife habitat. At the April 16, 1997 meeting of the VBWMAB, the board requested investigation of a structure on Miner County Rd. #4 that would provide continual use of the road and equalize the water surface elevations on each side of the roadway. This is represented as alternative number 3.


Culvert Rating Curve
Miner County Road #4
W.S.Elev. (ft)
1692.0
1691.5
1691.0
1690.5
1690.0
1689.5
1689.0
1688.5
0
50
100
150
200
250
300
Q Total (cfs)

ALTERNATIVE NUMBER 1

INSTALL STRUCTURE - IN TOWNSHIP ROAD ALONG N LINE OF SECTION 25 - T108N - R55W

The township road along the north line of Section 25, Township 108 North, Range 55 West has been inundated due to the high water levels and outflow from Lake Thompson. This roadway has an elevation of approximately 1690 over a length of approximately one-quarter of a mile. There is an existing culvert in the channel providing flow through this roadway embankment, but records could not be found determining the size and field investigations could not determine the location and characteristics of this culvert. This study assumed that the existing culvert was a 24" culvert providing flow from the high point in Section 25 into the Lake Thompson Watershed Basin. Field investigations did show that there was a breech in the roadway of this township road allowing the water to flow to the south, minimizing the overtopping of the roadway. This segment of the outlet channel was modeled with 2- 5'x12' box culverts installed to provide for the conveyance of water below the existing elevation of the roadway. The result of the model showed that no increase in the flowage at the natural outlet occurred due to this alternative, however, it does provide equalization of water levels on each side of the roadway and provides accessibility and use of this roadway along with elimination of the breech that presently exists. Probable total project cost for this alternative are shown in Table 2. Since the roadway has not been utilized due to the flooding, and alternate routes are available, the township should consider abandoning this section of roadway and returning it back to a natural section.

Table 2 - Probable Total Project Cost for Alternative #1

ITEM DESCRIPTION	AMOUNT
Land Acquisition / Easements	$0.00
Construction Costs	$73,200.00
Project Contingencies	$10,980.00
Design / Engineering Costs	$8,784.00
Probable Total Project Cost	**$92,964.00**

ALTERNATIVE NUMBER 2

CHANNEL WIDENING / CONTROL STRUCTURE AT NATURAL OUTLET - SECTION 25, T108N, R55W

This alternative proposes widening the existing channel for a distance of approximately 1500 feet, constructing a fixed weir at an elevation of 1688.6, constructing a gated control structure and cleaning and grading the channel for a distance of approximately 3000 feet to the south line of Section 25-T108N-R55W. Figure 5 shows the area of channel widening. The control structure would be set at an invert elevation of 1687.0. The channel would be cleaned and graded uniformly to meet the existing channel elevation at the Hanson Bridge. The control structure was modeled with 4- 5'x12' Box Culverts with manually operated gates. The channel was widened to 160' in width (see figure 6) with a fixed weir constructed 200' upstream of the structure.

A review was also performed removing the fixed weir, cleaning the channel north of the control

structure to an elevation of 1687, and eliminating the channel widening. This option would be feasible providing permission was granted by the appropriate regulating agencies to allow control of the gated structure to be the responsibility of the VBWMAB with a operation agreement in place. The agreement would require the gates to be closed when the water surface elevation of Lake Thompson reached 1688.6 or when other flooding was taking place downstream on the Vermillion River. This alternative allows higher flows when Lake Thompson approaches the regulated outlet elevation. The potential flow through the outlet structure for both alternatives, 2 and 2A are represented in Table 3. The probable total costs for both alternatives are represented in Table 3A.

Table 3 - Potential Flows at Control Structure

Water Surface Elevation	Alternate 2 w/ weir Flow (cfs)	Alternate 2A w/o weir Flow (cfs)
1688.6	0	236
1689.0	122	328
1690.0	600	600
1691.0	900	900
1692.0	1228	1228

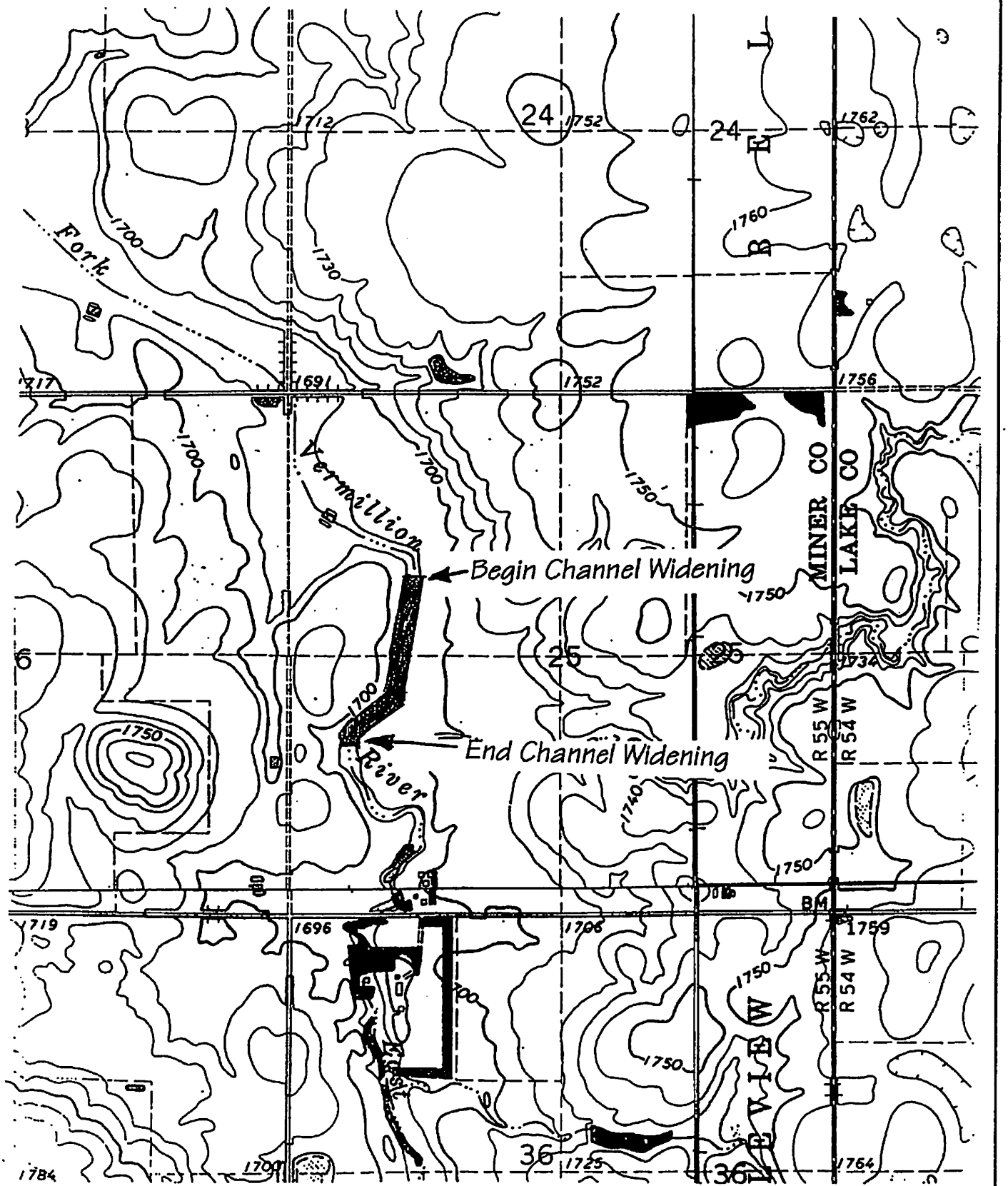


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Figure 5

Channel Widening

Section 25 - T108N - R55W

Victor Engineering
121 South Egan Ave.
Madison, S.D., 57042
(605) 256-0060

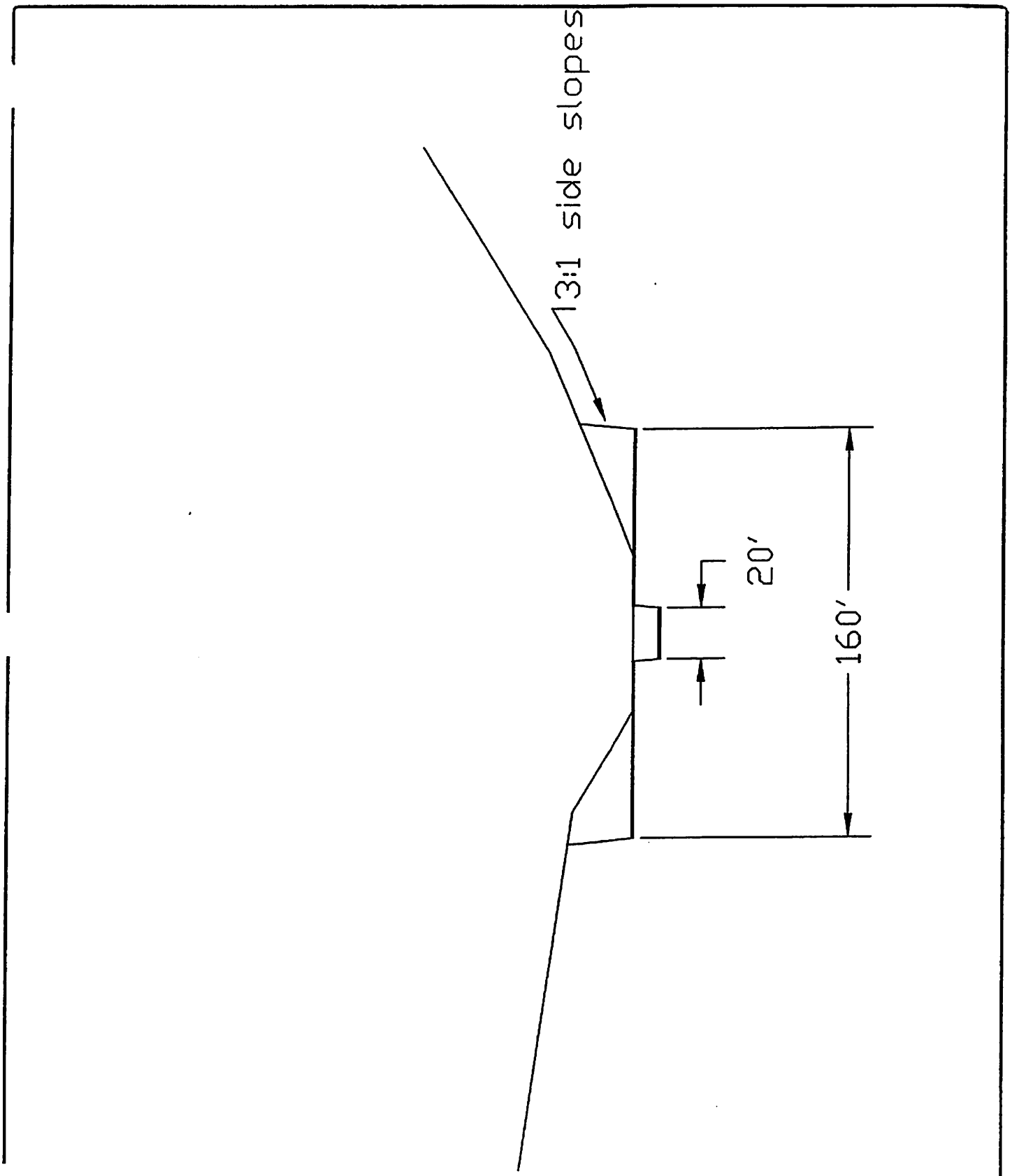

Figure 6

Channel Widening Typical Section

Section 25 - T108N - R55W

Victor Engineering
121 South Egan Ave.
Madison, S.D., 57042
(605) 256-0060

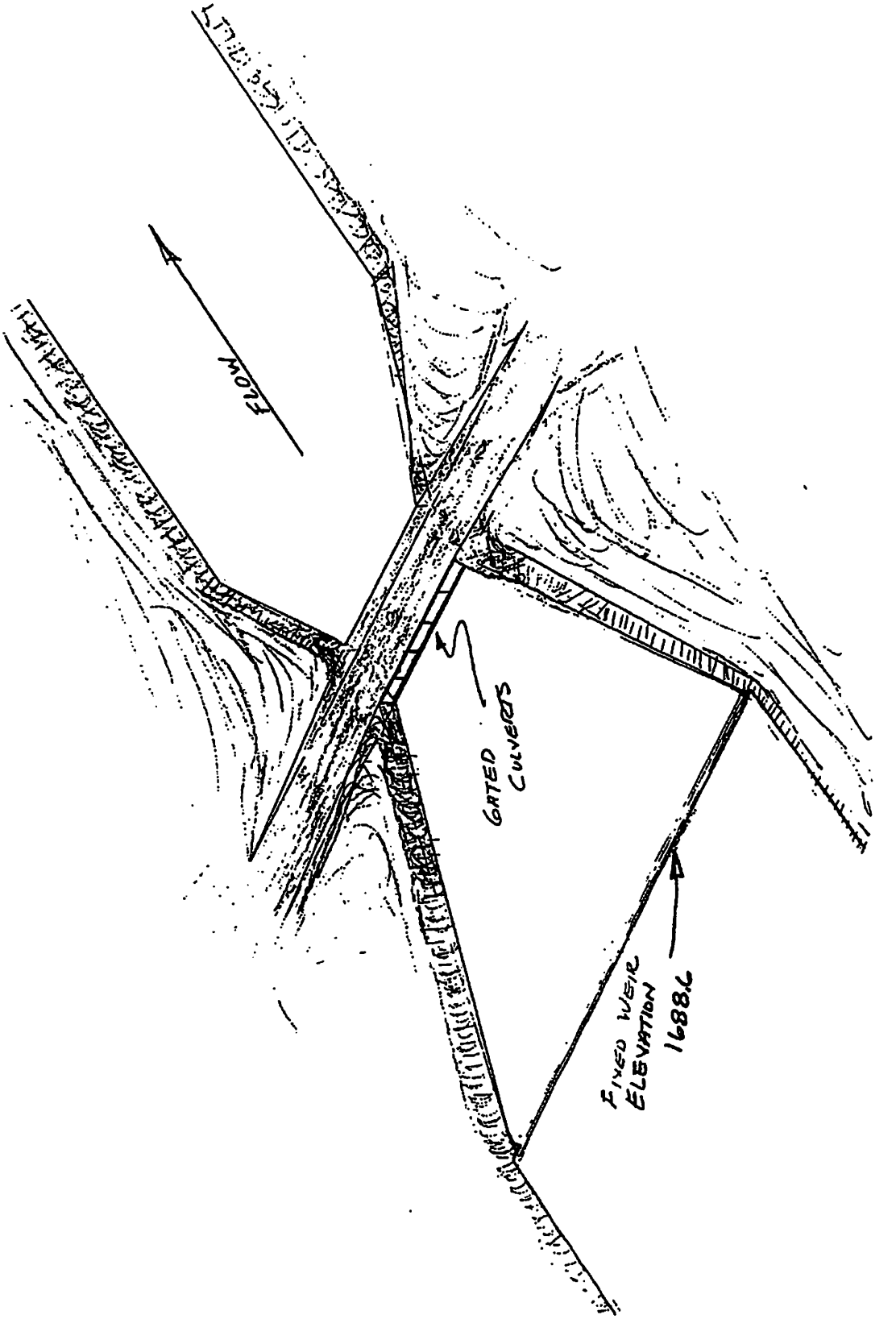

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Figure 7

Typical Control Structure

Victor Engineering
121 South Egan Ave.
Madison, S.D., 57042
(605) 256-0060

Table 3A - Probable Total Project Cost for Alternative #2

ITEM DESCRIPTION	ALTERNATE 2	ALTERNATE 2A
Land Acquisition / Easements for widening	$20,000.00	$15,000.00
Construction Costs for widening	$62,670.00	$0.00
Construction costs for clean out and grading	$15,000.00	$20000.00
Construction costs for fixed weir	$22,500.00	$0.00
Construction Costs for Control Structure	$239,720.00	$239,720.00
Project Contingencies	$53,983.00	$41,208.00
Design / Engineering	$49,665.00	$37,900.00
Probable Total Cost	**$463,538.00**	**$353,828.00**

ALTERNATIVE NUMBER 3

STRUCTURE AT MINER COUNTY ROAD #4

This alternate represents constructing a structure on Miner County Road #4 that provides equalization of water levels on both sides of the road and eliminates the continual overtopping of the roadway. Two (2) 9'x12' Box culverts with channel clean out and raising a portion of the road grade would equalize the water elevations and prevent the overtopping of the roadway when coupled with either alternate 2 or 2A. The probable project costs for this alternative are shown below in Table 3B.

ITEM DESCRIPTION	AMOUNT
Construction Costs for Alternate 3	$97,800.00
Project Contingencies	$14,670.00
Design / Engineering	$13,500.00
Probable Total Cost for Alternate #3	$125,970.00

ALTERNATIVE NUMBER 4

MECHANICAL PUMPING STATION.

As a means of reducing the water surface elevation in Lake Thompson after the natural gravity flow at the outlet falls below an acceptable outflow level, a pumping station was evaluated to continue the draw-down of Lake Thompson to an elevation of 1688.6 over a shorter period of time. The proposed pumping station would consist of three 50,000 gallon-per-minute storm water pumps located on the north side of Miner County Road #4. The proposed pumping station would provide for microwave control with the proposed stations operations being governed by conditions downstream on the Vermillion River. It would be utilized when there would be no economical impacts downstream due to its operations to reduce the lake level of Lake Thompson for providing storage capacity for future runoff events. See Figure 8 for sketch of a typical pumping station.

This pumping station was analyzed assuming a water surface elevation of Lake Thompson at 1690 plus or minus which is equal to approximately 18,000 surface acres. Three pumps at 50,000 gallons-per-minute would equal a discharge rate of approximately 334 cubic feet-per-second. With all three pumps pumping this station could discharge approximately 663 acre feet of water per day, or in effect lower Lake Thompson by one foot over a period of 27 days. The probable total project cost of this alternative is shown in Table 4. Estimated pumping cost in evaluating this structure, were based on assuming the following conditions:

a. Motor efficiency at 85%.

b. Pump efficiency at 75%.

c. Power cost per kilowatt hour at $.045.

d. Pump head equal to 10 feet.

Cost/Hr = (0.000189 x 150,000 x 10 x 0.045) / (0.85 x 0.75)
= $20.01

Operational costs were calculated to a probable cost per hour of pumping of $20.01 or a cost to lower Lake Thompson one foot in elevation at $13,040.

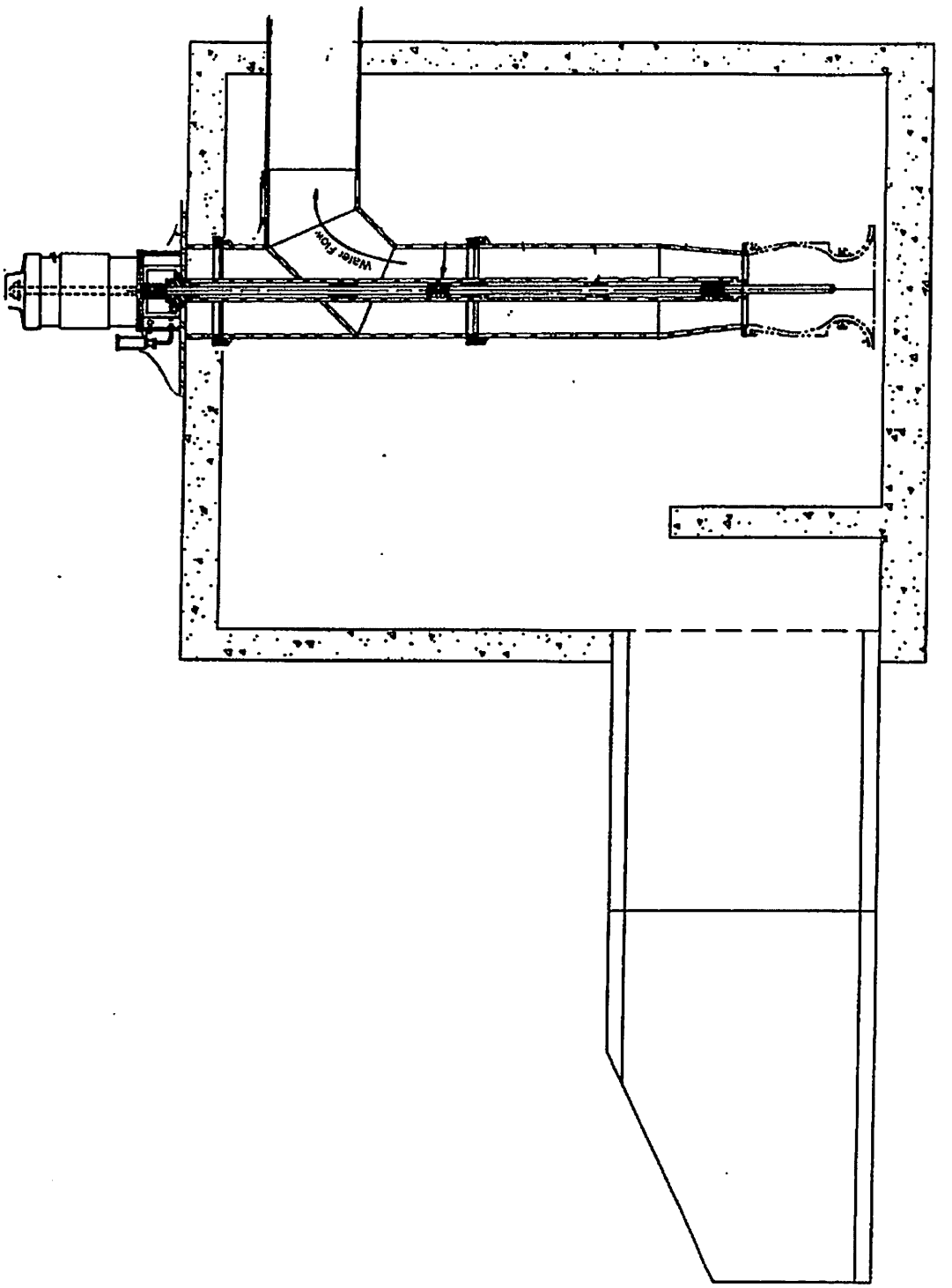
Table 4 - Probable Total Project Cost for Alternative #4

ITEM DESCRIPTION	AMOUNT
Land Acquisition / Easements	$0.00
Construction Costs	$291,000.00
Project Contingencies	$43,650.00
Design / Engineering Costs	$35,350.00
Probable Total Project Cost	**$370,000.00**

ALTERNATIVE NUMBER 5

WETLAND RESTORATION

Water storage in small wetlands helps to alleviate flooded roads and croplands throughout the Lake Thompson Watershed. More than 7,600 acres of wetlands under 5 acres in size are in the watershed. Those small wetlands average 1.4 feet in depth, approximately 10,600 acre feet of water could be held on the land following a spring thaw or a rainfall event. This alternative would provide for the continual restoration of existing wetlands within the watershed in accordance with the Lake Thompson Watershed Protection Plan dated 1991. The probable total project cost of this alternative in accordance with the Lake Thompson Watershed Protection Plan is $3,742,500.



Pump Station utilizes a vertical stormwater pump within a box culvert. Pump may be optionally enclosed.

Typical Pumping Station

Victor Engineering
121 South Egan Ave.
Madison, S.D., 57042
(605) 256-0060

CONCLUSIONS

It was determined that alternative #2 providing for channel widening does provide an increase flow from Lake Thompson to the Vermillion River. This flow though is dependent upon the head or elevation of Lake Thompson since it is a gravity flow situation. Alternative 2A provides more flow when the water surface elevation on Lake Thompson approaches 1688.6. Although a pumping station located on Miner County Road #4 would provide a continuous controlled level of output to control the lake level of Lake Thompson, the operation and maintenance of this pumping station would be cost prohibited to be reliable for lake level control.

RECOMMENDATIONS

The Vermillion Watershed Management Advisory Board should pursue investigation with regulating authorities regarding the outlet elevation for Alternate #2A. If authority is not granted, then alternate #2 is recommended for managing lake levels of Lake Thompson. Either of these two alternatives should be coupled with the abandonment of the township road along the north line of Section 25 and provisions for additional culverts or alternative #3 at Miner county road #4.

APPENDIX J
WATER MANAGEMENT BOARD RULINGS & STIPULATION
(2013)

RECEIVED
SEP 25 2013
WATER RIGHTS PROGRAM

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	)	WATER MANAGEMENT BOARD'S RULINGS ON PARTIES SUBMISSIONS

Pursuant to direction of the Water Management Board, counsel for Department of Environment and Natural Resources, Water Rights Program (DENR) submited proposed Findings of Fact, Conclusions of Law and Final Order. DENR's proposal was prepared with input from the Department of Game, Fish, and Parks, and the five counties that are parties to this proceeding, all whom entered a Stipulation. Intervenor Stephen Noding submitted his opposition to the Findings of Fact, Conclusions of Law and Final Order submitted by the DENR through a document dated September 10, 2013. No other parties submitted additional proposed findings of fact and conclusions of law or objections to the DENR proposed Findings of Fact, Conclusions of Law and Final Order. The Board, upon review of the submissions received, the administrative record, and having orally entered its revised decision on July 10, 2013 (oral decision), hereby enters the following rulings:

A. DENR's proposed Findings of Fact Nos. 1-24 are accepted by the Board as consistent with and supported by the administrative record and the Board's oral decision.

B. DENR's proposed Conclusions of Law are accepted by the Board as consistent with and supported by the administrative record, the Board's oral decision, and the Findings of Fact adopted by the Board in the above ruling as renumbered Conclusions of Law Nos. 1-20.

C. DENR's proposed Final Order is accepted by the Board as consistent with and supported by the administrative record, the Board's oral decision and the Findings of Fact and Conclusions of Law adopted by the Board in the above rulings.

D. Intervenor Noding's Opposition to the Findings of Fact, Conclusions of Law and Final Decision submitted by the DENR are rejected and denied. There is no factual or legal support for an outlet elevation of "at least 1689 fmsl." Further, Intervenor's opposition to the removal of silt as set forth in revised Section 6 of the Stipulation in inconsistent with the provisions of SDCL 46-5-1.1.

The Board's attorney is directed to prepare Findings of Fact, Conclusions of Law and Final Order consistent with the above rulings to be executed by the Chairman of the Board or the Board's designee without further notice or hearing.

Dated this 3 day of October, 2013.

BY THE BOARD:

Chad A Comes

Chad Comes, Chairman
S.D. Water Management Board

pld_JPH_Water Board - Lake Thompson (br)

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON	)	
IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	)	FINDINGS OF FACT, CONCLUSIONS OF LAW AND FINAL ORDER

The South Dakota Water Management Board ("Board"), having considered the evidence and argument presented by the parties at its March 6, May 1 and July 10, 2013 hearings, as well as all written submissions, hereby makes the following:

FINDINGS OF FACT

1. The parties are the Chief Engineer and Water Rights Program in the Department of Environment and Natural Resources (collectively "DENR"), the Department of Game, Fish, and Parks ("GFP"), Kingsbury County, Miner County, Lake County, Turner County, Clay County, and individuals Merrill Nelson, E. John Bruner, and Stephen Noding.

2. GFP filed Vested Water Right Claim No. 707-3 in 1988. It was published June 22 and 29, 1988, in the De Smet News. The Notice stated the Chief Engineer's recommendation will be to validate the water right claim for sufficient water to fill the lake annually to the outlet elevation or to the elevation necessary to maintain the ordinary high water mark, whichever is

lower. The only petition received opposing the validation was filed September 21, 1988 by the Chief Engineer of the Water Rights Division. The intent of the petition was to postpone validation for the following reasons.

- Until the outlet elevation for the lake is surveyed and the outlet elevation is set by the Water Management Board.
- To allow the vested water right claim to be amended, if necessary, as follows:
  a. Include the outlet elevation;
  b. To correct the amount of water claimed;
  c. To add a qualification that a vested claim is subject where necessary to installation of a concrete outlet structure to assure retention of the outlet as the established elevation; and
  d. To add any amendments and qualifications necessary to clarify a vested right claim.

3. In 2012 Kingsbury County made application to set the outlet elevation for Lake Thompson, which is located in Kingsbury and Miner Counties. As part of this proceeding, the Board also considered the previously filed vested right claim filed by GFP.

4. DENR conducted a field investigation to ascertain the physical data to identify the outlet elevation of Lake Thompson and Lynn Beck, a DENR engineer, issued a report. Based on the Beck report, the Chief Engineer proposed an elevation of 1687.5 feet mean sea level (fmsl).

5. DENR mailed a Notice of Hearing to Kingsbury, Miner, Lake, McCook, Turner, and Clay counties and riparian landowners. The Notice was also published in the DeSmet News, the Miner County Pioneer, the Brookings

Register, the Madison Daily Leader, the Arlington Sun, and the Lake Preston Times. The Notice allowed for intervention and scheduled an evidentiary hearing for March 6, 2013.

6. On February 19, 2013, Kingsbury County filed a letter supporting the Chief Engineer's recommendation. During the March 6 evidentiary hearing Kingsbury County supported the Chief Engineer's recommendation, but also was not opposed to a lower level of 1686.3 fmsl.

7. Merrill Nelson and E. John Brunner filed petitions to intervene. Both Mr. Nelson and Mr. Bruner own land in the Lake Thompson drainage basin and appeared at the evidentiary hearing on March 6. They advocated for an elevation of 1685 fmsl. They did not appear at any later hearings or file any additional motions or responses.

8. Jerry Gruenhagen filed a written petition opposing the Chief Engineer's proposed elevation of 1687.5 fmsl "because that level is too high." Although provided with Notice, Gruenhagen did not appear at any of the three hearings or file responses to any motions.

9. Dr. Stephen Noding intervened on February 12, 2013, proposing an outlet elevation of "at least one foot higher" than the 1,687.5 fmsl proposed by the Chief Engineer. He did not appear at the March 6 evidentiary hearing, but did appear at later hearings on May 1 and July 10. In a letter dated April 15, 2013, Noding proposed that the outlet elevation be at least 1687.5 fmsl or preferably a higher elevation that would include installation of sluice gates at the 218th St. overpass and maintaining the lake's water level at 1689 fmsl.

10. At the close of hearing on March 6, the Board made an oral ruling that the outlet elevation should be 1686.3 fmsl. The oral determination was not final; the Board required the parties to submit proposed Findings of Fact and Conclusions of Law for consideration on May 1.

11. Miner, Turner, Clay, and Lake Counties subsequently petitioned to intervene and were granted party status on May 1. The Board also granted their request for reconsideration and set a reconsideration hearing for July 10.

12. At the reconsideration hearing DENR, GFP, Kingsbury County, Miner County, Lake County, Turner County, and Clay County offered a Stipulation to address both the outlet elevation and GFP vested right. GFP also presented evidence showing that the 1686.3 fmsl outlet elevation would have a detrimental effect on its several boat ramps on Lake Thompson and urged the Board to adopt the stipulation instead. Bruner and Nelson did not appear.

13. Noding appeared in opposition to the stipulation at the July 10 hearing. He argued that Section 6 of the stipulation improperly contemplated clean out of silt from the lake outlet area and that silt removal is unnecessary and unwarranted.

14. The ordinary high water mark and the ordinary low water mark for Lake Thompson have not been set and were not under consideration in these proceedings.

15. Since 1984, Lake Thompson has filled and now covers approximately 18,000 acres and spills into the East Fork of the Vermillion River.

16. The outlet for Lake Thompson is located in the approximate center of the W ½ Section 25, T108N-R55W, Miner County, South Dakota. The outlet consists of a broad, relatively flat channel bottom which spills into the East Fork of the Vermillion River.

17. Water in Lake Thompson must pass through the outlet before flowing into the East Fork of the Vermillion River. The outlet is a natural elevation subject to deposition and erosion.

18. The hard bottom elevations taken in the channel bottom are shown in Attachment 2 of the recommendation of the Chief Engineer on Establishment of an Outlet Elevation for Lake Thompson. Several of those elevations are at or near 1,687.5 fmsl. A cross section at the outlet location shows that the lowest hard bottom point surveyed is 1686.3 fmsl.

19. The Board relies upon evidence from the expert for the DENR, Lynn Beck, including Attachment No. 2 of Ms. Beck's report which is attached hereto and incorporated by reference.

20. The Board recognizes that the entire outlet configuration should be analyzed if any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is contemplated in the future that may impact the OHWM or would otherwise affect the stage, level or flow of waters of the state. Such future changes to the outlet itself would need to be assessed when they are planned.

21. GFP claims a 1889 priority date for public recreational purposes. It is undisputed that while water levels changed over the years, at any given

time, Lake Thompson was used for public recreational purposes on a legally continuous basis since statehood in 1889. Such public recreational purposes include use of the lake for fishing, boating, swimming, picnicking, hunting and other recreational purposes. There are several public boat ramps on this lake.

22. GFP Vested Water Right Claim No. 707-3 is the only existing claim on file for water in Lake Thompson. However, domestic uses (i.e. livestock watering, dams, dugouts, etc.) are present within the Lake Thompson drainage basin.

23. Vested Water Right Claim No. 707-3 claims approximately 27,500 acre-feet of water per year to fill Lake Thompson to the outlet level for recreational purposes.

24. Vested Water Right Claim No. 707-3 can now be validated, stating that the amount of water claimed should be "sufficient to fill Lake Thompson annually to the established outlet elevation of 1,687.5 fmsl."

CONCLUSIONS OF LAW

1. This Board has the jurisdiction and authority to set the outlet elevation for Lake Thompson under SDCL 46-1-1, 46-1-2, 46-2-9, and ARSD 74:02:01:50.

2. This Board has the jurisdiction and authority to validate the vested right for GFP under SDCL 46-1-1, 46-1-2, 46-2-9, 46-2-11, 46-2A-16, 46-2A-17, and 46-5-9.

3. Notice of Hearing was properly made and published pursuant to law.

4. The Chief Engineer made recommendations on both the outlet level and on the vested right. The Chief Engineer's recommendations are not final or binding on the Board, who is authorized to accept, reject, revise or defer action on the Chief Engineer's recommendation.

5. The parties are DENR, GFP, Kingsbury County, Miner County, Lake County, Turner County, Clay County, and individuals Merrill Nelson, E. John Bruner, and Stephen Noding. Jerry Gruenhagen did not appear at any hearings and forfeited his right to participate. SDCL 1-26-17. Although he was provided with courtesy copies of Motions and other filings, he has waived the right to receive additional notices under ARSD 74:02:01:12.02.

6. DENR, GFP, Kingsbury County, Miner County, Lake County, Turner County, Clay County entered into a Stipulation. During hearing on July 10 the parties to the stipulation orally agreed to change section 6 of the stipulation to read: "Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed pursuant to SDCL 46-5-1.1."

7. The term "outlet elevation" is not specifically defined by South Dakota Codified Law or administrative rule, but the definition can be ascertained by the context. The Stipulation offers the following explanation of the term:

> This matter pertains to the natural outlet elevation for Lake Thompson. Interpreting SDCL 46-5-1.1 and ARSD 74:02:01:50 together, along with the plain meaning of the term "outlet," the "outlet elevation" of a lake is the lowest elevation at which water leaves or "outlets" a lake while maintaining the lake's natural stage, level or flow. The "outlet elevation" is distinguished from a designed or constructed outlet elevation when the designed or constructed outlet elevation changes the stage, level or flow of the

water of the state and requires a flood control permit or other water permit in light of SDCL 46-5-1.1.

This explanation is proper in light of the statutory framework and administrative rule involved.

8. The word "outlet elevation" is used in ARSD 74:02:01:50 (. . . The Board may clarify or amend existing water rights or permits to include the outlet elevation . . . .). While the term is not specifically defined in the rule, court cases provide that words in statutes are to be given "their plain meaning and effect" and that it is necessary to "read statutes as a whole, as well as enactments relating to the same subject." *State v. Anders,* 2009 S.D. 15, ¶ 10, 763 N.W.2d 547, 551. These rules of construction apply.

9. The "plain meaning" of the term "outlet" in the context of the "rule as a whole" refers to water leaving or going out of a lake as referenced in a water right or water permit. In the case at hand, the only water right involved is that of GFP. GFP relies on use of water from the natural outlet elevation. There is no constructed or designed elevation and GFP is not requesting one.

10. To define the natural outlet elevation it is also useful to examine "other enactments relating to the same subject." SDCL 46-5-1.1 explains the scenarios that are *not natural*: changes in the stage, level, or flow of waters of the state. SDCL 46-5-1.1 makes it clear that any structures that change the stage, level, or flow of waters of the state are *not* natural outlet elevations and instead require permits for the new elevation. It stands to reason that the converse is true: that a "natural outlet elevation" would be one that does not change the stage, level, or flow of waters of the state.

11. The declared "natural outlet elevation" should reflect actual water flow elevations from a lake (in this case as shown by Attachment No. 2), not just the lowest level where water will trickle out. If this Board were to declare a "natural outlet" elevation as the very lowest level in the channel, construction at such a level, if it changed other outlet elevations in the channel, would still have the tendency to change the stage, level, or flow of waters of the state and would not be "natural."

12. The parties to the Stipulation agreed to obtain permission from the Board before constructing any outlet structure. This is due to the varying configuration of this particular outlet. Regardless of the stipulation, of course, the foregoing explanation of the "natural outlet elevation" applies.

13. The stipulation was signed by all parties except Bruner, Nelson, and Noding. Bruner and Nelson did not appear at the July 10 hearing or otherwise file any opposition to the Board's consideration of the stipulation.

14. Noding opposes the stipulation. Noding's opposition to the Stipulation does not prevent the Board from considering it. *Steiner v. Marshall County* 1997 S.D. 109, 568 N.W.2d 627. Noding, as an intervenor, was afforded the opportunity to present evidence and have his objection heard at the July 10 hearing.

15. Noding's objection to the Stipulation arises from his understanding of Section 6 of the stipulation. Section 6, read in conjunction with the remainder of the stipulation, provides that the parties do not need to approach this Board for ordinary maintenance of the outlet so long as such maintenance

does not amount to any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet that would impact the Ordinary High Water Mark, if one is established, or would affect the stage, level, or flow of Lake Thompson or the waters of the state. Similarly, SDCL 46-5-1.1 does not require Board action for routine maintenance like tree removal or removal of silt, but would require action if structural changes or excavation was undertaken that changes the stage, level, or flow of the water. Consequently, Section 6, as amended by the parties at hearing, provides the same as the law already provides. Section 6 is proper and can be approved.

16. In light of SDCL 46-5-1.1, any future proposed structural changes, excavation of the hard bottom of this channel, or change in location of the outlet must be analyzed to determine whether they affect the OHWM or otherwise affect the stage, level, or flow of Lake Thompson or the downstream channel or other waters. At such time the outlet configuration would need to be analyzed and appropriate plans submitted to the Chief Engineer for analysis.

17. The Board should retain jurisdiction over this matter to address any proposed changes that would affect the OHWM or otherwise affect the stage, level, or flow of waters of the state.

18. The Department of Game, Fish, and Parks presently holds recognized Vested Water Right Claim No. 707-3 for Lake Thompson. However, the claim had not been previously validated pursuant to SDCL 46-2A-16 and SDCL 46-2A-17.

19. The Department of Game, Fish, and Parks Vested Water Right Claim No. 707-3 is validated to allow storage of water to elevation 1,687.5 fmsl with a priority date of November 2, 1889 (date of statehood).

20. Having considered the evidence and legal argument submitted, as well as the filed Stipulation, and having rendered the foregoing Findings of Fact and Conclusions of Law, the Board hereby makes the following:

ORDER

1. The Stipulation is hereby approved and is incorporated by reference as though set forth herein.

2. The GFP vested water right claim is hereby validated for sufficient water to maintain the water level up to 1687.5 fmsl.

3. The outlet elevation is hereby declared to be 1687.5 fmsl and the Board hereby acknowledges that there exist within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.

4. Based on the unique circumstances of this particular matter as well as the configuration of the outlet and its location, neither GFP nor anyone else may construct any outlet structure at 1687.5 or any other elevation unless approval is granted by this Board. Further, the entire outlet configuration must be analyzed and approval of this Board must be obtained before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

5. The Board retains jurisdiction to address any changes to the outlet elevation, if requested.

Dated this 3 day of October, 2013.

BY THE BOARD:

Chad A Comes

Chad Comes, Chairman
S.D. Water Management Board

pld_JPH_Water Board - Lake Thompson FOF COL Order (br)

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

707-3

NOV 2 1 2013

South Dakota Department of Game, Fish & Parks
c/o Leslie Murphy
523 E Capitol
Pierre SD 57501

Dear Ms. Murphy:

The Water Management Board has validated the enclosed Vested Water Right No. 707-3. This validation gives legal status to the claim and is the final document for a vested right. Enclosed is the reissued water license which reflects the right as validated by the Board.

As long as the Department of Game, Fish & Parks uses the water beneficially, as stated in the validation, State Water Laws provide a continuing right to use the water.

Sincerely,

Joanne Goodman

Joanne Goodman, Chief Engineer
Water Rights Program
605 773-3352

enclosures

REISSUED

STATE OF SOUTH DAKOTA

VESTED RIGHT WATER LICENSE NO. 707-3

(1) The South Dakota Department of Game, Fish and Parks, 523 E Capitol, Pierre SD was issued Water License No. 707-3, for a vested right claim to appropriate 27,500 acre-feet of water annually in Lake Thompson from runoff, Kingsbury County, South Dakota, for public recreation purposes.

On October 3, 2013, the Water Management Board validated Vested Right No. 707-3. Vested Right No. 707-3 is being reissued to reflect the outlet elevation as it currently exists.

(2) Water in Lake Thompson has been applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the Department of Game, Fish and Parks holds Vested Water Right No. 707-3. The license is reissued, bearing the priority date of November 2, 1889.

The outlet for Lake Thompson is located in the approximate center of the W 1/2 Section 25-T108N-R55W. The Department of Game, Fish & Parks vested water right claim is validated for sufficient water to maintain the water level up to 1687.5 feet mean sea level (fmsl).

(3) This license is subject to South Dakota Water Law and the following Order by the Water Management Board:

- The Stipulation is hereby approved and is incorporated by reference as though set forth herein.
- The Department of Game, Fish & Parks vested water right claim is hereby validated for sufficient water to maintain the water level up to 1687.5 fmsl.
- The outlet elevation is hereby declared to be 1687.5 fmsl and the Board hereby acknowledges that there exist within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.
- Based on the unique circumstances of this particular matter as well as the configuration of the outlet and its location neither, the Department of Game, Fish and Parks nor anyone else may construct any outlet structure at 1687.5 fmsl or any other elevation unless approval is granted by the Water Management Board. Further, the entire outlet configuration must be analyzed and approval by the Board must be obtained before any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.
- The Board retains jurisdiction to address any changes to the outlet elevation, if requested.

Jeanne Goodman

NOV 2 1 2013

Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

date

SOUTH DAKOTA
VESTED WATER RIGHT NO. 707-3

Date of Receipt of Claim April 15, 1960.

Date of Validation October 3, 2013.

The Water Management Board validated Vested Water Right Claim No. 707-3 for South Dakota Department of Game, Fish & Parks, 523 E Capitol, Pierre SD 57501 with the following limitations, conditions and order:

1. Vested Water Right No. 707-3 is for sufficient water annually to maintain the water to the outlet elevation of 1,687.5 feet mean sea level (fmsl) for Lake Thompson. The outlet for Lake Thompson is located in the approximate center of the W 1/2 Section 25-T108N-R55W.

2. The appropriated water is used for fish and wildlife propagation and recreational use and may not exceed the amount of water needed for beneficial use.

   The water is to be used during the following annual period: January 1 – December 31.

3. The priority date of the Vested Water Right No. 707-3 is November 2, 1889.

4. The water has been applied to beneficial use.

5. Water Rights obtained in compliance with the laws of the State of South Dakota must not be unlawfully impaired by this appropriation.

Order by Water Management Board

1. The Stipulation is hereby approved and is incorporated by reference as though set forth herein.

2. The Department of Game, Fish & Parks vested water right claim is hereby validated for sufficient water to maintain the water level up to 1687.5 fmsl.

3. The outlet elevation is hereby declared to be 1687.5 fmsl and the Board hereby acknowledges that there exist within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.

4. Based on the unique circumstances of this particular matter as well as the configuration of the outlet and its location neither, the Department of Game, Fish and Parks nor anyone else may construct any outlet structure at 1687.5 fmsl or any other elevation unless approval is granted by the Water Management Board. Further, the entire outlet configuration must be analyzed and approval by the Board must be obtained before any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

5. The Board retains jurisdiction to address any changes to the outlet elevation, if requested.

WATER MANAGEMENT BOARD

By: Jeanne Goodman

NOV 2 1 2013

Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

date

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	STIPULATION

COME NOW, the undersigned parties and hereby stipulate as follows:

1) This matter pertains to the natural outlet elevation for Lake Thompson. Interpreting SDCL 46-5-1.1 and ARSD 74:02:01:50 together, along with the plain meaning of the term "outlet," the "outlet elevation" of a lake is the lowest elevation at which water leaves or "outlets" a lake while maintaining the lake's natural stage, level or flow. The "outlet elevation" is distinguished from a designed or constructed outlet elevation when the designed or constructed outlet elevation changes the stage, level or flow of the water of the state and requires a flood control permit or other water permit in light of SDCL 46-5-1.1.

2) The outlet for Lake Thompson is located in the W ½ of Section 25, T108N, R55 W, Miner County, South Dakota.

3) The cross-section of elevations at the outlet location is shown by "Attachment No. 2" of a report prepared by Lynn Beck, Natural Resources Engineer with DENR and incorporated herein by reference as "Exhibit A."

4) The bottom of the channel at the outlet is irregular, with its lowest elevation at 1686.3 feet mean sea level. The outlet elevation must take into consideration the configuration of the entire outlet cross section and not merely the lowest elevation point found in a narrow portion of the outlet cross section.

5) The outlet elevation should be established at 1687.5 feet mean sea level, with an acknowledgement that there exists within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.

6) Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed, subject to jurisdiction of the board.

7) However, the entire outlet configuration should be analyzed in this case before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is contemplated in the future that may impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

8) The Board should retain jurisdiction to address any potential changes to the hard bottom of the outlet that would affect the Ordinary High Water Mark, if one is established, or otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state, including any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet.

9) Vested Water Right Claim No. 707-3 of South Dakota Game, Fish, and Parks should be validated for sufficient water to maintain the water level up to 1687.5 fmsl.

10) This agreement may be executed in counterparts, each of which, when so executed and delivered, shall be deemed an original, but all of which together shall constitute one and the same document.

Dated this _____day of June, 2013.

_____
Kingsbury County _____(title)
On behalf of Kingsbury County

Dated this _____day of June, 2013.

_____
Lake County State's Attorney
On behalf of Lake County

Dated this 18 day of June, 2013.

_____
Miner County State's Attorney
On behalf of Miner County

Dated this _____day of June, 2013.

Clay County State's Attorney
On behalf of Clay County

Dated this _____day of June, 2013.

Turner County State's Attorney
On behalf of Turner County

Dated this 20th day of June, 2013.

Jeffrey R. Vonk, Secretary
On behalf of the South Dakota
Department of Game, Fish, and Parks

Dated this 20th day of June, 2013.

Jeanne Goodman, Chief Engineer
On behalf of the South Dakota
Department of Environment and Natural
Resources, Water Rights Program

Dated this _____day of June, 2013.

Steven Noding

Dated this _____day of June, 2013.

John Bruner

Dated this _____day of June, 2013.

Merrill Nelson

STATE OF SOUTH DAKOTA

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time, Lake Thompson was used for public recreational purposes on a legally continuous basis since statehood in 1889. Such public recreational purposes include use of the lake for fishing, boating, swimming, picnicking, hunting and other recreational purposes. There are several public boat ramps on this lake.

22. GFP Vested Water Right Claim No. 707-3 is the only existing claim on file for water in Lake Thompson. However, domestic uses (i.e. livestock watering, dams, dugouts, etc.) are present within the Lake Thompson drainage basin.

23. Vested Water Right Claim No. 707-3 claims approximately 27,500 acre-feet of water per year to fill Lake Thompson to the outlet level for recreational purposes.

24. Vested Water Right Claim No. 707-3 can now be validated, stating that the amount of water claimed should be "sufficient to fill Lake Thompson annually to the established outlet elevation of 1,687.5 fmsl."

CONCLUSIONS OF LAW

1. This Board has the jurisdiction and authority to set the outlet elevation for Lake Thompson under SDCL 46-1-1, 46-1-2, 46-2-9, and ARSD 74:02:01:50.

2. This Board has the jurisdiction and authority to validate the vested right for GFP under SDCL 46-1-1, 46-1-2, 46-2-9, 46-2-11, 46-2A-16, 46-2A-17, and 46-5-9.

3. Notice of Hearing was properly made and published pursuant to law.

4. The Chief Engineer made recommendations on both the outlet level and on the vested right. The Chief Engineer's recommendations are not final or binding on the Board, who is authorized to accept, reject, revise or defer action on the Chief Engineer's recommendation.

5. The parties are DENR, GFP, Kingsbury County, Miner County, Lake County, Turner County, Clay County, and individuals Merrill Nelson, E. John Bruner, and Stephen Noding. Jerry Gruenhagen did not appear at any hearings and forfeited his right to participate. SDCL 1-26-17. Although he was provided with courtesy copies of Motions and other filings, he has waived the right to receive additional notices under ARSD 74:02:01:12.02.

6. DENR, GFP, Kingsbury County, Miner County, Lake County, Turner County, Clay County entered into a Stipulation. During hearing on July 10 the parties to the stipulation orally agreed to change section 6 of the stipulation to read: "Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed pursuant to SDCL 46-5-1.1."

7. The term "outlet elevation" is not specifically defined by South Dakota Codified Law or administrative rule, but the definition can be ascertained by the context. The Stipulation offers the following explanation of the term:

> This matter pertains to the natural outlet elevation for Lake Thompson. Interpreting SDCL 46-5-1.1 and ARSD 74:02:01:50 together, along with the plain meaning of the term "outlet," the "outlet elevation" of a lake is the lowest elevation at which water leaves or "outlets" a lake while maintaining the lake's natural stage, level or flow. The "outlet elevation" is distinguished from a designed or constructed outlet elevation when the designed or constructed outlet elevation changes the stage, level or flow of the

water of the state and requires a flood control permit or other water permit in light of SDCL 46-5-1.1.

This explanation is proper in light of the statutory framework and administrative rule involved.

8. The word "outlet elevation" is used in ARSD 74:02:01:50 (. . . The Board may clarify or amend existing water rights or permits to include the outlet elevation . . . .). While the term is not specifically defined in the rule, court cases provide that words in statutes are to be given "their plain meaning and effect" and that it is necessary to "read statutes as a whole, as well as enactments relating to the same subject." *State v. Anders,* 2009 S.D. 15, ¶ 10, 763 N.W.2d 547, 551. These rules of construction apply.

9. The "plain meaning" of the term "outlet" in the context of the "rule as a whole" refers to water leaving or going out of a lake as referenced in a water right or water permit. In the case at hand, the only water right involved is that of GFP. GFP relies on use of water from the natural outlet elevation. There is no constructed or designed elevation and GFP is not requesting one.

10. To define the natural outlet elevation it is also useful to examine "other enactments relating to the same subject." SDCL 46-5-1.1 explains the scenarios that are *not natural*: changes in the stage, level, or flow of waters of the state. SDCL 46-5-1.1 makes it clear that any structures that change the stage, level, or flow of waters of the state are *not* natural outlet elevations and instead require permits for the new elevation. It stands to reason that the converse is true: that a "natural outlet elevation" would be one that does not change the stage, level, or flow of waters of the state.

11. The declared "natural outlet elevation" should reflect actual water flow elevations from a lake (in this case as shown by Attachment No. 2), not just the lowest level where water will trickle out. If this Board were to declare a "natural outlet" elevation as the very lowest level in the channel, construction at such a level, if it changed other outlet elevations in the channel, would still have the tendency to change the stage, level, or flow of waters of the state and would not be "natural."

12. The parties to the Stipulation agreed to obtain permission from the Board before constructing any outlet structure. This is due to the varying configuration of this particular outlet. Regardless of the stipulation, of course, the foregoing explanation of the "natural outlet elevation" applies.

13. The stipulation was signed by all parties except Bruner, Nelson, and Noding. Bruner and Nelson did not appear at the July 10 hearing or otherwise file any opposition to the Board's consideration of the stipulation.

14. Noding opposes the stipulation. Noding's opposition to the Stipulation does not prevent the Board from considering it. *Steiner v. Marshall County* 1997 S.D. 109, 568 N.W.2d 627. Noding, as an intervenor, was afforded the opportunity to present evidence and have his objection heard at the July 10 hearing.

15. Noding's objection to the Stipulation arises from his understanding of Section 6 of the stipulation. Section 6, read in conjunction with the remainder of the stipulation, provides that the parties do not need to approach this Board for ordinary maintenance of the outlet so long as such maintenance

does not amount to any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet that would impact the Ordinary High Water Mark, if one is established, or would affect the stage, level, or flow of Lake Thompson or the waters of the state. Similarly, SDCL 46-5-1.1 does not require Board action for routine maintenance like tree removal or removal of silt, but would require action if structural changes or excavation was undertaken that changes the stage, level, or flow of the water. Consequently, Section 6, as amended by the parties at hearing, provides the same as the law already provides. Section 6 is proper and can be approved.

16. In light of SDCL 46-5-1.1, any future proposed structural changes, excavation of the hard bottom of this channel, or change in location of the outlet must be analyzed to determine whether they affect the OHWM or otherwise affect the stage, level, or flow of Lake Thompson or the downstream channel or other waters. At such time the outlet configuration would need to be analyzed and appropriate plans submitted to the Chief Engineer for analysis.

17. The Board should retain jurisdiction over this matter to address any proposed changes that would affect the OHWM or otherwise affect the stage, level, or flow of waters of the state.

18. The Department of Game, Fish, and Parks presently holds recognized Vested Water Right Claim No. 707-3 for Lake Thompson. However, the claim had not been previously validated pursuant to SDCL 46-2A-16 and SDCL 46-2A-17.

19. The Department of Game, Fish, and Parks Vested Water Right Claim No. 707-3 is validated to allow storage of water to elevation 1,687.5 fmsl with a priority date of November 2, 1889 (date of statehood).

20. Having considered the evidence and legal argument submitted, as well as the filed Stipulation, and having rendered the foregoing Findings of Fact and Conclusions of Law, the Board hereby makes the following:

ORDER

1. The Stipulation is hereby approved and is incorporated by reference as though set forth herein.

2. The GFP vested water right claim is hereby validated for sufficient water to maintain the water level up to 1687.5 fmsl.

3. The outlet elevation is hereby declared to be 1687.5 fmsl and the Board hereby acknowledges that there exist within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.

4. Based on the unique circumstances of this particular matter as well as the configuration of the outlet and its location, neither GFP nor anyone else may construct any outlet structure at 1687.5 or any other elevation unless approval is granted by this Board. Further, the entire outlet configuration must be analyzed and approval of this Board must be obtained before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

5. The Board retains jurisdiction to address any changes to the outlet elevation, if requested.

Dated this 3 day of October, 2013.

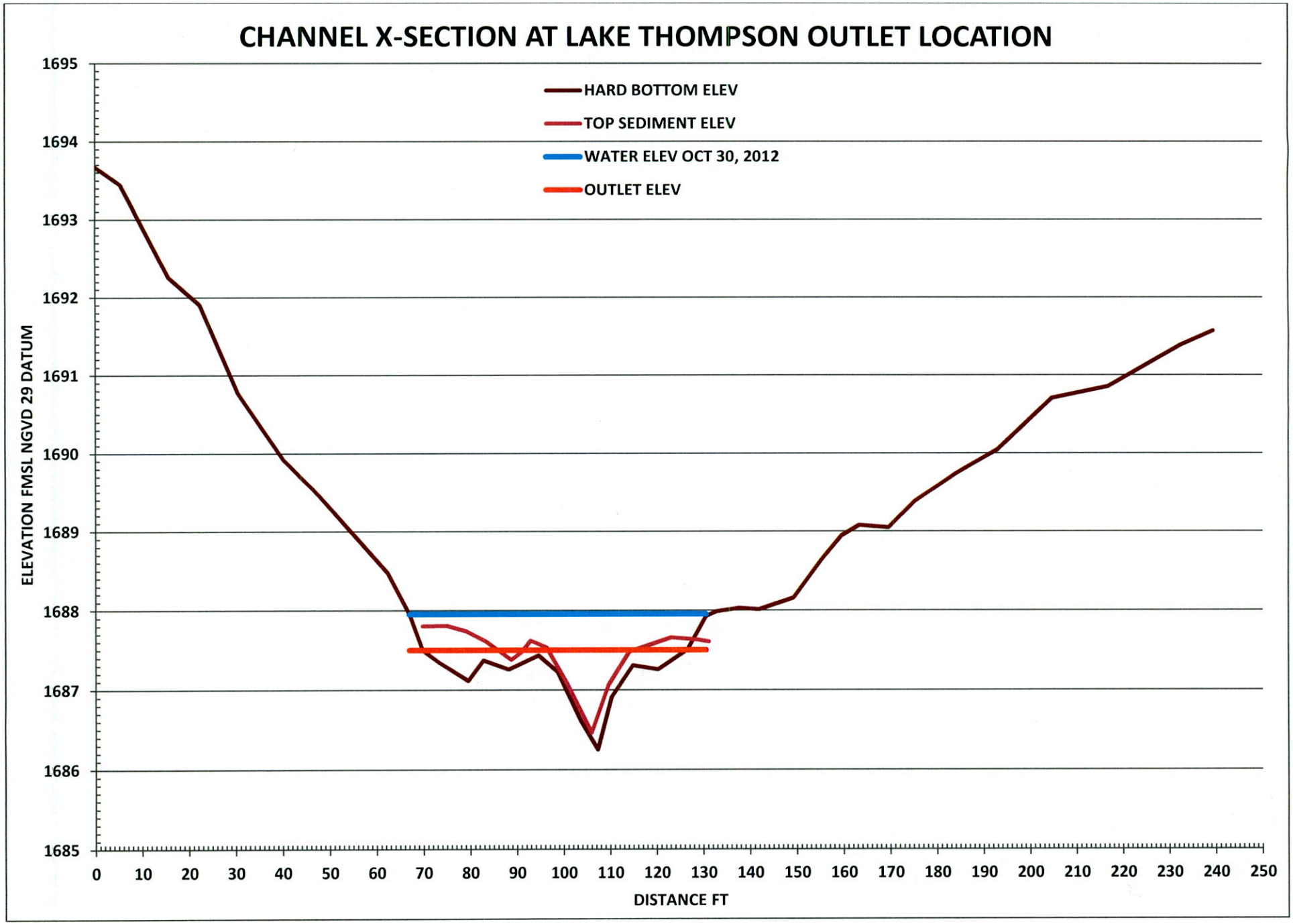
BY THE BOARD:

Chad A Comes

Chad Comes, Chairman
S.D. Water Management Board

pld_JPH_Water Board - Lake Thompson FOF COL Order (br)

ATTACHMENT NO. 2



STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF THE ESTABLISHMENT OF THE OUTLET ELEVATION FOR LAKE THOMPSON IN THE MATTER OF THE VALIDATION OF VESTED WATER RIGHT NO. 707-3, SOUTH DAKOTA DEPARTMENT OF GAME, FISH, AND PARKS	STIPULATION

COME NOW, the undersigned parties and hereby stipulate as follows:

1) This matter pertains to the natural outlet elevation for Lake Thompson. Interpreting SDCL 46-5-1.1 and ARSD 74:02:01:50 together, along with the plain meaning of the term "outlet," the "outlet elevation" of a lake is the lowest elevation at which water leaves or "outlets" a lake while maintaining the lake's natural stage, level or flow. The "outlet elevation" is distinguished from a designed or constructed outlet elevation when the designed or constructed outlet elevation changes the stage, level or flow of the water of the state and requires a flood control permit or other water permit in light of SDCL 46-5-1.1.

2) The outlet for Lake Thompson is located in the W ½ of Section 25, T108N, R55 W, Miner County, South Dakota.

3) The cross-section of elevations at the outlet location is shown by "Attachment No. 2" of a report prepared by Lynn Beck, Natural Resources Engineer with DENR and incorporated herein by reference as "Exhibit A."

4) The bottom of the channel at the outlet is irregular, with its lowest elevation at 1686.3 feet mean sea level. The outlet elevation must take into consideration the configuration of the entire outlet cross section and not merely the lowest elevation point found in a narrow portion of the outlet cross section.

5) The outlet elevation should be established at 1687.5 feet mean sea level, with an acknowledgement that there exists within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.

6) Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed, subject to jurisdiction of the board.

7) However, the entire outlet configuration should be analyzed in this case before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is contemplated in the future that may impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

8) The Board should retain jurisdiction to address any potential changes to the hard bottom of the outlet that would affect the Ordinary High Water Mark, if one is established, or otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state, including any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet.

9) Vested Water Right Claim No. 707-3 of South Dakota Game, Fish, and Parks should be validated for sufficient water to maintain the water level up to 1687.5 fmsl.

10) This agreement may be executed in counterparts, each of which, when so executed and delivered, shall be deemed an original, but all of which together shall constitute one and the same document.

Dated this _____day of June, 2013.

_____
Kingsbury County _____(title)
On behalf of Kingsbury County

Dated this _____day of June, 2013.

_____
Lake County State's Attorney
On behalf of Lake County

Dated this 18 day of June, 2013.

_____
Miner County State's Attorney
On behalf of Miner County

Dated this _____day of June, 2013.

Clay County State's Attorney
On behalf of Clay County

Dated this _____day of June, 2013.

Turner County State's Attorney
On behalf of Turner County

Dated this 20TH day of June, 2013.

Jeffrey R. Vonk, Secretary
On behalf of the South Dakota
Department of Game, Fish, and Parks

Dated this 20th day of June, 2013.

Jeanne Goodman, Chief Engineer
On behalf of the South Dakota
Department of Environment and Natural
Resources, Water Rights Program

Dated this _____day of June, 2013.

Steven Noding

Dated this _____day of June, 2013.

John Bruner

Dated this _____day of June, 2013.

Merrill Nelson

6) Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed, subject to jurisdiction of the board.

7) However, the entire outlet configuration should be analyzed in this case before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is contemplated in the future that may impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

8) The Board should retain jurisdiction to address any potential changes to the hard bottom of the outlet that would affect the Ordinary High Water Mark, if one is established, or otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state, including any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet.

9) Vested Water Right Claim No. 707-3 of South Dakota Game, Fish, and Parks should be validated for sufficient water to maintain the water level up to 1687.5 fmsl.

10) This agreement may be executed in counterparts, each of which, when so executed and delivered, shall be deemed an original, but all of which together shall constitute one and the same document.

Dated this 18 day of June, 2013.

Shelley Nelsen
Shelley Nelsen Commission Chairman
Kingsbury County (title)
On behalf of Kingsbury County

Dated this _____ day of June , 2013.

_____
Lake County State's Attorney
On behalf of Lake County

Dated this _____ day of June , 2013.

_____
Miner County State's Attorney
On behalf of Miner County

6) Maintenance to the depth of the hard bottom elevations within the outlet cross section should be allowed, subject to jurisdiction of the board.

7) However, the entire outlet configuration should be analyzed in this case before any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet is contemplated in the future that may impact the Ordinary High Water Mark, if one is established, or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.

8) The Board should retain jurisdiction to address any potential changes to the hard bottom of the outlet that would affect the Ordinary High Water Mark, if one is established, or otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state, including any structural changes, excavation of the hard bottom of this channel, or change in location of the outlet.

9) Vested Water Right Claim No. 707-3 of South Dakota Game, Fish, and Parks should be validated for sufficient water to maintain the water level up to 1687.5 fmsl.

10) This agreement may be executed in counterparts, each of which, when so executed and delivered, shall be deemed an original, but all of which together shall constitute one and the same document.

Dated this _____day of June, 2013.

_____

Kingsbury County _____(title)
On behalf of Kingsbury County

Dated this 18th day of June , 2013.

Chris S. Giles

Lake County State's Attorney
On behalf of Lake County

Dated this _____day of June , 2013.

_____

Miner County State's Attorney
On behalf of Miner County

Dated this 18th day of June, 2013.

Teddi J Bertsma
Clay County State's Attorney
On behalf of Clay County

Dated this _____ day of June, 2013.

_____
Turner County State's Attorney
On behalf of Turner County

Dated this _____ day of June, 2013.

_____
Jeffrey R. Vonk, Secretary
On behalf of the South Dakota
Department of Game, Fish, and Parks

Dated this _____ day of June, 2013.

_____
Jeanne Goodman, Chief Engineer
On behalf of the South Dakota
Department of Environment and Natural
Resources, Water Rights Program

Dated this _____ day of June, 2013.

_____
Steven Noding

Dated this _____ day of June, 2013.

_____
John Bruner

Dated this _____ day of June, 2013.

_____
Merrill Nelson

Dated this _____day of June, 2013.

Clay County State's Attorney
On behalf of Clay County

Dated this 17th day of June, 2013.

Turner County State's Attorney
On behalf of Turner County

Dated this _____day of June, 2013.

Jeffrey R. Vonk, Secretary
On behalf of the South Dakota
Department of Game, Fish, and Parks

Dated this _____day of June, 2013.

Jeanne Goodman, Chief Engineer
On behalf of the South Dakota
Department of Environment and Natural
Resources, Water Rights Program

Dated this _____day of June, 2013.

Steven Noding

Dated this _____day of June, 2013.

John Bruner

Dated this _____day of June, 2013.

Merrill Nelson

REISSUED

STATE OF SOUTH DAKOTA

VESTED RIGHT WATER LICENSE NO. 707-3

(1) The South Dakota Department of Game, Fish and Parks, 523 E Capitol, Pierre SD was issued Water License No. 707-3, for a vested right claim to appropriate 27,500 acre-feet of water annually in Lake Thompson from runoff, Kingsbury County, South Dakota, for public recreation purposes.

On October 3, 2013, the Water Management Board validated Vested Right No. 707-3. Vested Right No. 707-3 is being reissued to reflect the outlet elevation as it currently exists.

(2) Water in Lake Thompson has been applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the Department of Game, Fish and Parks holds Vested Water Right No. 707-3. The license is reissued, bearing the priority date of November 2, 1889.

The outlet for Lake Thompson is located in the approximate center of the W 1/2 Section 25-T108N-R55W. The Department of Game, Fish & Parks vested water right claim is validated for sufficient water to maintain the water level up to 1687.5 feet mean sea level (fmsl).

(3) This license is subject to South Dakota Water Law and the following Order by the Water Management Board:

- The Stipulation is hereby approved and is incorporated by reference as though set forth herein.
- The Department of Game, Fish & Parks vested water right claim is hereby validated for sufficient water to maintain the water level up to 1687.5 fmsl.
- The outlet elevation is hereby declared to be 1687.5 fmsl and the Board hereby acknowledges that there exist within the outlet cross section various hard bottom elevations, including a minimum elevation of 1686.3 fmsl.
- Based on the unique circumstances of this particular matter as well as the configuration of the outlet and its location neither, the Department of Game, Fish and Parks nor anyone else may construct any outlet structure at 1687.5 fmsl or any other elevation unless approval is granted by the Water Management Board. Further, the entire outlet configuration must be analyzed and approval by the Board must be obtained before any structural changes, excavation of the hard bottom of the channel, or change in location of the outlet is undertaken that would impact the Ordinary High Water Mark or would otherwise affect the stage, level, or flow of Lake Thompson or the waters of the state.
- The Board retains jurisdiction to address any changes to the outlet elevation, if requested.

Jeanne Goodman

NOV 2 1 2013

Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

date

STATE OF SOUTH DAKOTA GREAT SEAL 1889

LAKE THOMPSON – KINGSBURY &HAMLIN COUNTIES

ESTABLISHMENT OF THE OUTLET ELEVATION

January 9, 2013

INTRODUCTION

On September 5, 2012, the Department of Environment and Natural Resources – Water Rights Program received a petition from Gass Law Office, Gregg A. Gass on behalf of the Kingsbury County Commission, which requested the Water Management Board to determine the outlet elevation for Lake Thompson. The Water Management Board has not set an Ordinary High Water Mark for Lake Thompson.

The Water Management Board has the authority to set the outlet elevation under the following:

74:02:01:50. Outlet elevation -- Inclusion in existing water rights or permits. When determining an ordinary high-water mark, the board may also set the outlet elevation consistent with the existing water rights or permits. The board may clarify or amend existing water rights or permits to include the outlet elevation consistent with chapter 46-2A.

46-1-14. Terms and conditions of permits and licenses--Amendment. The Water Management Board may issue any permit or license subject to terms, conditions, restrictions, qualifications, quantifications, or limitations on perpetuity consistent with this chapter which it considers necessary to protect the public interest and which are related to matters within the jurisdiction of the board. Water rights issued pursuant to this section may be amended by the board and priority is retained upon amendment. Upon amendment the board may alter terms, conditions, restrictions, qualifications, or quantifications consistent with this chapter.

46-2-5. Rules to establish procedures and practices of board. The Water Management Board may promulgate rules pursuant to chapter 1-26 to:

(1) Establish procedures for submitting applications;

(2) Establish procedures and criteria for issuing, amending, renewing, qualifying, inspecting, reinstating, suspending, and cancelling permits, rights, and licenses;

(3) Establish procedures and criteria for regulating water uses;

(4) Establish practice requirements and procedures for issuing declaratory rulings and conducting contested cases; and

(5) Establish procedures for determining ordinary high and low water marks and outlet elevations.

This report is based on the results of the field work and Global Positioning System (GPS) survey conducted October 30, 2012 by Jeremy Schelhaas and Lynn Beck engineering staff with the Department of Environment and Natural Resources. It is important to note that elevations in this report are in the National Geodetic Vertical Datum of 1929.

GENERAL INFORMATION

Lake Thompson is a natural lake located in Kingsbury and Hamlin counties. For many years the lake was approximately 5,000 surface acres and essentially dry. Since 1984, the lake has filled and presently convers approximately 18,000 acres and spills to the East Fork of the Vermillion River. The lake extends approximately15.5 miles from the north end to the outlet located at the south end of the lake in the approximate center of the W½ of Section 25, T108N, R55W. Lake Thompson is 5 miles east and 4 miles south of the town of DeSmet, SD. See map Attachment 1.

INVESTIGATION

The existing outlet for Lake Thompson is located in the approximate center of the W½ of Section 25, T108N, R55W.

The outlet is a natural ground elevation subject to both deposition and erosion. Several surveys have been performed at the outlet location since 1983 with varying results. Past surveyed elevations have ranged from 1686.7 to 1688.6 feet mean sea level (fmsl). In 1998 a survey was conducted resulting in the lowest noted elevation. The lowest elevation is the result of subtracting the sediment deposition noted in the area from the survey elevation resulting in a hard bottom elevation of 1686.7 fmsl.

On October 30, 2012, a GPS survey was conducted resulting in a hard bottom elevation at the outlet location of 1687.5 fmsl. The survey also included invert elevations of culverts located at channel crossings north of the outlet to Oldham Road (218th Street). An invert elevation was also taken at the box culvert immediately downstream of the outlet location. The resulting elevations and their locations show that the outlet is located at the approximate center of the W½ of Section 25, T108N, R55W at an elevation of 1687.5 fmsl. A majority of the hard bottom elevations taken in the flat channel bottom were at or near 1687.5 fmsl. A channel profile and the outlet cross section are shown in Attachments 2 and 3.

The cross section at the outlet location shows that the lowest hard bottom point surveyed is approximately one foot lower than the recommended outlet elevation of 1687.5 fmls. This does not represent the channel cross section as a whole as it represents a very small area of the channel. To construct an efficient outlet at the elevation of the lowest point in the cross section would affect the Ordinary High Water Mark. Even though an official OHWM has not been set by the Water Management Board one exists in nature.

All elevations in this report are referenced to a United States Department of the Interior, Geological Survey benchmark with a 1929 sea level datum described as follows:

> Base Station Benchmark – The benchmark is located 3 miles west and 8 miles south of the town of Oldham, SD; near the corner of Sections 25, 30, 31, and 36 T108N between R 54 and 55 W; 36 feet south and 34 feet east and 0.9 feet lower than the crossroads; 5

feet south of a power pole; in the top of a concrete post a standard plate stamped "26 BRL 1759" with a published elevation of 1759.316 fmsl.

The survey closed back on the base station with an elevation difference of less than 0.01 feet. The largest differences in elevation checks were 0.06 to 0.20 feet on benchmarks found 15 miles from the base station. The further from the base station the more error incurred. The outlet location is only a mile from the base station. These checks indicate that the survey is accurate.

WATER RIGHTS

Vested Water Right Claim No. 707-3 held by the South Dakota Department of Game, Fish and Parks is the only existing claim on file for water in Lake Thompson (Water Rights, 2013a). However, domestic uses (i.e. livestock watering, dams, dugouts, etc.) are present within the Lake Thompson drainage basin.

Vested Water Right Claim No. 707-3 claims an 1889 priority date, and approximately 27,500 acre-feet of water per year to fill Lake Thompson to the outlet level for recreational purposes. The locations of the points of diversion are as follows: SW¼ NW¼ Section 20, NE¼ SW¼ Section 22, and NE¼ SE¼ Section 28, all in T110N-R55W.

Pursuant to SDCL 46-2A-16 the validation of Vested Water Right Claim No. 707-3 was published June 22, and 29, 1988 in the DeSmet News. That notice stated the Chief Engineer's recommendation will be to validate the water right claim for sufficient water to fill the lake annually to the outlet elevation or to the elevation necessary to maintain the ordinary high water mark, whichever is lower. The only petition received opposing the validation was filed September 21, 1988 by the Chief Engineer of the Water Rights Division. The intent of the petition was to postpone validation for the following reasons.

1. Until the outlet elevation for the lake is surveyed and the outlet elevation is set by the Water Management Board.
2. To all the vested water right claim to be amended, if necessary, as follows:
   a) Included the outlet elevation;
   b) To correct the amount of water claimed;
   c) To add a qualification that a vested claim is subject where necessary to installation of a concrete outlet structure to assure retention of the outlet as the established elevation; and
   d) To add any amendments and qualifications necessary to clarify a vested right claim.

Vested Water Right Claim No. 707-3 can now be validated, stating that the amount of water claimed shall be "sufficient to fill Lake Thompson annually to the established outlet elevation of 1687.5 fmsl."

CONCLUSIONS

1. The Water Management Board has the authority to set the outlet elevation for Lake Thompson or any other water body.

2. A request has been received to set the outlet elevation for Lake Thompson.

3. The Department of Game, Fish, and Parks presently holds recognized Vested Water Right Claim No. 707-3 for Lake Thompson. However, the claim has not been validated pursuant to SDCL 46-2A-16 and SDCL 46-2A-17.

4. The outlet for Lake Thompson is in the W½ of Section 25, T108N, R55W at an elevation of 1687.5 feet mean sea level.

5. The Department of Game, Fish, and Parks Vested Water Right Claim No. 707-3 should be validated to allow storage of water to elevation 1687.5 feet mean sea level with a priority date of November 2, 1889 (date of statehood).

Lynn Beck

Lynn Beck
Natural Resources Engineer III
DENR – Water Rights Program

REFERENCES

Water Rights. 2013a. Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

Water Rights. 2013b. Water General Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

RECOMMENDATION OF CHIEF ENGINEER ON ESTABLISHMENT OF AN OUTLET ELEVATION FOR LAKE THOMPSON

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning establishment of an outlet elevation for Lake Thompson in Kingsbury and Miner Counties. The request was filed on behalf of the Kingsbury County Commission by Gregg A. Gass, Gass Law Office, PO Box 35, DeSmet SD 57231.

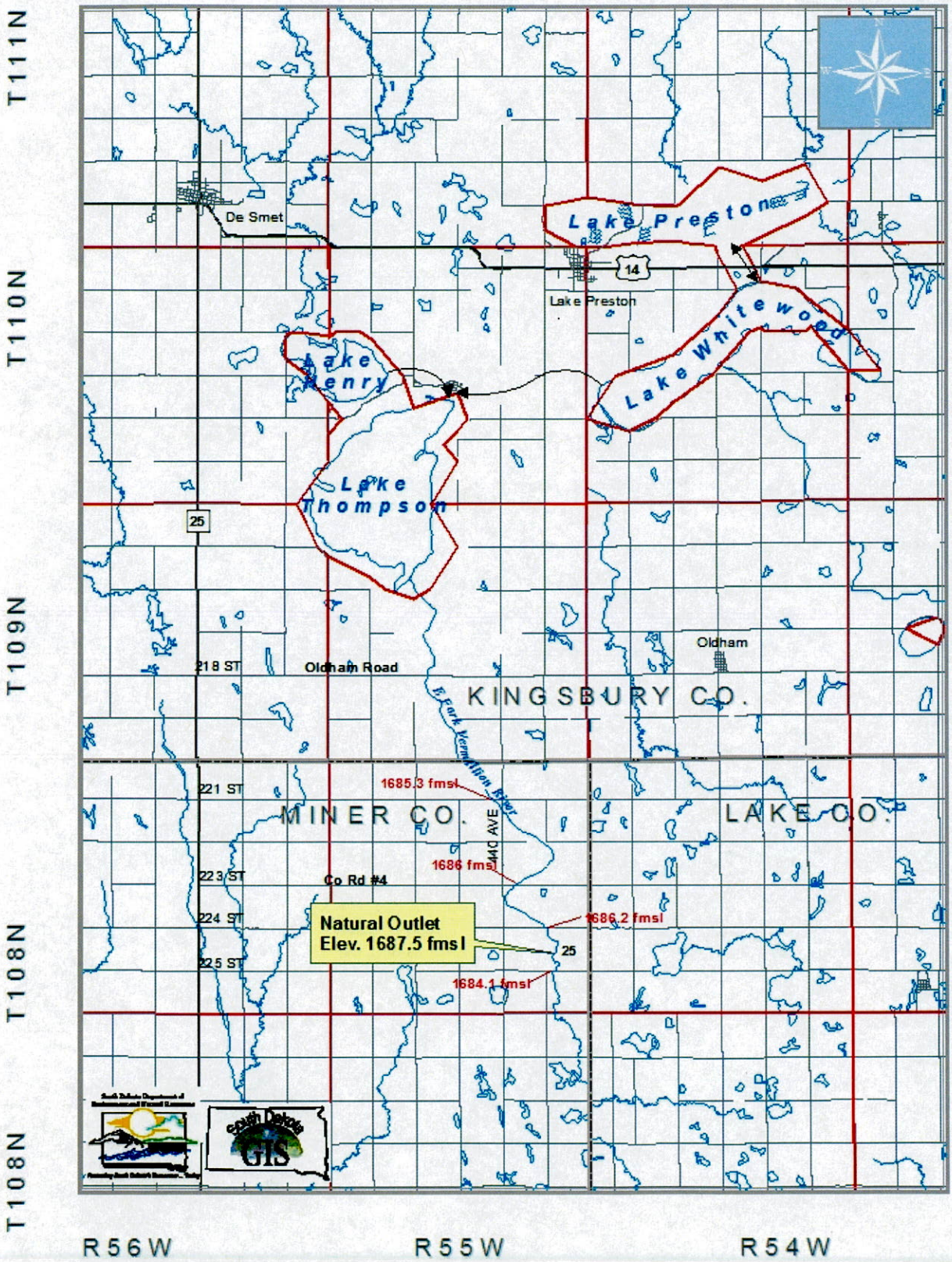
The Chief Engineer of the Water Rights Program of the Department of Environment and Natural Resource recommends that the outlet elevation for Lake Thompson be established at an elevation of 1687.5 feet mean sea level (fmsl). The recommendation is based on a survey conducted in the fall of 2012 of hard bottom elevations at the outlet location.

See report on application for additional information.

Garland Erbele, Chief Engineer
January 29, 2013

ATTACHMENT NO. 1

LAKE THOMPSON OUTLET CHANNEL



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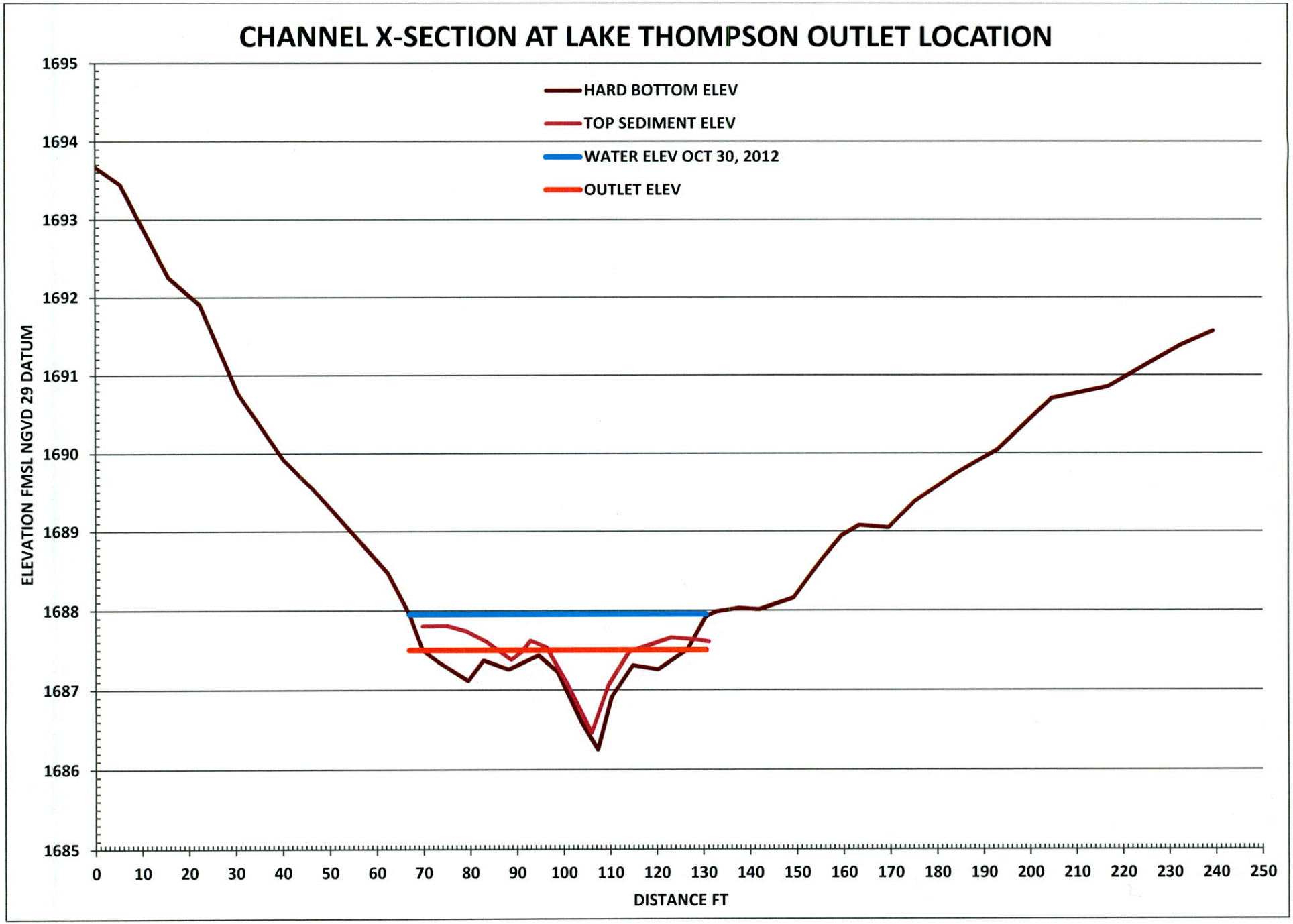
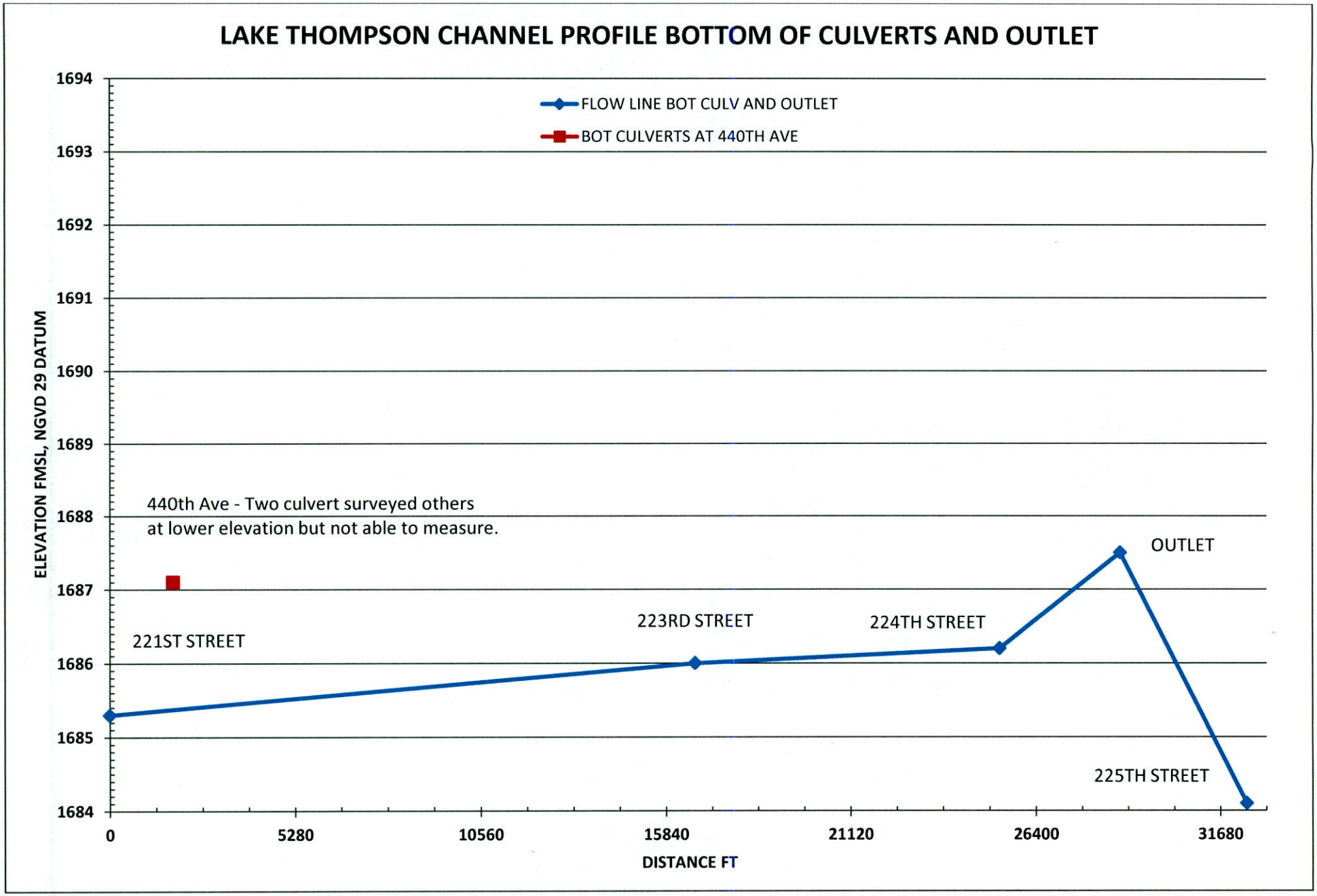


ATTACHMENT NO. 3



ATTACHMENT NO. 4