REASONER DAM
ANALYSIS and FEASIBLITY REPORT

April 14th, 2023

AXIOMCONSULTANTS

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PREPARED FOR:

Brett Harklau and the Humboldt County Conservation Board

Humboldt County IOWA

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EXECUTIVE SUMMARY

The following report was completed by Axiom Consultants, LLC (AXC) located in Iowa City, IA. The report summarizes an effort by our Structural Engineering team to analyze the Reasoner Dam in Humboldt, Iowa for our client – Bret Harklau - also of Humboldt. The report includes analysis of the dam – primarily in the form of review of dive inspections completed by JF Brennan out of La Crosse, Wisconsin as well as utilization of existing plans and documentation to create a 3D model of the dam and make a stability analysis. It is our understanding that the dam is owned by the Humboldt County Conservation Board and that there has been a lot of discussion over the past few years as to how to repair the dam as it has fallen into a state of much disrepair.

The report was requested by Mr. Bret Harklau – a local resident of Humboldt – after we were recommended to him by the JF Brennan company. Axiom has a long history of working with JF Brennan company on a number of different marine-construction projects including low-head dams similar to this.

The primary goal of this assessment report was to provide a focused analysis of the dam, free of theoretical upgrade possibilities and different options for improvement. The focus was on analyzing the dam, determining the structural stability in its current state, modeling the overall facilities, and providing a path towards stabilization repairs such that the dam can be utilized moving forward by providing a consistent recreational pool as well as improving the functionality thereof by means of a repaired flow-control gate as well as an Obermeyer system installed on the crest.

The report includes background of the dam, Axiom cursory analyses of the Stantec report and JF Brennan reports, structural stability analysis of the dam, a BIM model of the dam (provided electronically), proposed improvements to the dam, and an opinion of cost thereof.

It is our opinion that the dam can continue to be of us, and fully capable of providing continued pool use for recreational needs as sufficient repairs and stabilization are undertaken, along with the continued completion of periodic inspections and evaluations of the facility.

This report should not be considered to the "last-word" in terms of Axiom's provided service. Our team is available for additional questions and clarifications as they may arise from the reading and digestion of all that is contained herein. Please reach out to us with those needs as they arise.

ROBERT A. DECKER MSE, CPG, CPII, CDT
Principal – Owner

BACKGROUND

History of the Facility

The Reasoner Dam was built on the West Fork of the Des Moines River in 1911. At the time of this report, the dam is 112 years old. The dam was originally built for a local hydro-electric facility. Much of the history of the dam was reported on in the *Iowa Low-Head Dam Project* by Impact 7G out of the Des Moines area. This historical report is included in the Appendix of this report for further historical reference.

Description of the Facility

LOCATION:
Humboldt, Iowa

OWNER:
Humboldt Co Cons Board

SEC/TWP/RANGE:
NE ¼ of SE ¼ of Sec.2, Twnshp 91 N, Range 29 W

WATERWAY:
West Fork, Des Moines River

DAM RIENTATION:
West – East

Historical Environmental Factors

GAUGE INFORMATION

The gauge most applicable to the project is as follows:

Location: Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.
River Mile: 334.3 miles above the mouth of the Des Moines River
Flood Stage: 10.0ft (or Zero Data 1053.54ft) = FLOOD STAGE 1063.54
Record High Stage: 15.4ft (April 1969)

FLOODING EVENTS:

USACE historical flow information indicates the following periods of flooding on the river at this location over the past fifty (50) years:

1978: 2 days (+0.11 max)
1983: 8 days (+1.09 max)
1984: 35 days (+2.18 max)
1993: 84 days (+4.63 max)
1994: 5 days (+1.49 max)
2001: 19 days (+1.76 max)
2010: 23 days (+2.07 max)
2011: 4 days (+0.12 max)
2014: 14 days (+3.22 max)
2018: 59 days (+3.31 max)
2019: 68 days (+4.20 max)

In the past 9 years there have been three (3) long-lasting events with very high maximum flood levels (+3.00'.) In the prior 41 years there were four (4) long-lasting events (1984, 1993, 2001, 2010) with high maximum flood levels (+1.75') With the potential for longer/larger flooding events seemingly becoming more common – a solution to repair or replace the dam is becoming more imperative.

OTHER:

The United States Army Corps of Engineers manages the website www.rivergages.com where historical information on water levels near the dam can be found. This database should be consulted for additional information but flow data from the ***West Fork Des Moines River at Humboldt, IA*** gauge is included here to detail historical high water events.

Prior Investigation and Inspection Work Timeline

According to information provided to Axiom Consultants the following documents have been created detailing various investigative work on the dam. Some of these inspections/documents are referenced in greater detail later in this report:

- 1952: Iowa Public Service Company – Inspection Photos
- 1971: Howard R Green – Report Detailing Repair Work

- 1976: Howard R Green – Report Detailing Field Inspection
- 2006: JF Brennan – Underwater Inspection Report
- 2007: Townsend Engineering - Renovation and Cost Analysis for Gates
- 2009: USACE – Reconnaissance Report
- 2015: JF Brennan – Underwater Inspection Report
- 2021: Stantec – Reasoner Dam Alternatives Analysis
- 2022: JF Brennan – Underwater Inspection Report

Current Needs

According to a number of the prior reports and particularly the 2021 Stantec report (as it is the most comprehensive and in-depth, the primary reasons for wanting to maintain the dam, the associated pool (Lake Nokomis), and the flow control structures are primarily:

- Recreational usage on Lake Nokomis
- Nearby fish hatchery requirements
- Municipal water intake requirements for pool elevation
- Preservation of surrounding conditions both upstream and downstream

ANALYSIS OF EXISTING REPORTS & INSPECTIONS

Stantec and Townsend Reports

In 2007 Townsend Engineering looked at renovating the existing lift gate and adding an additional water elevation control structure. The existing lift gate was found to be in poor condition and in need of renovating if not replacement. They also gave additional options of adding a second lift gate structure as well as raising the flashboard heights along the spillways.

Stantec was brought in to look at the dam in 2021, with the goal of evaluating the structure and giving options going forth. It was stated that the Humbolt dam structure had reached the end of its material and functional life, requiring future action. Three options were given forth:

- Renovation the dam and replacing the Coffer dam cells with a rack ramp
- Partial removal of the dam and replacement of Coffer dam with a rock ramp
- Full removal of dam structure and return river to natural flow conditions

Brennan Dive Inspections

Over the past 15 years JFB have performed numerous dive inspections on the facility. The primary findings that have come from those dive inspections are:

- The upstream portion of the Eastern Bypass hastwo bands of scaling as well as an area of spalling.
- The upstream portion of the Control Gates has a vertical crack in the corner of the East Pier.
- The West Pier displays scaling, spalling, and a vertical crack.
- The Control Gate is completely deteriorated and non-functional.
- The upstream portion of the Spillway Center Pier experienced heavy scaling with exposed rebar, and an area of spalling below the waterline.
- The upstream portion of Spillway 3 has two areas where a section of the lip was missing.
- Downstream portion of the Eastern Bypass experienced an area of spalling with exposed rebar.
- The downstream East Wingwall has multiple bands of scaling and two areas of spalling.
- The drainpipe on the East Wingwall shows an area undermining with ~92" of loss.
- Three areas of spalling and one area of scaling with exposed rebar were present on the downstream portion of the Control Gates.
- Two areas of undermining were present on the step-out of the apron of Spillway 1.
- The downstream West Wingwall experienced two areas of spalling.
- The upstream West Gate Pier appears to be in poor condition. Fractures on the pier's West face have joined to create large areas with the potential to create pop-outs. A large void exists at the interface of the pier and the East end of the spillway. Previous repair attempts to the pier are in poor condition. Heavy scaling exists at the repaired areas.
- Several areas of concrete erosion and cracking on the inside faces of the gate piers.

Axiom Findings

The reports and inspections detailed above indicate that the structure is experiencing large amounts of degradation in a number of areas including waterline, toe, and wingwall areas. The vertical gate structure is destroyed and completely non-functional. Sheet piling on the coffer-cell structure is likely at the end of useful life which would be expected to be 50-60 years. Flash board structures are a poor solution for pool elevation maintenance and they are non-existent. We agree with the primary findings of the Stantec report and, when coupled with the subsequent JFB inspection, agree that the structure is likely nearing the end of functional life absent of any repair or rehabilitation efforts.

STABILITY ANALYSIS

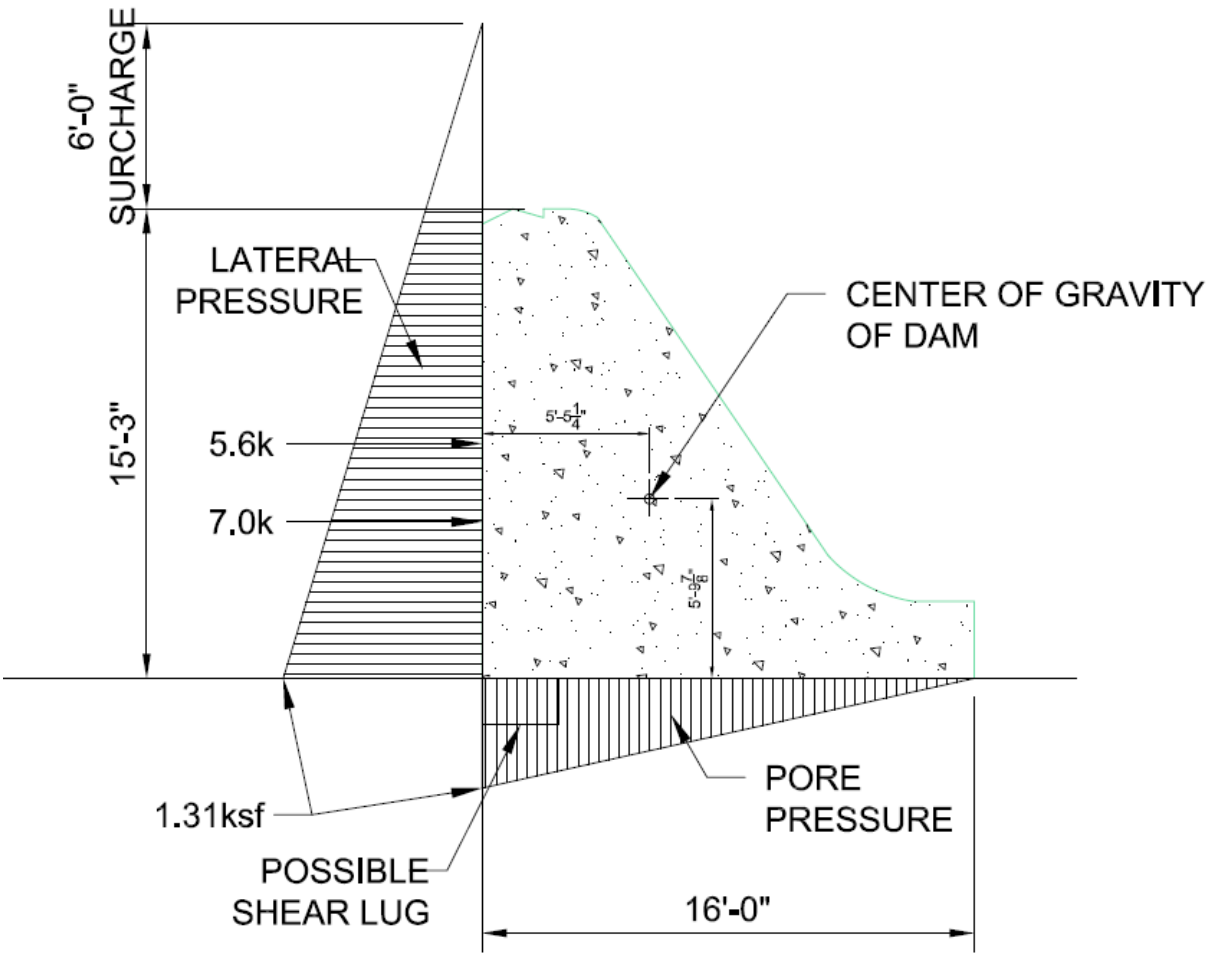
Calculations

The Reasoner dam is a low-head gravity dam. This means that the weight of the dam provides the stability required to resist the hydrostatic forces exerted on the dam structure from the pool of water directly upstream of the dam.

The forces on the dam all result from water pressure from the retained pool. The primary force is the lateral force on the dam from water pressure. The horizontal water pressure is closely represented by the trapezoidal pressure shown in the figure below. The design high water at this location is unknown but a depth of 6 feet over the top of the dam was assumed.

Uplift forces occur as internal pressures in pores, cracks and fissures in the bed rock allow the pressure to be exerted on the bottom of the dam. It is assumed that these pressures dissipate towards the front of the dam.

Silt pressure on the back of the dam are very close to the hydrostatic pressure of water. Although heavier than water the submerged weight of silt is very close to that of water so may be neglected. Water pressure on the front side of the dam is neglected based on the Bernoulli effect of flowing fluid having lower pressure.



Resistance to Forces

The dam resists forces by weight of the concrete and some adhesion of the concrete to the bedrock. Some of the documentation of the dam indicates that a shear lug was to be built on the back side of the dam. However, the depth or if it was built has not been confirmed. This shear lug has been ignored in this analysis. If the shear lug exists the Factor of Safety for sliding is much higher. There is every indication that the dam was built on solid bedrock after the weathered rock was removed. Inspection records indicate that some erosion of the bedrock as occurred at the toe of the dam. For this reason, a reduction factor of 50% will be applied to the concrete to bedrock adhesion.

Stability

There are two primary stability criteria for dams. The first is **overturning** and the second is **sliding**.

There is a tendency for a gravity dam to overturn about downstream toe of the foundation. This analysis consists of summing the forces, positive and negative, to determine a factor of safety (FS) for overturning. The overturning forces include the horizontal hydrostatic force and uplift pore pressure. The resisting force is simply the weight of the dam. The results are summarized in the table below.

A dam can fail by sliding down stream from the hydrostatic force from the impounded water behind the dam. This force is resisted by a combination of the shear resistance + adhesion of the concrete to the bedrock. If there is a shear lug it would also resist the sliding forces. The result of this analysis is summarized in the table below.

REASONER DAM ANALYSIS	
Area of Dam	141 sq ft
Weight of dam (1 ft)	21,170 lbs
Pressure at base of dam	1,310 psi
Surcharge (Assumed)	6 ft
Adhesion (Assumed)	15 psi
Coefficient of friction	0.3
Overturning moment	77.5 ft-k
Resisting Moment	222 ft-k
Factor of Safety (OT)	**2.8**
Sliding forces	12.6 k
Resisting forces	20.5 k
Factor of Safety (Sliding)	**1.6**

Derating

The calculations above are based on detailing for the dam provided by the original design documents. The assumptions are based on a material condition and geometry that is/was new but then assume a certain amount of ***derating*** to accommodate for deteriorated condition of the dam as it exists today. To account for this, our team has assumed a ***fifty-percent (50%) reduction*** for sliding because of assumed deterioration of the top layer of the limestone bedrock below the dam. Likewise we have ***disregarded the shear-key*** included in the original design because it is unknown as to whether it was installed at all and, if so, what the dimensions of the key were. The original plans allow for some flexibility in its installation so we have chosen to ignore it. Derating of the weight of the dam for overturning does not seem appropriate so no adjustments were made in that regard. Assigning a derating to the dam can be somewhat arbitrary and is based on reasonable assumptions and experience. Overall the dam seems to be in fair condition but we wanted to make what we believe are some reasonable assumptions to account for real-world conditions.

Lifespan Expectations

Lifespan of the dam is inherently tied to derating and condition expectations and, therefore, is very difficult to estimate. Doing so involves even more guess work that the prior section. Factors like future flooding, physical damage, human-caused events, and other unknown items could severely damage the dam and impact its overall stability in the same way that any act-of-nature could. Rather, AXC recommends an approach that asks the question:

"If recommended repairs are made on the dam, what is a potential or reasonable period of time to assume that the dam can exist and operate for its intended use?"

In other words, part of the goal of this report is to provide some recommended repairs to the dam to allow it to continue to exist and function for an additional period of time with a lessening of worry or concern over it's operability. What type of period could be assumed if these recommendations are followed? We believe that **fifty years (50)** is a solid assumption. This is based on the assumption that monitoring of the dam will take place and that inspections are still commonplace – both to continue to review dam condition, but also to review the performance of the installed repairs. While by no means a scientific or calculated value, Axiom Consultants feels that this timeframe is reasonable, all things being equal.

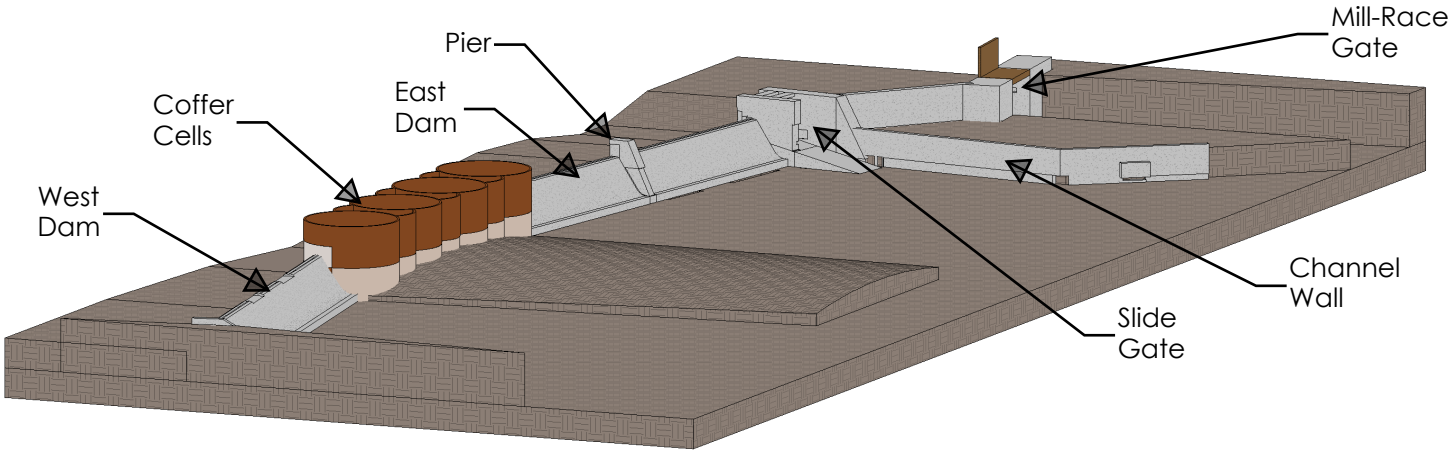
MODELING

Methodology

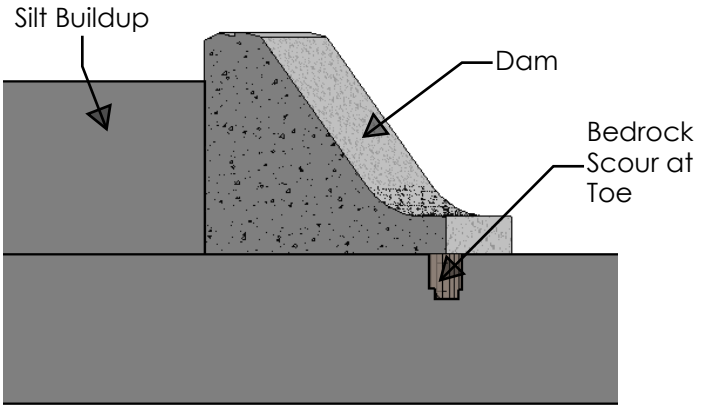
A number of plan-type data sources (or sources from which geometric information could be gleaned) were provided to Axiom Consultants for the use of this report including but not limited to:

- Humbolt Dam Original Design Plans – 1967
- Howard R. Green Construction Plans – 1969
- Howard R. Green Inspection Reports – 1976 – 2004
- Brennan Inspection Reports – 2006, 2015, 2022

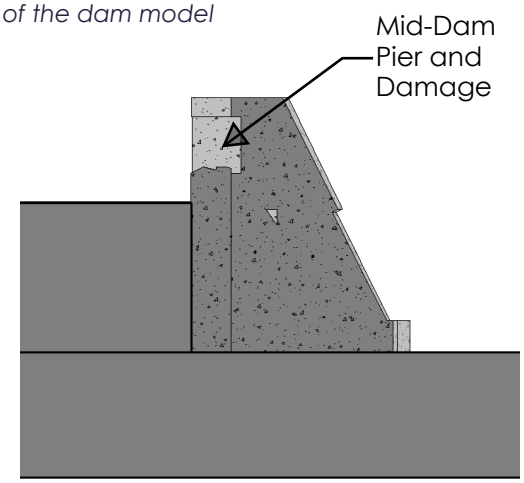
Using geometric dimensions gathered through these plans, a 3D Revit model of the dam structure was created. Damage was able to be noted and modeled using the information listed in the Inspection Reports.



Screenshot of the overall isometric view of the dam model



Dam section with early toe scour modeling



Dam section with mid-pier deterioration

Use

Axiom Consultants modeled the Reasoner Dam in a BIM/3D format because none of the other work done on the dam to date has modeled the dam in this easier-to-digest format. It is our hope that the model will allow for ongoing evaluation and discussion of the structure in a way that allows stakeholders to understand the critical points of the geometry, field conditions, and potential repairs. The model may also be used on any future inspection efforts to better located and indicate issues as well as to create plans for repair and/or reconstruction. This model will be provided in its full format along with this report.

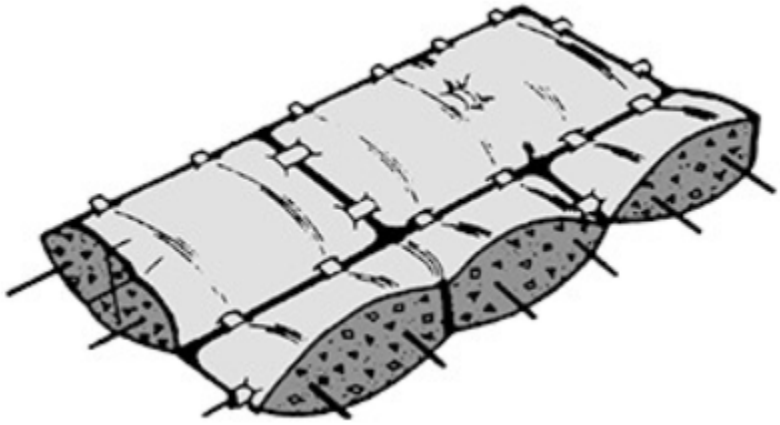
PROPOSED IMPROVEMENTS AND APPROACHES

Toe Erosion Repair

Toe erosion is the most critical item for consideration on the Reasoner dam both in relation to sliding and overturning. The keyed in portion of the dam at the base (in addition to a potential shear key) is very important to the overall stability of the dam. Over time the heavy and continuous flow over the dam scours the sediment from the tow and erodes into the bedrock footing. This will often result in a cupped area directly below the dam and should eventually be bolstered and stabilized to restore much of that integrity and guard against additional scour and erosion. One of the most effective and utilized approaches to this type of repair is a cabled cell-structure matting pumped full of grout and pinned/anchored into the substrate. A-B (articulating block) mat is one of the more effective types of this product and one that we (and JF Brennan) have had good results with. Our recommendations for repair and stabilization start with installation of this product. JFB has an excellent writeup of these products and their application on their website:

https://www.jfbrennan.com/blog/fighting-scour-with-articulating-block-mats

Fabriform (pictured below from their website) is the most common brand of AB mat that we see utilized on projects: http://www.fabriform1.com/



We would propose to install a 20' wide AB/Fabriform mat along the tow of both sections of dam with an approximate 5' wrap up the dam face and 15' downstream portion. After this matting is installed and pinned into the underlying bedrock, the rear section of it would be pumped full of grout utilizing entry ports on the 5' upstream side to fill any/all void space behind the matting.

Shell and Wall Repairs

Surface repairs aren't the most critical item to the stability of the dam – especially considering the dam doesn't have any shell construction (hollow interior), utility tunnels, or other intentionally constructed voids within it. All plans and evidence indicate a solid core of concrete so shell damage has less of an impact in the overall consideration of the dam integrity. Portland cement concrete is permeable, however, and infiltration of water, chlorides, bacteria, and simple consideration of scour and erosion do mean that spalling and surface damage should be monitored and periodically repaired. Dive inspections are good for identifying these areas and helping to understand their magnitude. Periodic inspection by dive teams can identify high erosion/damage areas that can be candidates for repair. Our recommendation for these types of repairs (in underwater areas) is pre-placed aggregate concrete (PAC) which is very similar to standard concrete but involves high pressure injection of the cementitious material resulting in lower potential for cracking, spalling, and shrinkage and providing better performance for marine applications. It is more expensive to place but it's ROI is excellent and it is a well-recognized repair method by the USACE.

We would proposed installation of PAC patches in sections of the dam shell that are eroded out more than 4" or more to stabilize the shell to a better condition and prevent further scour of the cavitated areas. Overall the patching will be estimated to a total SF of repairs but this item will cover the proposed patches which would be specifically indicated and sized in a set of final construction documents. Wing wall sections of the dam and other areas with better access which are easily dewatered or required no dewatering at all, would be repaired utilizing more conventional concrete structural repairs.

Coffer Cell Armoring

The original coffer cell created in the middle of the dam – in order to in-fill a blowout of an island from a high water event – was a somewhat crude but cheap way to stabilize the middle portion of the structure where the island used to sit. Because of this and because of cost considerations moving forward, the most economical way to stabilize the dam and repair this section of it, is to re-armor the area by re-installing a new alignment of sheet pile wall structure, offset from the existing wall. This sheet piling could be installed in a straighter orientation, circumventing the curves that were installed on the original structure and better resisting the forces imparted by the current, likely creating an upstream chevron and utilizing a straight section across the downstream side.

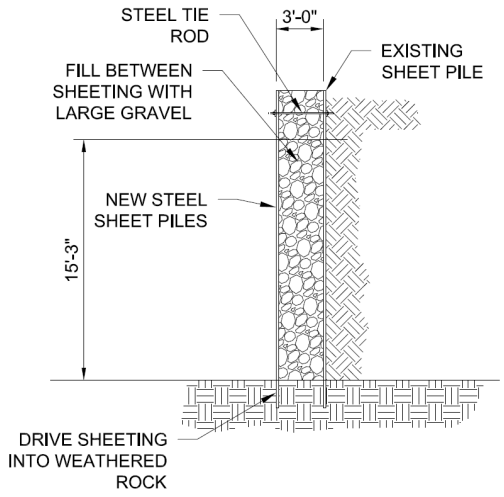
We believe that the most likely failure of this system is bound to occur due to corrosion in the sheet piling used in its construction.

The middle of the dam has a cell structure that consists of steel sheet pile driven in rings to form 4 cells that are connected with straight line chords. The steel sheeting is corroding at the waterline from the wet/dry cycles as shown in the photo below. There is significant loss of steel cross section in this area. There may be more corrosion under water but likely the lack of oxygen has prevented as much corrosion as we see at the waterline. The estimated life of steel sheeting in these conditions is generally 50 years. As this structure was installed in the early 70's it is nearing its expected life.

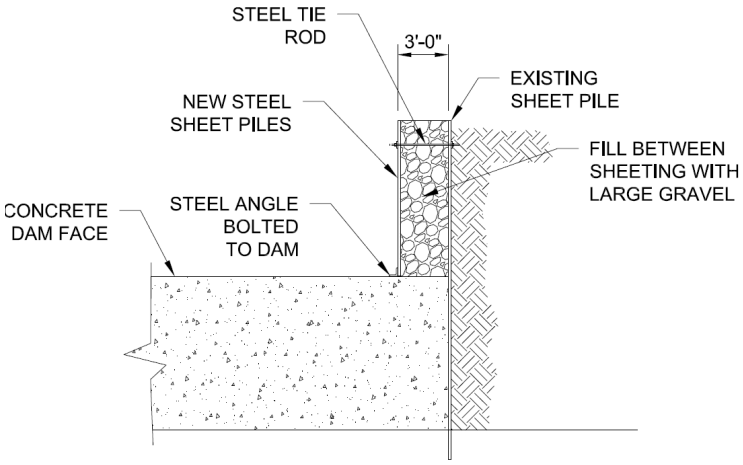
We believe another 50 years of life can be added by doubling up the sheeting. A new row of sheeting can be added, tied to the existing sheeting and the space between filled with large gravel. There are three conditions that need to be considered for the details of how the new sheeting works.

1. Behind the dam where the sheeting can be driven into bedrock.
2. Beside the dam where the existing sheeting meets the top of the dam and can be pinned to it.
3. In front of the dam where the sheeting can be pinned to the existing bedrock.

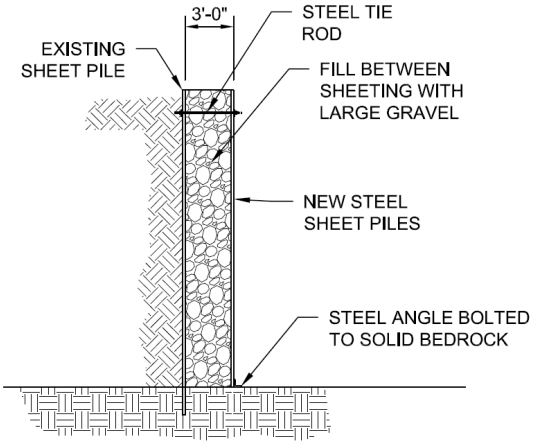
Each of these scenarios are illustrated in the following sketches:



SECTION BEHIND DAM



SECTION BESIDE THE DAM



SECTION IN FRONT OF THE DAM

Repair for this items would be measured in wall-feet which represents a linear foot of wall, full-depth down to the substrate, that is tied back to the original coffer cell structure via a rodded anchor system. The bottom of the sheeting would either be anchored into the rock or tied back from kickout via another method to be determined in the final construction documents.

Obermeyer System

While not critical to the stability of the dam, control of the pool upstream of the dam is important for its effective ongoing operation. It would allow some maintenance of the pool level for things like potable water intakes or fish hatcheries, while eliminating costly flash-board installation that breaks within a couple of weeks after installation. One of the most effective ways to do this on a low-head gravity dam is to install an Obermeyer system. This system would allow an armored bladder to be installed which would allow for more simple adjustments to the pool level while also allowing for safer and more timely cleanup of debris. While these are expensive, they are a far better solution to increasing the pool level on the upstream side with some capability for variation of a couple of feet. Flash board systems often last for a couple of weeks before being broken by large debris floating downstream. This feature could be considered an optional but desirable option. ROI on a system like this (compared to a flash board option) is likely on the order of 10 or 12:1.

Image from Obermeyer Hydro website

New Gate(s)

The dam currently has a dilapidated vertical slide gate on it. The gate is nearly entirely destroyed and is completely non-functional. It is unknown if the gate is original (unlikely) but it is certainly quite old. This gate appears to have been monitored and hand operated to control flow through the shell of the dam and would allow some control of high-water conditions and dam cresting conditions. Consideration should be made for removing and replacing this style of gate at the same time as the other repairs on the dam are being made. Another type of gate could be considered as well but would likely require a higher degree of infrastructure improvements including some new construction to support the additional hardware that is necessary. A radial arm gate (tainter gate) could be considered to replace the slide gate. In addition to the above-described crest-based flow-control system, installation of a new gate through the dam's primary shell would allow for a small capacity for flood controls than simple crest overflow. Because the geometry and infrastructure basics are in-place. We would recommend the installation of the vertical slide gate vs. a complicated and expensive tainter gate. The mill-race could also be fitted with a new (larger) gate as well, that area appears to feed some fish habitat downstream and also may be used for some flushing operations. This would would be a bit easier as dewatering this section would be much more limited in scope. A price for replacement of the mill race wooden gate structure with a new steel gate is included in the overall pricing. There would be associated concrete repairs with the adjacent structure as well.

Recent conditions of the existing slide gate.

Current condition of the vertical lift gate with the old mill-race gate also shown.

Dredging

Dredging is not a dam infrastructure repair element nor does it affect the functioning of the dam as the Obermeyer and gate systems would. It does affect the usage of the lake, however. Additionally, it's weight on the back of the dam is potentially somewhat higher than that of water. The material type is unknown so whether the force is equivalent or slightly higher is unknown, but the possibility certainly exists. Water weight on the dam is **62.41 lbs/ft^3** whereas soil (depending on type of silt/sand/gravel mix) is going to range between **125-150 lbs/ft^3** buoyancy would need to be taken into account reducing the weight of the soil by 62.4 lbs/ft^3. **For the lighter soil weight range this would mean an equivalent force. For a heavier soil, it could provide a number of lbs/ft^3 additional force.** Dredging the lake would be a large-scale and expensive effort but would provide greater depths for recreational uses such as boating and fishing as well as reducing the overall pressure exerted on the dam. Dredging operations must take into account additional coordination factors as well as permitting regulations which can be very complex. Permitting requirements for dredging will involve the Iowa DNR and USACE at a minimum and may require a mussel study and remediation. Sediment removed from the area that breaks the plane of the water will need to be carefully permitted, monitored, and relocated. JF Brennan company – who is highly recommended for this type of work, can provide additional expertise on dredging and associated permitting. Costs for dredging are not considered in this report as they are not part of the dam repair.

Staging

Staging for the project is not straight-forward. Based on conditions on the West and East sides of the river, it is anticipated that a temporary causeway deck or flexi-float staging area will need to be constructed behind the dam from the East side of the river. This area would need to be closed off for a significant period of time to allow for laydown and construction staging operations. These approaches would allow for flow-through to occur during construction which is an easier and more cost-effective approach than river diversion.

Example of Flexi-Float staging

Flexi-float staging example

Temporary access trestle example

COST OPINION

Proposed Repairs

The following cost opinion was completed for the proposed improvements in the prior section. These repairs comprise what Axiom Consultants deems a minimum amount of stabilization effort required to keep the dam functional and provide additional life for the facilities. These estimates have been prepared utilizing our own experience with similar dam projects combined with a review by JF Brennan companies. JFB has completed a huge number of inland marine repairs similar to this and have a tremendous expertise completing these types of projects.

ITEM NUMBER	DIVISION	DESCRIPTION	UNIT	COUNT	PRICE	TOTAL
1	00 0000	General Conditions and Mobilization	%	1	6%	$135,435
2	01 0000	Overhead and Profit	%	1	6%	$134,435
3	01 5529	Staging, Causeway, and Diversion	LS	1	$350,000	$350,000
4	02 0000	Gate Demolition	LS	1	$15,000	$15,000
5	03 3000	Structural Concrete Repairs (Appurtenances)	CY	100	$1,150	$115,000
6	03 3726	Pre-Placed Concrete Repairs (Shell)	SF	300	$1,000	$300,000
7	32 0000	Drain Pipe Repair	LS	1	$25,000	$25,000
8	35 2213	Spillway Crest Gates (Obermeyer)	LF	350	$2,300	$805,000
9a*	***35 2246***	***Tainter Gate Construction***	***EA***	***1***	***$150,000***	***$150,000***
9b*	***35 2253***	***Vertical Lift Gate Construction***	***EA***	***1***	***$75,000***	***$75,000***
10	35 4213	Sheet Piling Bank Protection	SF	5,250	$130	$682,500
11	35 4300	Waterway Scour Protection	SF	6,600	$35	$231,000
HARD COSTS TOTALS						**$3,018,370**
Engineering Design Costs						$75,000
Contingency (15%)						$401,568
TOTAL COSTS						**$3,494,938**

Disclaimer

The cost opinion assumes staging and construction primarily via means described in the section above. River diversion and dewatering would only be utilized if absolutely necessary and in target approaches. Boat work would also likely be utilized. These approaches would be subject to change pending the final design documents and integration with the JFB team.

SUMMARY

Next Steps

Repair

Based on the findings of the dive inspections, the 2021 Stantec report, and findings by Townsend Engineering on a couple of occasions – we believe that the dam should be repaired as soon as practicality allows. The Stantec report detailed a number of excellent options but those options may be beyond the means available to the HCCB and other groups. Many communities in Eastern Iowa have created, or considered creation of, dam retro-fits to enhance the safety aspects of dams while providing recreational opportunities to kayakers, wake boarders, surfers, and other hobbyists. This approach may not be the best approach for this dam at this time, however. While our studies and analysis show that the dam may be stable for the time being, it is critical to undertake repairs to button-up the facility and ensure that potential failure modes aren't enhanced. Without these repairs, the structure is nearing the end of its functional life as the other reports stated.

Future Inspections

Axiom would recommend that the HCCB contract bi-annual dive inspections of the facility until the dam and associated elements are removed, repaired, or reconfigured. Once repairs are made, inspections could likely be backed off to a five (5) year inspection period. Because of the advanced (112 year) age of the structure, it is critical that the best monitoring of it be performed that budgeting will allow to prevent a potential failure of the structure.

Monitoring Markers

On past projects, our team has worked with JF Brennan to install survey markers on the shell sections of dams where condition monitoring was critical. Most recently this type of work was completed on the Burlington Street dam in Iowa City which is very similar in construction and material to the Reasoner dam. Markers are constructed out of solid brass and are drilled into the shell and anchored with an epoxy resin. Specialty brass rods were fabricated that allow a survey prism to screw into the anchors for periodic survey of the markers which allow for evaluation of movement over time. A screenshot is included below from the referenced project indicating how the markers and associated control points were laid out for measurement over time. The survey crew works in tandem with the dive crew to perform the annual or bi-annual measurements. If similar monitoring is desired by the HCCB, installation of similar monitoring points by future inspection dive-crews would be a good option.

Image from survey marker layout on similar dam project

Example of brass survey monitoring marker

APPENDICES

Firm Profile

Axiom Consultants, LLC is a fully-licensed engineering firm based out of Iowa City, IA. With offices in Iowa City and Cedar Rapids we provide civil, structural, mechanical, and electrical engineering services across the State of Iowa and Western Illinois. We also provide fully licensed professional land survey and construction staking services, and specialty services including aerial photography and video, 3D scanning, planning, project management/owner's representative, property condition assessments, specialty inspections, and more. Our staff have over 200-years of combined engineering experience and provide unique owner-focused services based on being adept, agile, and communicative in ways that are often overlooked.

Axiom staff, led by Rob Decker, have worked on a number of low-head dam projects and other marine investigations and analyses including a number of low-head dams. Our history working with JF Brennan dates back to 2013. Our companies share common approaches to working with clients, often ushering them through sensitive and complex forensic investigation and repair projects.

Staff Roles and Qualifications

ROB DECKER, MSE, CPG, CPII
PRINCIPAL – OWNER
Building Services Manager

M.S. - Engineering (Structural and Geotechnical)
The University of Wisconsin (Platteville)
B.S. – Geoscience
The University of Iowa

Mr. Decker is the owner and founder of Axiom Consultants located in Iowa City. On a practical level he serves a variety of roles including managing the Building Services division of Axiom. He serves as the lead for the majority of Axiom's building-related projects and has a long history working for all manner of institutions. Rob is an expert in structural and civil engineering and has worked on a variety of projects from small tenant improvements to large multi-million dollar facilities. He works closely with owners and architects to deliver sound design and project management services and is known for being a level-headed problem solver.
phone **319.519.6221** email **rdecker@axiom-con.com**

STEVE JACOBSEN, MSE, PE
SENIOR STRUCTURAL ENGINEER

M.S. - Engineering (Structural)
The University of Iowa
B.S. – Civil Engineering (Structural Emphasis)
The University of Iowa

Mr. Jacobsen is a career structural engineer with a history of successful and award-winning projects. He has completed complex evaluations, designs, and rehabilitations throughout his career across the state of Iowa. Mr. Jacobsen has had a successful career teaching structural design at the University of Iowa and working as a structural design consultant for decades. He is an expert in a variety of areas including building design, bridge design, structural forensics, industrial structural design, and much more. His calm and level-headed approach to everything he does has made him an invaluable resource in the field of structural analysis and design and his stellar reputation is second to none.
phone **507.254.8288** email **sjacobsen@axiom-con.com**

Additional Included Reference Information

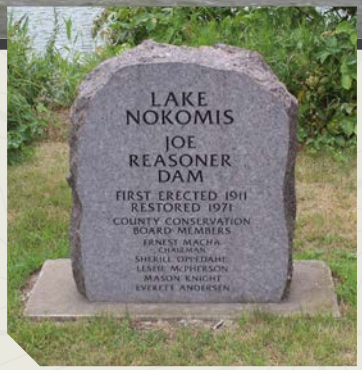
- Reasoner Dam Brochure: Iowa DNR Low-Head Dam Project
- RiverGages.Com Report: 50-Year History of Humboldt Gauge Flow Data
- Underwater Inspection Report, 2022 (JF Brennan)
- JF Brennan Dam Construction Brochure

Additional Included Materials

- BIM model of the Reasoner Dam

REASONER DAM

HUMBOLDT COUNTY, IOWA



ABOUT THE DAM

The Reasoner Dam spans the West Fork the of the Des Moines River and is only one of two dams in the interior of Iowa that has an island at the middle of the structure, which is an unusal layout for low-head structures. The dam includes a lengthy millrace that diverted water to a powerhouse downstream.

While an earlier mill dam existed at this location (built in 1864), the current dam was built in 1911 to provide a pool for hydroelectric power generation. Construction was encouraged by a state-wide push for Iowa communities to electrify their neighborhoods by creating small power companies utilizing river resources. Due to the signfiance of engineering and various distinctive architectural elements, the Reasoner Dam is recommended for eligibility on the National Register of Historic Places.

QUICK FACTS

BUILDER/CONTRACTOR
Tolz, King and Day, Inc.

HISTORIC FUNCTIONS
Hydroelectric Dam, Reservoir

CURRENT FUNCTIONS
Park, Dam

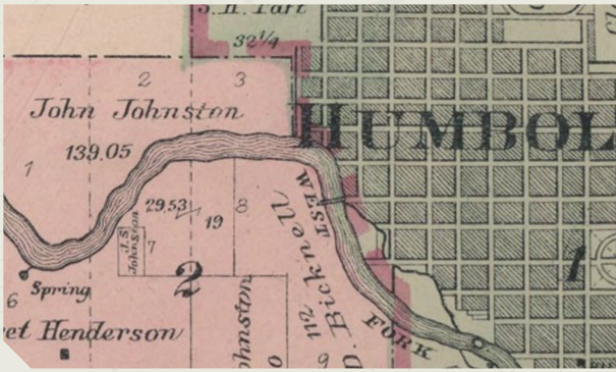
MATERIALS
Reinforced Concrete

PERIOD OF SIGNIFICANCE
1911 - 1964

CONSTRUCTION COST
$100,000

NAMESAKE
Joe Reasoner, President of the Citizen Committee for Dam Repairs

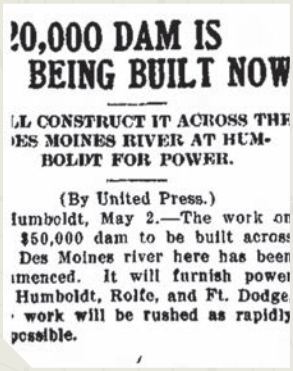
HISTORY



According to Pat Baker, historian at the Humboldt County Historical Museum, the first dam in this area was built in 1864. According to Swisher (1940), Reverend S. H. Taft built a dam across the Des Moines River and operated a flour mill at Humboldt. The county history relates that the sawmill and flour mill were built in 1864 by Reverend Taft, with operations beginning in 1865. The mill had three buhr stones. Taft was a very early resident of the Humboldt/Dakota City area. In 1866, prominent members of the community including judges, the sheriff, and county officials stated, "The colony, mill, and town enterprise to which Mr. Taft has devoted himself since he came into this State, has, in our opinion, done more to develop the resources of this section of the State, and advance the price of land, than any improvement which has preceded it".

In 1867, a millrace was cut with a dam located at the head. The work was completed by approximately 50 men for a cost of over $17,000. This statement in the county history indicates a second dam was constructed in 1867 to assist with milling work on the river. In 1883, the mill belonged to a Mr. Rickard, who removed the wood dam and replaced it with a stone crib dam. The mill had a capacity of 100 barrels per day.

In 1900, a small electric light plant had been added to the east side of the mill in a detached structure. In 1909, the electrical plant was known as Humboldt Electric Light Company. In 1915, the mill still existed on the banks of the river, but the Northern Iowa Power Company built a facility just upstream of a dam. The city map shows the dam with an island at the center. By 1930, the mill was no longer present, and the plant was owned by Iowa Public Service Company. From a milling perspective, the current dam might have only serviced a mill for a few years. The Sanborn maps do depict a mill and powerhouse, but the facilities were located at the tail end of the millrace, which has its head at Reasoner Dam. Water flowed from the dam to the mill and powerhouse some 2,400 ft below Reasoner Dam. A second, smaller dam might exist or have existed at the tail end of the millrace.



20,000 DAM IS BEING BUILT NOW

LL CONSTRUCT IT ACROSS THE DES MOINES RIVER AT HUMBOLDT FOR POWER.

(By United Press.)

Humboldt, May 2.—The work on $50,000 dam to be built across Des Moines river here has been mmenced. It will furnish power Humboldt, Rolfe, and Ft. Dodge. work will be rushed as rapidly possible.

In 1911, plans for a hydroelectric dam were presented for Humboldt at the Northern Roller Milling Company and Humboldt Electric Light and Power Company location (owned by the same individuals). The plan was to build a concrete dam across the river and erect a new powerhouse. The cost was estimated at $50,000 and approximately 1,200 hp would be produced. Plans were made by an engineer named "Tolz" of St. Paul, Minnesota (probably Tolz, King and Day, Inc. who also designed the Rutland Dam). But also in 1911, the dam is said to be under construction by the Northern Iowa Power Company. This might be a rebranding of the mill/electric company as Northern Iowa Power Company was based in Humboldt in 1911.

An older dam was present at this time, and it existed just upstream from the new concrete dam. The concrete dam was excavated to 5 ft below the riverbed. The width of the sluiceway was documented as 12 ft. The dam was reportedly 220 ft in length, 16 ft wide at the base, 14 ft tall, and the top was 4 ft wide. New cost estimates for construction totaled $75,000. By the time of completion, the facility cost $100,000.

IOWA DAM NEARLY FINISHED

Humboldt Power Plant Costing $100,000 to Be Ready Soon.

Special to The Gazette.

Humboldt, Iowa, Aug. 28—The Northern Iowa Power and Light company with headquarters at Humboldt, is just completing its second dam across the Des Moines river here after two weeks of day and night cement work. The dams and other improvements will represent a cost of $100,000.

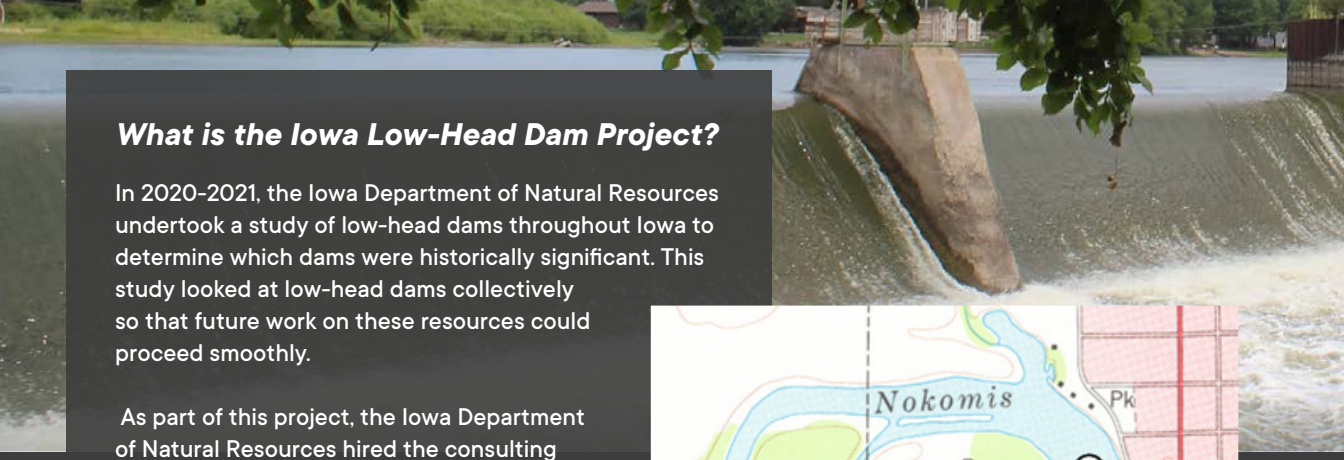
The same company soon will start active work on the big dam and power-house to be built at Forth Dodge, across and near the Des Moines, which will mean the expenditure of about $200,000. These two enterprises will develop thousands of horse power and mark the beginning of the utilization of Iowa's river water power that has been going to waste for many years.

A bill in the legislature last winter which sought to require such companies as the one now building to pay a large sum for the privilege of harnessing the river power of the state was lost.

Northern Iowa Power Company had multiple dams and holdings that serviced electricity and eventually went by the name "Northern Iowa Gas and Electric Company" in 1916 and also "Northern Iowa Light and Power Company". In 1925, Northern Iowa Gas and Electric merged with Central Iowa Power and Light Company of Fort Dodge. After a merger between Iowa Light, Heat, and Power Company in Northwest Iowa with Central Iowa Power and Light Company in 1927, the company became Iowa Public Service Company and the dam transferred ownership at that time. Repair work was completed on the west dam wall by Sande Construction Company in 1953. The plant ceased operations in 1963 or 1964. Additional utility acquisitions occurred in 1948, and in 1984, shareholders voted to make Iowa Public Service Company a subsidiary of Midwest Energy, followed by another merger in 1990 to form Midwest Resources. In 1995, Midwest Resources was merged with Iowa-Illinois Gas and Electric Company to form MidAmerican Energy.

After a flood in 1969, the center portion of the dam (island) washed out causing significant damage to the structure. A citizens committee was formed in 1970 to assist with funding of the dam reconstruction project to re-pool Lake Nokomis. The center section of the dam was rebuilt using four major and three minor sheet pile cells with 72 pilings in each cell. Each major cell is 30 ft in diameter and filled with aggregate from the Des Moines River. Riprap and concrete rubble were placed on top. Concrete work was also completed on the flanking sections of the dam. The dam repairs cost about $118,160 and it was a cooperative effort between the community of Humboldt and the Humboldt County Conservation Board. Howard R. Green Company of Cedar Rapids undertook design work. The dam is named after Joe Reasoner, the president of the citizen's committee that helped fund the project, who was at the dedication ceremony in 1971.

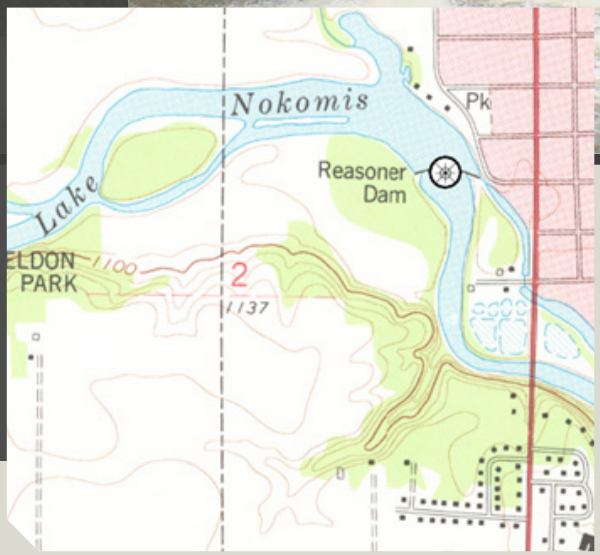
According to DNR records, after the center island construction episode, the remainder of the dam was rebuilt in 1980, but we could locate no information about a significant building episode. The 1981 inspection report indicates that the dam is made of reinforced concrete with an ogee shaped spillway between abutments. Two spillway sections were separated by an island. The east spillway has a sluice gate that flowed into a 3,000 ft long millrace that led to the powerhouse. The millrace was controlled by four 5 ft wide wooden sluice gates. The powerhouse was 48 ft wide by 52 ft long. It contained three horizontal drive turbines that were each connected to a 175-kW generator. The powerhouse was retired in 1963.



What is the Iowa Low-Head Dam Project?

In 2020-2021, the Iowa Department of Natural Resources undertook a study of low-head dams throughout Iowa to determine which dams were historically significant. This study looked at low-head dams collectively so that future work on these resources could proceed smoothly.

As part of this project, the Iowa Department of Natural Resources hired the consulting firm, Impact7G, Inc. to develop a guide to assist project partners navigate the often complex laws and regulations associated with historically significant dams.



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West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

For official flow data, please visit the USGS website listed in the Additional Links for this station. The National Weather Service information is also linked in the Additional Links for this station.

1973 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.81	1057.14	1057.58	1057.72	1058.11	1058.27	1057.96	1056.86	1056.62	M	M	M
2	1057.64	1057.09	1057.88	1057.83	1058.06	1058.16	1057.92	1056.82	1056.58	M	M	M
3	1057.63	1057.04	1058.13	1058.34	1058.07	1058.22	1057.81	1056.82	1056.58	M	M	M
4	1057.53	1057.07	1058.06	1058.57	1058.03	1058.10	1057.71	1056.80	1056.56	M	M	M
5	1057.41	1056.99	1057.84	1058.59	1057.96	1058.04	1057.67	1056.80	1056.56	M	M	M
6	1057.47	M	1057.85	1058.53	1057.94	1058.17	1057.54	1056.79	1056.56	M	M	M
7	1057.41	M	1057.82	1058.51	1057.94	1058.91	1057.49	1056.78	1056.54	M	M	M
8	1057.34	M	1057.92	1058.51	1057.92	1059.25	1057.42	1056.72	1056.54	M	M	M
9	1057.28	M	1058.09	1058.53	1057.92	1059.36	1057.41	1056.76	1056.57	M	M	M
10	1057.30	M	1058.17	1058.50	1058.17	1059.34	1057.47	1056.82	1056.47	M	M	M
11	1057.35	1056.97	1058.37	1058.59	1058.64	1059.66	1057.52	1056.79	1056.51	M	M	M
12	1057.16	1057.08	1058.70	1059.30	1058.81	1059.57	1057.46	1056.70	1056.54	M	M	M
13	1057.14	1057.29	1058.68	1059.76	1058.92	1059.23	1057.40	1056.72	1056.57	M	M	M
14	1057.10	1057.34	1058.54	1059.96	1058.73	1058.97	1057.33	1056.67	1056.53	M	M	M
15	1057.07	1057.25	1058.35	1059.89	1058.65	1058.81	1057.26	1056.69	1056.53	M	M	M
16	1057.08	1057.33	1058.15	1059.66	1058.56	1058.61	1057.22	1056.68	1056.52	M	M	M
17	1057.08	1057.55	1058.08	M	1058.53	1058.46	1057.17	1056.71	1056.49	M	M	M
18	1057.07	1057.57	1058.00	1059.15	1058.69	1058.69	1057.13	1056.69	1056.48	M	M	M
19	1057.08	1057.92	1057.88	1059.02	1058.67	1058.77	1057.10	1056.64	1056.50	M	M	M
20	1057.09	1057.91	1057.84	1058.88	1058.62	1058.53	1057.09	1056.64	1056.45	M	M	M
21	M	1057.70	1057.83	1058.92	1058.66	1058.95	1057.08	1056.63	1056.47	M	M	M
22	M	1057.60	1057.64	1058.81	1058.82	1060.24	1057.02	1057.17	1056.45	M	M	M
23	M	1057.51	1057.43	1058.71	1058.69	1060.15	1056.99	1057.04	1056.46	M	M	M
24	1057.11	1057.44	1057.54	1058.56	1058.61	1059.65	1056.98	1056.89	1056.47	M	M	M
25	1057.11	1057.42	1057.82	1058.48	1058.43	1059.13	1056.96	1056.79	1056.45	M	M	M
26	1057.11	1057.50	1057.74	1058.42	1058.37	1058.82	1056.96	1056.81	1056.45	M	M	M
27	M	1057.50	1057.72	1058.40	1058.30	1058.58	1056.96	1056.73	1056.47	M	M	M
28	1057.10	1057.53	1057.67	1058.30	1058.28	1058.39	1056.92	1056.70	1056.43	M	M	M
29	1057.08		1057.69	1058.23	1058.27	1058.24	1056.88	1056.67	1056.43	M	M	M
30	M		1057.69	1058.17	1058.39	1058.08	1056.84	1056.61	M	M	M	M
31	1057.11		1057.72		1058.22		1056.95	1056.62		M		1056.25
MIN	1057.07	1056.97	1057.43	1057.72	1057.92	1058.04	1056.84	1056.61	1056.43			1056.25
MAX	1057.81	1057.92	1058.70	1059.96	1058.92	1060.24	1057.96	1057.17	1056.62			1056.25
MEAN	1057.26	1057.38	1057.95	1058.72	1058.39	1058.85	1057.28	1056.76	1056.51			

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Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.30	1056.16	1056.24	1057.07	1061.95	1058.61	1058.63	1056.81	1056.73	M	M	M
2	1056.29	1056.18	1056.23	1057.17	1061.25	1058.51	1058.47	1056.77	1056.71	M	M	M
3	1056.25	1056.17	1056.26	1057.20	1060.74	1058.54	1058.29	1056.81	1056.70	M	M	M
4	1056.28	1056.07	1056.27	1057.11	1060.56	1059.35	1058.21	1056.79	1056.66	M	M	M
5	1056.29	1056.11	1056.24	1057.36	1060.25	1060.10	1058.13	1056.76	1056.69	M	M	M
6	1056.25	1056.13	1056.23	1057.68	1060.03	1059.90	1058.06	1056.79	1056.66	M	M	M
7	1056.30	1056.13	1056.27	1058.38	1060.04	1059.29	1057.99	1056.65	1056.64	M	M	M
8	1056.28	1056.17	1056.28	1059.18	1059.79	1058.98	1057.92	1056.71	1056.62	M	M	M
9	1056.31	1056.17	1056.27	1059.62	1059.61	1058.87	1057.82	1056.69	1056.62	M	M	M
10	1056.20	1056.16	1056.23	1059.63	1059.53	1058.98	1057.71	1056.69	1056.63	M	M	M
11	1056.17	1056.16	1056.24	1059.73	1059.80	1059.16	1057.59	1056.73	1056.63	M	M	M
12	1056.15	1056.16	1056.20	1060.05	1060.30	1059.16	1057.60	1056.70	1056.65	M	M	M
13	1056.12	1056.18	1056.21	1059.96	1060.13	1059.04	1057.56	1056.68	1056.69	M	M	M
14	1056.10	1056.13	1056.21	1060.02	1059.75	1058.92	1057.52	1056.67	1056.68	M	M	M
15	1056.12	1056.19	1056.27	1060.20	1059.40	1058.97	1057.48	1056.65	1056.66	M	M	M
16	1056.12	1056.17	1056.36	1060.29	1059.15	1059.12	1057.43	1056.64	1056.65	M	M	M
17	1056.14	1056.21	1056.49	1060.31	1058.97	1059.80	1057.45	1056.85	1056.65	M	M	M
18	1056.14	1056.20	1056.55	1060.25	1058.83	1059.88	1057.31	1056.93	1056.62	M	M	M
19	1056.14	1056.20	1056.66	1060.31	1058.70	1060.40	1057.31	1056.90	1056.85	M	M	M
20	1056.17	1056.19	1056.72	1060.29	1058.58	1060.27	1057.25	1056.87	1056.61	M	M	M
21	1056.12	1056.18	1056.78	1059.98	1058.46	1059.91	1057.19	1056.76	1056.80	M	M	M
22	1056.18	1056.23	1057.48	1059.89	1058.39	1059.88	1057.16	1057.04	1056.69	M	M	M
23	1056.14	1056.21	1057.69	1059.93	M	1060.19	1057.14	1057.29	1056.56	M	M	M
24	1056.17	1056.21	1057.56	1060.15	M	1060.40	1057.11	1057.13	1056.55	M	M	M
25	1056.15	1056.20	1057.48	1060.16	M	1060.09	1057.03	1057.06	1056.55	M	M	M
26	1056.12	1056.19	M	1060.08	1058.35	1059.65	1056.96	1056.97	1056.55	M	M	M
27	1056.13	1056.21	1057.34	1061.00	1058.57	1059.28	1056.93	1056.89	1056.56	M	M	M
28	1056.12	1056.27	1057.07	1062.40	1058.59	1059.00	1056.87	1056.85	1056.56	M	M	M
29	1056.13		1057.07	1062.58	1059.04	1058.88	1056.85	1056.85	1056.54	M	M	M
30	1056.13		1057.21	1062.39	1059.10	1058.72	1056.83	1056.77	M	M	M	M
31	1056.13		1057.00		1058.86		1056.82	1056.75		M		1056.51
MIN	1056.10	1056.07	1056.20	1057.07	1058.35	1058.51	1056.82	1056.64	1056.54			1056.51
MAX	1056.31	1056.27	1057.69	1062.58	1061.95	1060.40	1058.63	1057.29	1056.85			1056.51
MEAN	1056.18	1056.18	1056.64	1059.68	1059.53	1059.40	1057.50	1056.82	1056.65			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1975 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.50	1056.28	1057.08	1058.54	1057.24	1057.10	1056.83	1056.27	1056.10	M	M	M
2	1056.50	1056.28	1057.03	1058.37	1057.23	1057.02	1056.73	1056.27	1056.08	M	M	M
3	1056.40	1056.25	1056.79	1058.22	1057.18	1056.91	1056.67	1056.26	1056.13	M	M	M
4	1056.37	1056.26	1056.69	1058.13	1057.14	1056.86	1056.63	1056.27	1056.12	M	M	M
5	1056.38	1056.24	1056.39	1058.03	1057.07	1056.80	1056.59	1056.26	1056.12	M	M	M
6	1056.35	1056.25	1056.64	1057.93	1057.05	1056.77	1056.55	1056.25	1056.11	M	M	M
7	1056.31	1056.25	1056.90	1057.84	1057.04	1056.73	1056.44	1056.24	1056.06	M	M	M
8	1056.27	1056.26	1057.19	1057.79	1057.03	1056.70	1056.48	1056.23	1056.06	M	M	M
9	1056.26	1056.27	1057.20	1057.73	1056.99	1056.67	1056.45	1056.24	1056.06	M	M	M
10	1056.25	1056.28	1057.16	1057.67	1056.93	1056.72	1056.44	1056.16	1056.06	M	M	M
11	1056.26	1056.28	1057.22	1057.63	1056.90	1056.71	1056.43	1056.12	1056.06	M	M	M
12	1056.21	1056.35	M	1057.57	1056.89	1056.71	1056.43	1056.16	1056.05	M	M	M
13	1056.23	1056.34	1058.12	1057.52	1056.90	1056.69	1056.40	1056.21	1056.05	M	M	M

14	1056.22	1056.44	1058.44	1057.50	1056.90	1056.67	1056.41	1056.19	1056.04	M	M	M
15	1056.15	1056.46	1059.38	1057.47	1056.89	1056.73	1056.24	1056.14	1056.05	M	M	M
16	1056.26	1056.49	1058.57	1057.46	1056.90	1056.62	1056.27	1056.20	1056.05	M	M	M
17	1056.26	1056.55	1058.08	1057.48	1056.87	1056.61	1056.29	1056.20	1056.05	M	M	M
18	1056.27	1056.65	1058.04	1057.43	1056.84	1056.59	1056.28	1056.19	1056.04	M	M	M
19	1056.25	1056.90	1058.09	1057.36	1056.84	1056.64	1056.27	1056.23	1056.14	M	M	M
20	1056.26	1056.80	1058.23	1057.35	1056.82	1057.04	1056.29	1056.20	1056.18	M	M	M
21	1056.22	1056.72	1058.47	1057.32	1056.82	1056.96	1056.30	1056.16	1056.20	M	M	M
22	1056.19	1056.71	1058.46	1057.26	1056.87	1056.84	1056.30	1056.14	1056.18	M	M	M
23	1056.28	1056.81	1058.36	1057.15	1056.95	1056.75	1056.29	1056.15	1056.13	M	M	M
24	1056.27	1056.90	1058.21	1057.08	1056.94	1056.75	1056.27	1056.12	1056.08	M	M	M
25	1056.25	1057.04	1058.20	1057.26	1057.06	1056.65	1056.27	1056.13	1056.07	M	M	M
26	1056.26	1057.12	1058.25	1057.28	1057.03	1056.65	1056.27	1056.14	1056.07	M	M	M
27	1056.27	1057.18	1058.48	1057.27	1057.02	1056.67	1056.26	1056.15	1056.07	M	M	M
28	1056.27	1057.16	1058.48	1057.22	1056.95	1056.79	1056.28	1056.15	1056.07	M	M	M
29	1056.26		1058.25	1057.23	1056.93	1057.01	1056.30	1056.14	1056.07	M	M	M
30	1056.29		1058.35	1057.23	1056.93	1056.91	1056.29	1056.13	1056.09	M	M	M
31	1056.27		1058.54		1056.97		1056.27	1056.11		M		M
MIN	1056.15	1056.24	1056.39	1057.08	1056.82	1056.59	1056.24	1056.11	1056.04			
MAX	1056.50	1057.18	1059.38	1058.54	1057.24	1057.10	1056.83	1056.27	1056.20			
MEAN	1056.28	1056.55	1057.84	1057.58	1056.97	1056.78	1056.39	1056.19	1056.09			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1976 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.03	1056.15	1056.17	1056.93	1056.66	1056.40	1056.66	1056.19	1056.38	M	M	M
2	1056.03	1056.04	1056.18	1056.96	1056.64	1056.38	1056.75	1056.19	1056.32	M	M	M
3	1056.03	1055.99	1056.19	1056.98	1056.68	1056.37	1056.74	1056.14	1056.31	M	M	M
4	1056.03	1055.99	1056.15	1056.89	1056.93	1056.37	1056.70	1056.07	1056.27	M	M	M
5	1056.03	1056.05	1056.15	1056.68	1056.84	1056.34	1056.67	1056.10	1056.25	M	M	M
6	1056.03	1055.99	1056.21	1056.73	1056.78	1056.32	1056.65	1056.12	1056.24	M	M	M
7	1056.03	1055.99	1056.26	1056.80	1056.70	1056.32	1056.60	1056.14	1056.24	M	M	M
8	1056.03	1056.04	1056.33	1056.79	1056.96	1056.32	1056.54	1056.15	1056.28	M	M	M
9	1056.02	1056.10	1056.38	1056.79	1056.89	1056.32	1056.51	1056.14	1056.24	M	M	M
10	1056.02	1056.05	1056.80	1056.64	1056.79	1056.24	1056.56	1056.18	1056.23	M	M	M
11	1056.01	1056.06	1057.55	1056.68	1056.73	1056.16	1056.53	1056.21	1056.31	M	M	M
12	1055.99	1056.08	1057.59	1056.74	1056.66	1056.16	1056.50	1056.16	1056.28	M	M	M
13	1055.99	1056.08	1057.49	1056.78	1056.62	1056.20	1056.51	1056.11	1056.25	M	M	M
14	1055.99	1056.07	1057.39	1056.90	1056.57	1056.20	1056.48	1056.21	1056.21	M	M	M
15	1055.99	1056.06	1057.28	1056.85	1056.60	1056.28	1056.46	1056.34	1056.18	M	M	M
16	1055.99	1056.04	1057.10	1056.88	1056.57	1056.35	1056.45	1056.57	1056.17	M	M	M
17	1056.09	1056.03	1057.03	1056.84	1056.52	1056.38	1056.42	1056.46	1056.17	M	M	M
18	1056.09	1056.04	1056.89	1056.84	1056.51	1056.50	1056.38	1056.40	1056.18	M	M	M
19	1056.09	1056.04	1057.00	1056.85	1056.53	1056.56	1056.35	1056.36	1056.14	M	M	M
20	1056.09	1056.05	1057.19	1056.90	1056.48	1056.58	1056.33	1056.36	1056.12	M	M	M
21	1056.00	1056.05	1057.18	1056.89	1056.56	1056.62	1056.30	1056.35	1056.12	M	M	M
22	1056.00	1056.06	1057.07	1056.97	1056.52	1056.61	1056.29	1056.31	1056.27	M	M	M
23	1055.99	1056.13	1056.99	1056.89	1056.51	1056.55	1056.32	1056.29	1056.27	M	M	M
24	1055.98	1056.16	1056.96	1056.83	1056.52	1056.54	1056.51	1056.27	1056.28	M	M	M
25	1055.98	1056.14	1056.94	1056.81	1056.50	1056.55	1056.51	1056.28	1056.27	M	M	M
26	1055.98	1056.15	1056.89	1056.77	1056.49	1056.56	1056.41	1056.28	1056.25	M	M	M
27	1055.98	1056.18	1056.88	1056.77	1056.49	1056.66	1056.42	1056.26	1056.23	M	M	M
28	1056.04	1056.18	1056.90	1056.74	1056.50	1056.60	1056.34	1056.24	1056.23	M	M	M
29	1056.12	1056.15	1056.89	1056.72	1056.47	1056.62	1056.29	1056.23	1056.24	M	M	M
30	1056.15		1056.86	1056.70	1056.48	1056.60	1056.25	1056.25	M	M	M	M

31	1056.19		1056.83		1056.42		1056.22	1056.38		M		1057.10
MIN	1055.98	1055.99	1056.15	1056.64	1056.42	1056.16	1056.22	1056.07	1056.12			1057.10
MAX	1056.19	1056.18	1057.59	1056.98	1056.96	1056.66	1056.75	1056.57	1056.38			1057.10
MEAN	1056.03	1056.07	1056.83	1056.82	1056.62	1056.42	1056.47	1056.25	1056.24			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1977 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.08	1056.63	1056.50	1058.59	1058.62	1058.15	1057.77	1057.70	1057.08	M	M	M
2	1057.03	1056.61	1056.50	1058.51	1058.55	1058.03	1057.61	1057.62	1057.04	M	M	M
3	1057.00	1056.61	1056.50	1058.42	1058.49	1057.96	1057.50	1057.55	1057.00	M	M	M
4	1056.98	1056.59	1056.50	1058.34	1058.42	1057.88	1057.56	1057.49	1056.98	M	M	M
5	1056.94	1056.59	1056.50	1058.36	1058.33	1057.81	1059.47	1057.43	1056.92	M	M	M
6	1056.94	1056.59	1056.50	1058.46	1058.28	1057.71	1060.60	1057.39	1056.86	M	M	M
7	1056.98	1056.60	1056.48	1058.63	1058.26	1057.65	1060.96	1057.34	1056.85	M	M	M
8	1057.05	1056.59	1056.45	1058.78	1058.24	1057.60	1060.56	1057.31	1056.86	M	M	M
9	1057.05	1056.58	1056.49	1058.90	1058.23	1057.54	1059.98	1057.26	1056.84	M	M	M
10	1056.98	1056.57	1056.54	1058.80	1058.21	1057.46	1059.43	1057.23	1056.82	M	M	M
11	1056.93	1056.57	1056.60	1058.75	1058.19	1057.41	1058.99	1057.20	1056.89	M	M	M
12	1056.85	1056.57	1056.76	1058.74	1058.20	1057.35	1058.69	1057.16	1058.49	M	M	M
13	1056.80	1056.57	1056.82	1058.69	1058.16	1057.33	1058.46	1057.13	1059.38	M	M	M
14	1056.79	1056.56	1057.15	1058.58	1058.13	1057.30	1058.29	1057.17	1059.48	M	M	M
15	1056.81	1056.56	1057.39	1058.53	1058.08	1057.17	1058.11	1057.17	1059.13	M	M	M
16	1056.82	1056.56	1057.55	1058.46	1058.03	1058.14	1057.98	1057.19	1058.66	M	M	M
17	1056.76	1056.56	1057.69	1058.54	1057.98	1058.39	1057.84	1057.14	1058.37	M	M	M
18	1056.74	1056.56	1057.90	1058.81	1057.94	1058.04	1057.75	1057.13	1058.19	M	M	M
19	1056.73	1056.56	1058.01	1059.20	1057.87	1057.81	1057.68	1057.13	1058.01	M	M	M
20	1056.73	1056.55	1058.18	1059.23	1057.80	1057.77	1057.64	1057.19	1057.94	M	M	M
21	1056.72	1056.55	1058.40	1058.72	1057.74	1057.96	1057.74	1057.22	1057.86	M	M	M
22	1056.70	1056.55	1059.00	1058.94	1057.71	1057.85	1058.36	1057.17	1057.71	M	M	M
23	1056.70	1056.54	1059.66	1058.84	1057.58	1057.76	1059.04	1057.15	1057.64	M	M	M
24	1056.69	1056.53	1059.83	1058.87	1057.61	1057.78	1059.07	1057.15	1057.53	M	M	M
25	1056.70	1056.52	1059.60	1058.85	1057.59	1057.78	1058.76	1057.22	1057.46	M	M	M
26	1056.70	1056.52	1059.66	1058.84	1057.55	1057.61	1058.45	1057.31	1057.39	M	M	M
27	1056.69	1056.52	1059.38	1058.79	1057.55	1058.26	1058.22	1057.37	1057.31	M	M	M
28	1056.68	1056.50	1059.01	1058.73	1057.72	1058.30	1058.06	1057.30	1057.27	M	M	M
29	1056.67		1058.94	1058.69	1057.90	1058.05	1057.93	1057.20	1057.24	M	M	M
30	1056.66		1058.87	1058.68	1058.31	1057.99	1057.83	1057.14	M	M	M	M
31	1056.63		1058.73		1058.30		1057.74	1057.12		M		1056.52
MIN	1056.63	1056.50	1056.45	1058.34	1057.55	1057.17	1057.50	1057.12	1056.82			1056.52
MAX	1057.08	1056.63	1059.83	1059.23	1058.62	1058.39	1060.96	1057.70	1059.48			1056.52
MEAN	1056.82	1056.56	1057.74	1058.71	1058.05	1057.79	1058.52	1057.27	1057.63			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1978 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.53	1056.37	1056.42	1062.96	1060.23	1058.41	1058.89	1059.68	1062.49	M	M	M
2	1056.51	1056.37	1056.47	1062.74	1060.10	1058.27	1058.80	1059.19	1062.41	M	M	M
3	1056.54	1056.38	1056.39	1062.44	1059.99	1058.20	1058.79	1058.84	1062.20	M	M	M
4	1056.50	1056.40	1056.38	1062.19	1059.78	1058.14	1058.60	1058.59	1061.89	M	M	M
5	1056.45	1056.40	1056.50	1062.08	1059.70	1058.11	1058.47	1058.48	1061.71	M	M	M
6	1056.42	1056.43	1056.52	1062.09	1059.57	1058.08	1058.38	1058.38	1061.54	M	M	M
7	1056.39	1056.52	1056.50	1062.23	1059.44	1058.03	1058.31	1058.25	1061.27	M	M	M
8	1056.38	1056.49	1056.49	1062.30	1059.50	1058.02	1058.21	1058.43	1061.02	M	M	M
9	1056.38	1056.45	1056.45	1062.35	1059.69	1057.98	1058.10	1059.23	1060.75	M	M	M
10	1056.40	1056.44	1056.38	1062.30	1059.56	1057.98	1058.01	1059.65	1060.39	M	M	M
11	1056.40	1056.41	1056.39	1062.16	1059.56	1057.99	1057.92	1059.92	1060.08	M	M	M
12	1056.39	1056.40	1056.38	1061.99	1059.86	1058.05	1057.88	1060.18	1059.91	M	M	M
13	1056.41	1056.40	1056.38	1061.83	1060.07	1058.06	1059.14	1060.32	1059.94	M	M	M
14	1056.39	1056.44	1056.34	1061.73	1060.30	1057.96	1059.81	1060.06	1060.15	M	M	M
15	1056.39	1056.59	1056.38	1061.66	1060.34	1057.94	1059.56	1059.66	1060.27	M	M	M
16	1056.38	1056.38	1056.47	1061.62	1060.20	1057.91	1059.05	1059.54	1060.23	M	M	M
17	1056.37	1056.39	1056.79	1061.57	1060.19	1057.97	1058.64	1059.49	1060.02	M	M	M
18	1056.38	1056.40	1057.69	1061.50	1060.19	1058.08	1058.38	1059.67	1059.81	M	M	M
19	1056.37	1056.39	1058.87	1061.48	1060.18	1058.21	1058.22	1060.11	1059.67	M	M	M
20	1056.36	1056.38	1059.44	1061.50	1060.10	1058.48	1058.12	1060.75	1059.60	M	M	M
21	1056.35	1056.38	1060.33	1061.56	1059.99	1058.54	1058.05	1061.55	1059.46	M	M	M
22	1056.34	1056.38	1061.15	1061.54	1059.81	1058.55	1058.39	1062.49	1059.33	M	M	M
23	1056.33	1056.37	1061.60	1061.48	1059.60	1058.58	1058.34	1062.98	1059.21	M	M	M
24	1056.32	1056.36	1062.14	1061.37	1059.41	1058.57	1058.25	1063.43	1059.11	M	M	M
25	1056.37	1056.36	1062.41	1061.23	1059.27	1058.57	1058.25	1063.65	1059.04	M	M	M
26	1056.38	1056.38	1062.39	1061.12	1059.11	1059.21	1058.40	1063.57	1058.90	M	M	M
27	1056.36	1056.38	1062.56	1061.00	1058.97	1059.46	1058.88	1063.42	1058.80	M	M	M
28	1056.36	1056.38	1062.84	1060.82	1058.84	1059.27	1058.99	1063.15	1058.71	M	M	M
29	1056.36		1063.33	1060.53	1058.70	1059.10	1059.10	1062.81	1058.62	M	M	M
30	1056.36		1063.54	1060.34	1058.58	1059.00	1059.56	1062.58	M	M	M	M
31	1056.36		1063.34		1058.50		1059.86	1062.50		M		1058.32
MIN	1056.32	1056.36	1056.34	1060.34	1058.50	1057.91	1057.88	1058.25	1058.62			1058.32
MAX	1056.54	1056.59	1063.54	1062.96	1060.34	1059.46	1059.86	1063.65	1062.49			1058.32
MEAN	1056.39	1056.41	1058.75	1061.72	1059.66	1058.36	1058.62	1060.66	1060.23			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1979 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1058.28	1057.32	1057.21	1058.42	1058.04	1059.23	1057.74	1056.74	1057.43	M	M	M
2	1058.15	1057.25	1057.14	1058.43	1057.98	1059.63	1057.65	1056.72	1057.35	M	M	M
3	1058.05	1057.29	1057.17	1058.64	1057.96	1059.80	1057.58	1056.70	1057.26	M	M	M
4	1058.01	1057.19	1057.11	1059.22	1057.93	1059.79	1057.54	1056.76	1057.26	M	M	M
5	1057.95	1057.20	1057.18	1059.41	1057.87	1060.03	1057.50	1056.75	1057.31	M	M	M
6	1057.65	1057.23	1057.19	1059.61	1057.82	1060.22	1057.44	1056.77	1057.28	M	M	M
7	1057.39	1057.18	1057.16	1059.82	1057.75	1060.44	1057.41	1056.82	1057.25	M	M	M

8	1057.63	1057.14	1057.15	1059.99	1057.69	1060.18	1057.35	1056.77	1057.20	M	M	M
9	1057.60	1057.15	1057.31	1059.98	1057.69	1059.96	1057.29	1056.76	1057.12	M	M	M
10	1057.44	1057.15	1057.60	1059.81	1057.65	1059.75	1057.34	1056.90	1057.04	M	M	M
11	1057.53	1057.16	1057.84	1059.67	1057.63	1059.58	1057.38	1057.06	1057.00	M	M	M
12	1057.53	1057.19	1057.68	1059.51	1057.58	1059.48	1057.27	1056.98	1056.98	M	M	M
13	1057.57	1057.09	1057.53	1059.36	1057.57	1059.52	1057.21	1056.91	1056.95	M	M	M
14	1057.65	1057.09	1057.44	1059.24	1057.55	1060.35	1057.16	1056.88	1056.91	M	M	M
15	1057.87	1057.17	1057.60	1059.16	1057.49	1061.37	1057.15	1056.97	1056.88	M	M	M
16	1057.83	1057.09	1058.20	1059.03	1057.50	1060.99	1057.14	1057.19	1056.86	M	M	M
17	1057.76	1057.12	1058.65	1058.93	1057.51	1060.58	1057.06	1058.00	1056.82	M	M	M
18	1057.71	1057.03	1058.68	1058.84	1057.51	1060.13	1057.00	1058.27	1056.80	M	M	M
19	1057.68	1057.02	1058.74	1058.77	1057.54	1059.72	1056.98	1058.00	1056.79	M	M	M
20	1057.63	1057.19	1059.05	1058.73	1057.60	1059.35	1057.04	1057.84	1056.90	M	M	M
21	1057.62	1057.60	1058.80	1058.68	1057.58	1059.07	1057.04	1057.95	1057.40	M	M	M
22	1057.70	1057.76	1058.68	1058.62	1057.59	1058.83	1057.06	1057.88	1057.44	M	M	M
23	1057.55	1057.79	1058.72	1058.54	1057.60	1058.67	1056.98	1057.67	1057.97	M	M	M
24	1057.60	1057.50	1058.76	1058.47	1057.56	1058.51	1056.94	1057.49	1057.78	M	M	M
25	1057.68	1057.36	1058.77	1058.40	1057.53	1058.38	1056.90	1057.36	1057.62	M	M	M
26	1057.59	1057.32	1058.57	1058.31	1057.47	1058.25	1056.90	1057.32	1057.45	M	M	M
27	1057.50	1057.30	1058.40	1058.27	1057.41	1058.14	1056.86	1057.64	1057.34	M	M	M
28	1057.43	1057.30	1058.28	1058.22	1057.39	1058.03	1056.83	1057.76	1057.26	M	M	M
29	1057.31		1058.22	1058.16	1057.35	1057.94	1056.80	1057.72	1057.18	M	M	M
30	1057.36		1058.22	1058.12	1057.50	1057.83	1056.78	1057.61	1057.14	M	M	M
31	1057.35		1058.37		1058.32		1056.76	1057.51		M		M
MIN	1057.31	1057.02	1057.11	1058.12	1057.35	1057.83	1056.76	1056.70	1056.79			
MAX	1058.28	1057.79	1059.05	1059.99	1058.32	1061.37	1057.74	1058.27	1057.97			
MEAN	1057.66	1057.26	1057.98	1058.95	1057.65	1059.46	1057.16	1057.28	1057.20			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1980 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1058.28	1057.32	1057.14	1058.43	1057.98	1059.63	1057.65	1056.72	1057.35	M	M	M
2	1058.15	1057.25	1057.17	1058.64	1057.96	1059.80	1057.58	1056.70	1057.26	M	M	M
3	1058.05	1057.29	1057.11	1059.22	1057.93	1059.79	1057.54	1056.76	1057.26	M	M	M
4	1058.01	1057.19	1057.18	1059.41	1057.87	1060.03	1057.50	1056.75	1057.31	M	M	M
5	1057.95	1057.20	1057.19	1059.61	1057.82	1060.22	1057.44	1056.77	1057.28	M	M	M
6	1057.65	1057.23	1057.16	1059.82	1057.75	1060.44	1057.41	1056.82	1057.25	M	M	M
7	1057.39	1057.18	1057.15	1059.99	1057.69	1060.18	1057.35	1056.77	1057.20	M	M	M
8	1057.63	1057.14	1057.31	1059.98	1057.69	1059.96	1057.29	1056.76	1057.12	M	M	M
9	1057.60	1057.15	1057.60	1059.81	1057.65	1059.75	1057.34	1056.90	1057.04	M	M	M
10	1057.44	1057.15	1057.84	1059.67	1057.63	1059.58	1057.38	1057.06	1057.00	M	M	M
11	1057.53	1057.16	1057.68	1059.51	1057.58	1059.48	1057.27	1056.98	1056.98	M	M	M
12	1057.53	1057.19	1057.53	1059.36	1057.57	1059.52	1057.21	1056.91	1056.95	M	M	M
13	1057.57	1057.09	1057.44	1059.24	1057.55	1060.35	1057.16	1056.88	1056.91	M	M	M
14	1057.65	1057.09	1057.60	1059.16	1057.49	1061.37	1057.15	1056.97	1056.88	M	M	M
15	1057.87	1057.17	1058.20	1059.03	1057.50	1060.99	1057.14	1057.19	1056.86	M	M	M
16	1057.83	1057.09	1058.65	1058.93	1057.51	1060.58	1057.06	1058.00	1056.82	M	M	M
17	1057.76	1057.12	1058.68	1058.84	1057.51	1060.13	1057.00	1058.27	1056.80	M	M	M
18	1057.71	1057.03	1058.74	1058.77	1057.54	1059.72	1056.98	1058.00	1056.79	M	M	M
19	1057.68	1057.02	1059.05	1058.73	1057.60	1059.35	1057.04	1057.84	1056.90	M	M	M
20	1057.63	1057.19	1058.80	1058.68	1057.58	1059.07	1057.04	1057.95	1057.40	M	M	M
21	1057.62	1057.60	1058.68	1058.62	1057.59	1058.83	1057.06	1057.88	1057.44	M	M	M
22	1057.70	1057.76	1058.72	1058.54	1057.60	1058.67	1056.98	1057.67	1057.97	M	M	M
23	1057.55	1057.79	1058.76	1058.47	1057.56	1058.51	1056.94	1057.49	1057.78	M	M	M
24	1057.60	1057.50	1058.77	1058.40	1057.53	1058.38	1056.90	1057.36	1057.62	M	M	M

25	1057.68	1057.36	1058.57	1058.31	1057.47	1058.25	1056.90	1057.32	1057.45	M	M	M
26	1057.59	1057.32	1058.40	1058.27	1057.41	1058.14	1056.86	1057.64	1057.34	M	M	M
27	1057.50	1057.30	1058.28	1058.22	1057.39	1058.03	1056.83	1057.76	1057.26	M	M	M
28	1057.43	1057.30	1058.22	1058.16	1057.35	1057.94	1056.80	1057.72	1057.18	M	M	M
29	1057.31	1057.21	1058.22	1058.12	1057.50	1057.83	1056.78	1057.61	1057.14	M	M	M
30	1057.36		1058.37	1058.04	1058.32	1057.74	1056.76	1057.51	M	M	M	M
31	1057.35		1058.42		1059.23		1056.74	1057.43		M		M
MIN	1057.31	1057.02	1057.11	1058.04	1057.35	1057.74	1056.74	1056.70	1056.79			
MAX	1058.28	1057.79	1059.05	1059.99	1059.23	1061.37	1057.65	1058.27	1057.97			
MEAN	1057.66	1057.25	1058.02	1058.93	1057.69	1059.41	1057.13	1057.30	1057.19			

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1981 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.49	1056.38	1056.68	1056.69	1056.59	1057.14	1058.71	1057.98	1057.66	1056.52	1057.17	1056.91
2	1056.60	1056.36	1056.61	1056.84	1056.59	1057.10	1058.38	1058.10	1057.55	1056.61	1057.15	1056.87
3	1056.43	1056.33	1056.64	1056.89	1056.71	1057.07	1058.15	1058.11	1057.47	1056.79	1057.15	1057.08
4	1056.42	1056.30	1056.64	1056.91	1056.85	1057.03	1057.99	1057.84	1057.50	1056.96	1057.15	1057.03
5	1056.39	1056.30	1056.65	1056.93	1057.14	1056.97	1057.84	1057.77	1057.34	1057.02	1057.13	1057.02
6	1056.45	1056.29	1056.60	1056.89	1057.14	1056.93	1057.69	1057.63	1057.31	1057.02	1057.11	1057.15
7	1056.38	1056.29	1056.62	1056.87	1057.10	1056.90	1057.57	1057.50	1057.22	1057.01	1057.09	1057.13
8	1056.36	1056.28	1056.62	1056.83	1057.07	1056.91	1057.45	1057.41	1057.18	1057.00	1057.06	1056.99
9	1056.33	1056.33	1056.60	1056.81	1057.04	1056.93	1057.35	1057.32	1057.15	1056.97	1057.13	1056.77
10	1056.32	1056.32	1056.58	1056.79	1056.98	1056.90	1057.25	1057.24	1057.09	1056.95	1057.10	1056.92
11	1056.31	1056.29	1056.58	1056.82	1056.96	1056.91	1057.19	1057.18	1057.06	1056.92	1057.02	1057.06
12	1056.31	1056.23	1056.58	1056.79	1056.95	1057.88	1057.12	1057.11	1057.01	1056.91	1057.01	1057.10
13	1056.31	1056.23	1056.59	1056.75	1056.98	1058.73	1057.06	1057.10	1056.95	1056.92	1057.00	1056.94
14	1056.31	1056.29	1056.60	1056.73	1057.00	1059.49	1056.99	1057.08	1056.91	1056.98	1057.00	1056.67
15	1056.31	1056.38	1056.57	1056.73	1057.17	1059.83	1056.96	1057.14	1056.87	1057.08	1056.97	1056.62
16	1056.29	1056.54	1056.56	1056.75	1056.93	1059.94	1056.95	1057.14	1056.85	1057.13	1056.97	1056.69
17	1056.30	1056.76	1056.58	1056.71	1056.87	1059.39	1056.96	1057.07	1056.82	1057.29	1056.96	1056.88
18	1056.31	1056.85	1056.55	1056.70	1056.87	1058.73	1057.29	1057.06	1056.79	1057.63	1056.96	1056.88
19	1056.31	1056.89	1056.54	1056.71	1056.83	1058.34	1057.56	1057.03	1056.75	1057.65	1056.94	1056.86
20	1056.31	1056.96	1056.55	1056.69	1056.80	1058.09	1057.45	1056.98	1056.73	1057.56	1056.87	1056.84
21	1056.31	1056.91	1056.56	1056.75	1057.08	1057.90	1057.49	1056.95	1056.70	1057.48	1056.90	1056.83
22	1056.33	1056.79	1056.55	1056.75	1057.12	1057.79	1057.66	1056.93	1056.66	1057.41	1057.00	1056.81
23	1056.35	1056.71	1056.54	1056.73	1057.22	1058.46	1057.86	1056.96	1056.64	1057.37	1056.96	1056.79
24	1056.37	1056.70	1056.55	1056.70	1058.67	1058.84	1058.10	1056.98	1056.69	1057.36	1056.97	1056.77
25	1056.40	1056.68	1056.56	1056.71	1058.17	1059.02	1057.96	1057.23	1056.69	1057.33	1057.02	1056.77
26	1056.40	1056.71	1056.57	1056.71	1057.84	1058.86	1057.81	1057.37	1056.63	1057.32	1057.00	1056.77
27	1056.39	1056.70	1056.59	1056.66	1057.62	1058.49	1057.70	1057.71	1056.58	1057.30	1057.00	1056.79
28	1056.37	1056.72	1056.66	1056.66	1057.49	1058.36	1057.61	1058.09	1056.59	1057.27	1056.99	1056.77
29	1056.35		1056.70	1056.63	1057.17	1059.19	1057.56	1058.09	1056.60	1057.26	1057.03	1056.73
30	1056.36		1056.75	1057.20	1057.29	1059.13	1057.47	1057.95	1056.56	1057.24	1057.05	1056.74
31	1056.36		1056.69		1057.19		1057.38	1057.78		1057.20		1056.74
MIN	1056.29	1056.23	1056.54	1056.63	1056.59	1056.90	1056.95	1056.93	1056.56	1056.52	1056.87	1056.62
MAX	1056.60	1056.96	1056.75	1057.20	1058.67	1059.94	1058.71	1058.11	1057.66	1057.65	1057.17	1057.15
MEAN	1056.36	1056.52	1056.60	1056.78	1057.14	1058.11	1057.56	1057.41	1056.95	1057.14	1057.03	1056.87

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)

River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1982 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.69	1056.38	1058.71	1058.83	1058.00	1059.53	1057.90	1057.54	1058.44	1059.60	1058.88	1059.50
2	1056.68	1056.44	1058.68	1058.86	1057.94	1059.35	1057.84	1057.45	1058.22	1060.19	1058.78	1059.57
3	1056.67	1056.40	1058.51	1058.90	1057.90	1059.21	1057.77	1057.46	1057.92	1060.56	1058.71	1059.64
4	1056.66	1056.44	1058.28	1059.17	1058.00	1059.11	1057.70	1057.48	1057.68	1060.49	1058.64	1059.67
5	1056.71	1056.40	1058.14	1059.17	1058.25	1059.10	1058.13	1057.55	1057.52	1060.11	1058.55	1059.58
6	1056.72	1056.41	1057.98	1058.89	1058.37	1059.33	1059.25	1057.48	1057.41	1059.70	1058.53	1059.46
7	1056.69	1056.40	1057.81	1058.79	1058.33	1059.96	1059.68	1057.44	1057.35	1059.45	1058.45	1059.28
8	1056.69	1056.39	1057.71	1058.83	1058.23	1060.28	1060.05	1057.37	1057.31	1059.49	1058.46	1058.78
9	1056.71	1056.40	1057.61	1058.77	1058.12	1060.02	1060.60	1057.35	1057.27	1059.57	1058.83	1058.66
10	1056.79	1056.38	1057.70	1058.79	1058.04	1059.64	1060.97	1057.30	1057.24	1059.52	1059.63	1058.30
11	1056.75	1056.37	1057.86	1058.93	1058.23	1059.39	1060.94	1057.25	1057.35	1059.51	1060.03	1058.07
12	1056.66	1056.37	1058.06	1059.02	1058.52	1059.24	1060.49	1057.25	1058.20	1059.50	1060.32	1057.92
13	1056.59	1056.37	1058.21	1058.99	1058.86	1059.08	1059.93	1057.21	1059.50	1059.68	1060.18	1058.17
14	1056.58	1056.37	1058.39	1059.00	1059.10	1058.99	1059.48	1057.16	1059.87	1059.60	1060.05	1058.62
15	1056.58	1056.37	1058.48	1059.09	1059.29	1058.95	1059.18	1057.11	1059.78	1059.42	1059.88	1058.89
16	1056.56	1056.38	1058.52	1059.16	1059.51	1058.90	1059.05	1057.08	1059.47	1059.25	1059.81	1058.96
17	1056.58	1056.41	1058.85	1059.32	1059.57	1058.82	1058.88	1056.98	1059.12	1059.11	1059.74	1058.92
18	1056.53	1056.43	1059.00	1059.36	1059.41	1058.76	1058.65	1057.00	1058.82	1059.04	1059.70	1058.94
19	1056.49	1056.49	1059.65	1059.25	1059.60	1058.75	1058.51	1056.96	1058.59	1059.16	1059.66	1058.80
20	1056.49	1056.67	1059.90	1059.07	1059.70	1058.69	1058.47	1056.94	1058.38	1059.59	1059.82	1058.61
21	1056.52	1057.37	1060.09	1058.93	1059.73	1058.59	1058.39	1056.92	1058.22	1059.75	1059.88	1058.56
22	1056.47	1058.03	1060.08	1058.83	1059.67	1058.45	1058.32	1056.89	1058.11	1059.74	1059.95	1058.58
23	1056.41	1058.24	1059.83	1058.73	1059.59	1058.34	1058.22	1056.88	1058.00	1059.70	1059.83	1058.63
24	1056.42	1058.38	1059.65	1058.61	1059.44	1058.35	1058.10	1056.86	1057.89	1059.59	1059.66	1059.13
25	1056.49	1058.58	1059.40	1058.51	1059.59	1058.42	1057.97	1056.92	1057.81	1059.46	1059.43	1059.83
26	1056.48	1058.65	1059.20	1058.40	1060.00	1058.33	1057.92	1056.89	1057.76	1059.35	1059.15	1059.97
27	1056.44	1058.62	1059.05	1058.29	1060.39	1058.25	1057.91	1056.84	1057.69	1059.27	1059.29	1059.72
28	1056.40	1058.60	1058.94	1058.21	1060.43	1058.16	1057.90	1056.87	1057.67	1059.19	1059.45	1058.45
29	1056.38		1058.89	1058.12	1060.17	1058.06	1057.78	1056.96	1057.82	1059.12	1059.46	1058.76
30	1056.38		1058.89	1057.93	1059.87	1057.98	1057.68	1057.24	1058.89	1059.03	1059.46	1058.92
31	1056.38		1058.88		1059.69		1057.60	1057.82		1058.97		1058.89
MIN	1056.38	1056.37	1057.61	1057.93	1057.90	1057.98	1057.60	1056.84	1057.24	1058.97	1058.45	1057.92
MAX	1056.79	1058.65	1060.09	1059.36	1060.43	1060.28	1060.97	1057.82	1059.87	1060.56	1060.32	1059.97
MEAN	1056.57	1056.95	1058.74	1058.83	1059.08	1058.93	1058.75	1057.18	1058.18	1059.54	1059.41	1058.96

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

For official flow data, please visit the USGS website listed in the Additional Links for this station. The National Weather Service information is also linked in the Additional Links for this station.

1983 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1058.93	1057.74	1061.84	1061.99	1061.83	1059.21	1063.62	1058.51	1057.14	1057.34	1057.25	M

2	1058.82	1057.65	1061.99	1062.26	1062.13	1059.12	1064.46	1058.39	1057.11	1057.36	1057.23	M
3	1058.77	1057.43	1062.12	1062.27	1062.21	1059.05	1064.34	1058.27	1057.09	1057.30	1057.37	M
4	1058.69	1057.50	1062.25	1062.26	1062.20	1058.95	1064.17	1058.16	1057.11	1057.26	1057.99	M
5	1058.71	1057.43	1062.71	1062.40	1062.08	1058.86	1063.76	1058.08	1057.23	1057.22	1057.86	M
6	1058.68	1057.55	1063.25	1062.55	1061.93	1058.77	1063.46	1057.98	1057.16	1057.18	1057.73	M
7	1058.61	1057.47	1063.43	1062.65	1061.68	1058.68	1063.23	1057.85	1057.10	1057.15	1057.66	1057.82
8	1058.63	1057.36	1063.15	1062.68	1061.42	1058.60	1063.07	1057.71	1057.07	1057.12	1057.64	1057.78
9	1058.71	1057.40	1062.97	1062.72	1061.22	1058.53	1063.02	1057.66	1057.05	1057.09	1057.77	1057.78
10	1058.90	1057.39	1063.03	1062.78	1061.12	1058.37	1063.04	1057.59	1057.01	1057.23	1057.99	1057.79
11	1058.60	1057.37	1062.86	1062.90	1061.11	1058.39	1062.88	1057.55	1056.98	1057.62	1057.92	1057.88
12	1058.82	1057.36	1062.61	1063.38	1061.17	1058.37	1062.58	1057.50	1056.97	1057.73	1057.86	1057.72
13	1058.89	1057.36	1062.35	M	1061.22	1058.79	1062.24	1057.48	1056.95	1057.62	1057.88	1057.74
14	1058.43	1057.46	1062.18	M	1061.29	1059.70	1061.92	1057.44	1056.95	1057.54	1058.25	1057.67
15	1058.24	1057.62	1062.34	M	1061.32	1060.12	1061.61	1057.41	1056.98	1057.48	1058.39	1057.46
16	1058.36	1057.86	1062.49	M	1061.36	1059.99	1061.26	1057.38	M	1057.41	1058.28	1057.53
17	1058.44	1058.12	1062.60	1064.63	1061.36	1059.89	1060.96	1057.36	M	1057.36	1058.21	1057.88
18	1058.43	M	1062.63	M	1061.45	1059.95	1060.71	1057.35	M	1057.39	1058.19	1058.08
19	1058.32	M	1062.53	M	1061.44	1060.33	1060.52	1057.30	M	1057.45	1058.49	1058.19
20	1058.34	M	1062.26	1063.80	1061.26	1060.98	1060.26	1057.32	M	1057.67	1058.74	1057.95
21	1058.41	1060.34	1061.92	1063.62	1061.04	1061.48	1060.01	1057.28	M	1057.77	1058.68	1058.25
22	1058.32	M	1061.63	1063.39	1060.79	1061.56	1059.82	1057.24	1057.76	1057.73	1058.60	1058.33
23	1058.29	M	1061.40	1063.15	1060.56	1061.51	1059.72	1057.22	1057.61	1057.66	1058.51	1058.32
24	1058.21	1061.74	1061.20	1062.89	1060.34	1061.48	1059.62	1057.21	1057.51	1057.56	1058.30	1058.04
25	1058.06	1061.54	1061.08	1062.64	1060.16	1061.45	1059.45	1057.19	1057.42	1057.50	1058.18	1057.73
26	1058.00	1061.63	1060.85	1062.43	1060.01	1061.51	1059.29	1057.27	1057.35	1057.45	1058.10	1057.60
27	1057.84	1061.93	1060.54	1062.23	1059.85	1061.56	1059.17	1057.20	1057.30	1057.41	1057.80	1057.65
28	1058.00	1061.72	1060.56	1062.03	1059.69	1061.81	1059.04	1057.19	1057.27	1057.35	1057.61	1057.76
29	1058.05		1060.58	1061.86	1059.57	1062.17	1058.92	1057.21	1057.32	1057.30	1057.74	1057.83
30	1057.96		1060.77	1061.72	1059.47	1062.65	1058.77	1057.21	1057.35	1057.29	M	1057.58
31	1057.90		1061.43		1059.33		1058.63	1057.18		1057.27		1057.35
MIN	1057.84	1057.36	1060.54	1061.72	1059.33	1058.37	1058.63	1057.18	1056.95	1057.09	1057.23	1057.35
MAX	1058.93	1061.93	1063.43	1064.63	1062.21	1062.65	1064.46	1058.51	1057.76	1057.77	1058.74	1058.33
MEAN	1058.43	1058.56	1062.05	1062.72	1061.02	1060.06	1061.40	1057.54	1057.20	1057.41	1058.01	1057.83

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1984 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.22	1056.93	1058.92	1060.76	1063.47	1060.26	1063.15	1057.91	1057.03	1056.72	1057.44	1057.29
2	1057.17	1056.90	1058.73	1060.90	1063.68	1060.05	1062.92	1057.93	1057.01	1056.70	1057.47	1056.98
3	1057.13	1056.89	1058.72	1061.21	1063.60	1059.87	1062.67	1057.96	1057.01	1056.68	1057.36	1056.89
4	1057.13	1056.94	1058.63	1061.55	1063.45	1059.82	1062.39	1058.05	1056.97	1056.68	1057.31	1056.85
5	1057.10	1056.83	1058.31	1061.75	1063.35	1060.06	1062.08	1058.23	1056.92	1056.67	1057.28	1056.88
6	1057.07	1056.78	1058.15	1062.01	1063.17	1060.34	1061.77	1058.23	1056.93	1056.74	1057.30	1056.93
7	1057.08	1056.82	1058.10	1062.44	1063.05	1062.12	1061.54	1058.17	1056.91	1056.74	1057.29	1057.15
8	1057.09	1056.85	1058.09	1063.15	1062.82	1061.38	1061.49	1058.20	1056.89	1056.75	1057.34	1057.28
9	1057.16	1056.82	1058.12	1063.88	1062.64	1061.36	1061.41	1058.12	1056.89	1056.75	1057.61	1057.23
10	1057.16	1056.84	1058.04	1064.09	1062.50	1061.15	1061.14	1058.01	1056.90	1056.73	1057.94	1057.20
11	1057.10	1056.89	1057.73	1064.26	1062.30	1061.16	1060.88	1057.92	1056.89	1056.75	1057.81	1057.19
12	1057.07	1056.94	1057.77	1064.59	1062.09	1062.86	1060.62	1057.82	1056.87	1056.76	1057.67	1057.14
13	1057.06	1057.01	1058.02	1064.88	1061.92	1063.82	1060.39	1057.74	1056.86	1056.81	1057.63	1056.98
14	1057.09	1057.22	1058.14	1065.03	1061.83	1063.99	1060.27	1057.66	1056.86	1056.93	1057.67	1057.12
15	1057.06	1057.87	1057.89	1065.19	1061.78	1064.07	1059.98	1057.61	1056.89	1056.98	1057.68	1057.34
16	1057.08	1058.87	1057.90	1065.36	1061.70	1064.58	1059.86	1057.57	1056.89	1057.04	1057.67	1057.57
17	1057.12	1059.34	1057.91	1065.18	1061.61	1065.61	1059.76	1057.56	1056.88	1057.08	1057.60	1058.18
18	1057.15	1059.49	1057.88	1064.82	1061.51	1065.72	1059.67	1057.52	1056.84	1057.17	1057.51	1057.83

19	1057.13	1059.33	1057.83	1064.52	1061.32	1064.79	1059.46	1057.48	1056.83	1057.41	1057.39	1057.75
20	1057.20	1059.24	1057.81	1064.21	1061.12	1064.64	1059.33	1057.44	1056.81	1057.51	1057.34	1057.67
21	1056.94	1059.34	1058.02	1064.04	1061.03	1064.52	1059.16	1057.32	1056.80	1057.60	1057.31	1057.56
22	1056.90	1059.59	1058.76	1064.00	1060.95	1064.62	1059.01	1057.35	1056.79	1057.64	1057.35	1057.44
23	1056.90	1059.63	1059.48	1063.93	1060.86	1064.56	1058.83	1057.32	1056.79	1057.61	1057.48	1057.37
24	1056.89	1059.63	1060.05	1063.58	1060.75	1064.29	1058.68	1057.29	1056.76	1057.62	1057.48	1057.37
25	1056.90	1059.81	1060.49	1063.16	1060.67	1064.51	1058.58	1057.24	1056.73	1057.60	1057.50	1057.29
26	1056.89	1059.84	1060.71	1063.27	1060.59	1064.82	1058.49	1057.21	1056.73	1057.59	1057.46	1057.30
27	1056.89	1059.60	1060.78	1063.34	1060.54	1064.50	1058.48	1057.17	1056.74	1057.54	1057.41	1057.85
28	1056.88	1059.22	1060.83	1062.83	1060.79	1064.06	1058.39	1057.13	1056.73	1057.51	1057.40	1058.24
29	1056.91	1059.07	1060.82	1062.92	1060.91	1063.70	1058.22	1057.07	1056.72	1057.50	1057.37	1058.15
30	1056.90		1060.79	1063.12	1060.81	1063.40	1058.08	1057.05	1056.72	1057.48	1057.31	1057.70
31	1056.94		1060.78		1060.52		1057.96	1057.03		1057.45		1057.49
MIN	1056.88	1056.78	1057.73	1060.76	1060.52	1059.82	1057.96	1057.03	1056.72	1056.67	1057.28	1056.85
MAX	1057.22	1059.84	1060.83	1065.36	1063.68	1065.72	1063.15	1058.23	1057.03	1057.64	1057.94	1058.24
MEAN	1057.04	1058.16	1058.85	1063.47	1061.85	1063.02	1060.15	1057.62	1056.85	1057.12	1057.48	1057.39

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1985 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.41	1056.65	1057.07	1058.77	1060.96	1058.81	1058.43	1056.97	1057.12	1058.52	1058.02	1057.79
2	1057.28	1056.61	1057.06	1058.95	1060.99	1058.73	1058.54	1056.94	1057.04	1058.44	1057.91	1057.48
3	1057.22	1056.59	1057.01	1059.39	1060.86	1058.67	1058.60	1056.93	1057.03	1058.37	1057.85	1057.53
4	1057.17	1056.58	1056.88	1059.86	1060.64	1058.65	1058.60	1056.92	1057.40	1058.33	1057.83	1057.51
5	1057.14	1056.61	1057.03	1060.35	1060.41	1058.62	1058.55	1056.89	1058.53	1058.41	1057.81	1057.59
6	1057.13	1056.57	1057.25	1060.44	1060.22	1058.63	1058.43	1056.87	1058.89	1058.45	1057.80	1057.53
7	1057.11	1056.56	1057.50	1060.01	1060.07	1058.53	1058.27	1056.78	1058.52	1058.45	1057.77	1057.56
8	1057.03	1056.54	1057.86	1059.57	1059.94	1058.48	1058.15	1056.76	1058.25	1058.39	1057.75	1057.62
9	1057.02	1056.53	1059.11	1059.30	1059.79	1058.41	1058.05	1056.74	1058.13	1058.34	1057.72	1057.64
10	1056.97	1056.52	1059.52	1059.12	1059.62	1058.37	1057.92	1056.70	1058.11	1058.33	1057.70	1057.65
11	1057.02	1056.52	1059.91	1058.98	1059.47	1058.36	1057.82	1056.70	1058.02	1058.33	1057.64	1057.75
12	1057.03	1056.51	1060.14	1058.87	1059.27	1058.43	1057.74	1056.75	1057.95	1058.38	1057.62	1057.90
13	1056.95	1056.50	1059.98	1058.79	1059.21	1058.47	1057.69	1056.82	1057.90	1058.48	1057.65	1058.08
14	1056.95	1056.50	1059.92	1058.74	1059.25	1058.44	1057.61	1056.77	1057.75	1058.50	1057.72	1057.76
15	1056.90	1056.50	1059.86	1058.68	1059.26	1058.47	1057.57	1056.80	1057.72	1058.48	1057.80	1057.60
16	1056.86	1056.52	1059.75	1058.60	1059.30	1058.74	1057.53	1056.83	1057.71	1058.45	1057.81	1057.61
17	1056.86	1056.54	1059.78	1058.54	1059.35	1058.70	1057.45	1056.80	1057.67	1058.49	1057.91	1057.80
18	1056.87	1056.58	1059.77	1058.46	1059.37	1058.54	1057.40	1056.75	1057.61	1058.46	1058.19	1057.82
19	1057.18	1056.66	1059.91	1058.42	1059.35	1058.39	1057.35	1056.73	1057.62	1058.44	1058.56	1057.63
20	1056.96	1056.80	1059.82	1058.47	1059.37	1058.24	1057.32	1056.73	1057.55	1058.40	1058.12	1057.61
21	1056.80	1056.89	1059.79	1059.27	1059.38	1058.10	1057.27	1057.08	1057.55	1058.35	1058.15	1057.47
22	1056.75	1056.95	1059.60	1059.69	1059.30	1058.02	1057.19	1057.14	1057.61	1058.34	1058.15	1057.39
23	1056.73	1056.97	1059.49	1060.30	1059.22	1057.92	1057.19	1057.00	1057.61	1058.32	1057.86	1057.45
24	1056.75	1056.95	1059.43	1060.75	1059.15	1057.82	1057.20	1056.94	1057.71	1058.28	1057.83	1057.48
25	1056.72	1057.00	1059.30	1061.01	1059.06	1057.73	1057.13	1056.90	1057.77	1058.24	1057.97	1057.47
26	1056.69	1056.92	1059.22	1061.26	1058.97	1057.78	1057.11	1056.88	1057.82	1058.19	1058.17	1057.33
27	1056.66	1056.94	1059.18	1061.35	1058.83	1058.04	1057.08	1056.88	1057.84	1058.14	1057.78	1057.29
28	1056.68	1057.07	1059.15	1061.28	1058.70	1058.27	1057.05	1056.94	1057.86	1058.10	1058.07	1057.27
29	1056.66		1059.07	1061.12	1058.64	1058.26	1057.02	1057.07	1058.08	1058.09	1058.04	1057.24
30	1056.73		1058.97	1060.99	1058.59	1058.32	1057.02	1057.21	1058.47	1058.03	1058.04	1057.21
31	1056.69		1058.79		1058.72		1057.00	1057.20		1058.00		1057.14
MIN	1056.66	1056.50	1056.88	1058.42	1058.59	1057.73	1057.00	1056.70	1057.03	1058.00	1057.62	1057.14
MAX	1057.41	1057.07	1060.14	1061.35	1060.99	1058.81	1058.60	1057.21	1058.89	1058.52	1058.56	1058.08
MEAN	1056.93	1056.68	1058.94	1059.64	1059.52	1058.36	1057.65	1056.88	1057.83	1058.34	1057.91	1057.55

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1986 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.14	1056.94	1057.34	1061.94	1061.64	1060.24	1060.34	1058.74	1057.84	1061.24	1058.84	1058.44
2	1057.14	1056.94	1057.94	1061.94	1061.64	1060.04	1060.24	1058.54	1057.74	1061.24	1058.84	1058.44
3	1057.14	1056.94	1058.64	1061.84	1061.74	1059.84	1060.04	1058.44	1057.74	1061.24	1058.74	1058.34
4	M	1057.04	1058.84	1062.14	1061.74	1059.84	1059.94	1058.44	1057.64	1061.24	1058.64	1058.04
5	M	1057.44	1058.84	1062.54	1061.64	1059.74	1060.34	1058.24	1057.64	1061.24	1058.64	1058.14
6	M	1057.44	1058.84	1063.14	1061.44	1060.14	1060.34	1058.14	1057.54	1061.24	1058.54	1058.04
7	M	1057.44	1058.84	1063.14	1061.34	1060.14	1060.14	1058.04	1057.44	1061.24	1058.54	1058.04
8	1057.04	1057.44	1058.84	1063.04	1061.34	1059.94	1060.24	1058.04	1057.44	1061.24	1058.54	1058.04
9	1057.04	1057.34	1058.84	1062.94	1061.34	1059.74	1060.34	1057.94	1057.44	1060.44	1058.64	1057.74
10	1056.94	1057.34	1058.74	1062.74	1061.84	1059.64	1060.34	1057.84	1057.44	1060.14	1058.54	1057.64
11	1056.94	1057.34	1058.74	1062.34	1062.34	1059.54	1060.24	1057.74	1057.54	1060.44	1058.34	1057.64
12	1056.94	1057.34	1058.64	1062.04	1062.44	1059.44	1060.14	1057.74	1057.54	1060.74	1058.04	1057.34
13	1056.94	1057.34	1058.64	1061.84	1062.94	1059.24	1060.14	1058.74	1057.44	1061.04	1058.04	1057.34
14	1056.94	1057.34	1058.64	1061.94	1062.94	1059.24	1060.04	1059.04	1057.64	1060.84	1057.94	1057.44
15	1056.94	1057.24	1058.64	1061.94	1062.54	1059.14	1059.84	1058.64	1057.84	1060.54	1058.24	1057.74
16	1056.94	1057.24	1058.74	1061.74	1062.24	1059.04	1059.64	1058.24	1057.94	1061.24	1058.44	1057.84
17	M	1057.24	1059.14	1061.54	1061.94	1059.04	1059.54	1058.04	1058.04	1061.04	1058.44	1057.94
18	M	1057.24	1060.14	1061.34	1061.74	1058.94	1059.44	1057.94	1058.24	1060.74	1058.34	1057.94
19	1057.04	1056.84	1061.14	1061.24	1061.44	1058.74	1059.14	1057.84	1058.64	1060.44	1058.24	1057.84
20	1057.04	1056.84	1061.24	1061.14	1061.24	1059.64	1059.04	1057.84	1059.04	1060.34	1058.34	1057.84
21	1057.04	1056.84	1061.24	1060.94	1061.14	1059.04	1058.94	1058.04	1059.34	1060.24	1058.14	1057.64
22	1057.14	1056.84	1061.84	1060.84	1060.94	1059.04	1058.94	1057.94	1059.54	1059.84	1058.24	1057.64
23	1057.14	1056.84	1061.84	1060.74	1060.74	1059.24	1058.84	1057.84	1059.64	1059.54	1058.14	1057.64
24	1057.14	1056.74	1061.64	1060.64	1060.64	1059.34	1058.84	1057.74	1059.94	1059.54	1058.14	1057.64
25	1057.14	1056.74	1061.54	1060.54	1060.44	1059.24	1059.14	1057.84	1060.24	1059.54	1058.24	1057.64
26	1057.04	1057.14	1061.44	1060.44	1060.44	1059.04	1059.04	1058.24	1060.54	1059.34	1058.34	1057.44
27	1057.04	1057.14	1061.44	1060.94	1060.44	1058.94	1058.74	1058.74	1060.84	1059.24	1058.44	1057.54
28	1057.14	1057.24	1061.54	1061.44	1060.54	1059.24	1059.74	1058.54	1061.04	1059.14	1058.44	1057.54
29	1057.04		1061.74	1061.64	1060.64	1059.84	1060.14	1058.34	1061.24	1059.04	1058.44	1057.44
30	1057.04		1061.94	1061.64	1060.64	1060.14	1059.64	1058.14	1061.24	1058.94	1058.44	1057.44
31	1056.94		1061.94		1060.44		1059.04	1057.94		1058.84		1057.51
MIN	1056.94	1056.74	1057.34	1060.44	1060.44	1058.74	1058.74	1057.74	1057.44	1058.84	1057.94	1057.34
MAX	1057.14	1057.44	1061.94	1063.14	1062.94	1060.24	1060.34	1059.04	1061.24	1061.24	1058.84	1058.44
MEAN	1057.04	1057.14	1059.92	1061.74	1061.44	1059.48	1059.69	1058.18	1058.65	1060.36	1058.40	1057.77

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1987 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1057.41	1057.07	1057.16	1060.08	1058.27	1058.60	1057.01	1057.44	1056.67	1056.68	1056.57	1056.55
2	1057.41	1057.07	1057.13	1060.23	1058.31	1058.47	1056.97	1057.38	1056.65	1056.67	1056.58	1056.59
3	1057.51	1057.04	1057.13	1060.30	1058.29	1058.02	1056.94	1057.36	1056.62	1056.67	1056.57	1056.42
4	1057.46	1057.05	1057.13	1060.36	1058.22	1058.23	1056.92	1057.35	1056.62	1056.67	1056.54	1056.45
5	1057.43	1057.08	1057.17	1060.32	1058.16	1058.11	1056.98	1057.29	1056.65	1056.63	1056.54	1056.61
6	1057.45	1057.10	1057.21	1060.12	1058.12	1057.98	1057.12	1057.23	1056.66	1056.62	1056.75	1056.65
7	1057.43	1057.13	1057.25	1059.94	1058.07	1057.90	1057.18	1057.28	1056.63	1056.62	1056.60	1056.65
8	1057.36	1057.02	1057.28	1059.76	1058.02	1057.79	1057.58	1057.27	1056.61	1056.60	1056.57	1056.70
9	1057.26	1057.12	1057.29	1059.60	1057.98	1057.73	1058.74	1057.24	1056.61	1056.59	1056.55	1056.75
10	1057.20	1057.17	1057.30	1059.50	1057.92	1057.71	1058.91	1057.19	1056.62	1056.59	1056.56	1056.81
11	1057.36	1057.15	1057.29	1059.43	1057.86	1057.66	1058.99	1057.13	1056.61	1056.60	1056.55	1056.79
12	1057.46	1057.12	1057.27	1059.39	1057.81	1057.60	1059.72	1057.12	1056.59	1056.58	1056.55	1056.79
13	1057.43	1057.10	1057.28	1059.47	1057.78	1057.57	1060.08	1057.09	1056.61	1056.59	1056.55	1056.76
14	1057.23	1057.12	1057.32	1059.95	1057.90	1057.49	1059.79	1057.05	1056.67	1056.66	1056.57	1056.48
15	1057.01	1056.95	1057.30	1060.23	1057.87	1057.42	1059.41	1057.04	1056.88	1056.68	1056.60	1056.45
16	1057.06	1057.00	1057.28	1060.17	1057.78	1057.40	1059.05	1057.01	1057.15	1056.63	1056.58	1056.48
17	1057.20	1057.06	1057.31	1059.94	1057.71	1057.40	1059.14	1057.02	1057.21	1056.62	1056.56	1056.64
18	1057.15	1057.12	1057.38	1059.74	1057.69	1057.43	1059.35	1056.94	1057.21	1056.61	1056.56	1056.71
19	1057.10	1057.09	1057.51	1059.57	1057.65	1057.42	1059.09	1056.92	1057.13	1056.61	1056.52	1056.71
20	1057.11	1057.09	1057.67	1059.41	1057.62	1057.41	1059.07	1056.88	1057.07	1056.58	1056.48	1056.66
21	1057.17	1057.07	1057.75	1059.25	1057.62	1057.36	1059.12	1056.85	1057.02	1056.59	1056.57	1056.66
22	1057.04	1057.08	1057.82	1059.15	1057.68	1057.30	1059.11	1056.81	1056.99	1056.55	1056.54	1056.68
23	1057.02	1057.07	1057.92	1059.05	1057.72	1057.25	1058.81	1056.77	1056.95	1056.55	1056.52	1056.67
24	1057.07	1057.07	1058.44	1058.96	1057.76	1057.24	1058.59	1056.78	1056.92	1056.54	1056.55	1056.56
25	1057.04	1057.07	1058.99	1058.88	1058.44	1057.23	1058.38	1056.78	1056.88	1056.55	1056.53	1056.46
26	1057.01	1057.07	1059.42	1058.78	1059.32	1057.19	1058.15	1056.78	1056.85	1056.55	1056.52	1056.54
27	1057.02	1057.12	1059.63	1058.69	1059.49	1057.16	1057.97	1056.78	1056.82	1056.54	1056.60	1056.48
28	1057.02	1057.17	1059.68	1058.61	1059.29	1057.12	1057.84	1056.76	1056.77	1056.54	1056.61	1056.46
29	1057.03		1059.58	1058.51	1059.07	1057.08	1057.72	1056.74	1056.75	1056.54	1056.61	1056.56
30	1057.04		1059.70	1058.44	1058.90	1057.06	1057.62	1056.72	1056.76	1056.54	1056.59	1056.56
31	1057.04		1059.88		1058.74		1057.51	1056.68		1056.56		1056.54
MIN	1057.01	1056.95	1057.13	1058.44	1057.62	1057.06	1056.92	1056.68	1056.59	1056.54	1056.48	1056.42
MAX	1057.51	1057.17	1059.88	1060.36	1059.49	1058.60	1060.08	1057.44	1057.21	1056.68	1056.75	1056.81
MEAN	1057.21	1057.08	1057.89	1059.53	1058.16	1057.58	1058.35	1057.02	1056.81	1056.60	1056.57	1056.61

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1988 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	1056.54	1056.34	1057.54	1057.94	1059.24	1057.74	1056.64	1056.14	1056.14	1056.24	M	M
2	1056.54	1056.24	1057.94	1058.24	1059.04	1057.74	1056.64	1056.14	1056.14	1056.24	M	M
3	1056.54	1056.24	1057.84	1058.94	1058.94	1057.74	1056.64	1056.14	1056.14	1056.24	M	M
4	1056.54	1056.24	1057.74	1059.14	1058.84	1057.64	1056.64	1056.14	1056.14	1056.14	M	M
5	1056.44	1056.24	1057.64	1059.04	1058.74	1057.64	1056.54	1056.14	1056.14	1056.14	M	M
6	1056.34	1056.24	1057.74	1058.94	1058.64	1057.54	1056.54	1056.14	1056.14	1056.14	M	M
7	1056.34	1056.24	1057.94	1058.84	1058.94	1057.54	1056.54	1056.34	1056.14	1056.14	M	M
8	1056.24	1056.24	1057.74	1058.64	1059.14	1057.44	1056.54	1056.24	1056.14	1056.14	M	M
9	1056.24	1056.24	1057.74	1058.54	1058.94	1057.34	1056.64	1056.24	1056.14	1056.14	M	M
10	1056.24	1056.24	1057.94	1058.44	1058.84	1057.34	1056.54	1056.24	1056.14	1056.04	M	M
11	1056.24	1056.24	1057.94	1058.34	1058.64	1057.24	1056.44	1056.14	1056.14	1056.14	M	M
12	1056.24	1056.24	1057.54	1058.24	1058.44	1057.14	1056.44	1056.14	1056.04	1056.14	M	M

13	1056.24	1056.24	1057.64	1058.14	1058.44	1057.14	1056.34	1056.14	1056.04	1056.14	M	M
14	1056.24	1056.24	1057.74	1058.04	1058.34	1057.14	1056.34	1056.14	1056.04	1056.14	M	M
15	1056.24	1056.24	1057.64	1058.04	1058.24	1057.04	1056.44	1056.14	1056.24	1056.14	M	M
16	1056.24	1056.24	1057.74	1057.94	1058.14	1057.04	1056.34	1056.14	1056.14	1056.14	M	M
17	1056.24	1056.34	1057.74	1057.84	1058.04	1057.14	1056.34	1056.14	1056.14	1056.14	M	M
18	1056.24	1056.44	1057.84	1057.74	1057.94	1057.04	1056.34	1056.14	1056.14	1056.14	M	M
19	1056.34	1056.54	1057.74	1057.74	1057.84	1056.94	1056.34	1056.14	1056.24	1056.14	M	M
20	1056.24	1056.44	1057.74	1057.64	1057.74	1056.94	1056.34	1056.14	1056.04	1056.14	M	M
21	1056.24	1056.44	1057.84	1057.74	1057.74	1056.84	1056.34	1056.74	1056.04	1056.14	M	M
22	1056.24	1056.44	1057.84	1057.74	1058.04	1056.84	1056.34	1056.44	1056.14	1056.14	M	M
23	1056.24	1056.44	1057.74	1057.74	1058.14	1056.84	1056.34	1056.34	1056.14	1056.14	M	M
24	1056.54	1056.44	1057.84	1057.94	1058.14	1056.84	1056.24	1056.24	1056.14	1056.14	M	M
25	1056.34	1056.54	1057.84	1058.34	1058.04	1056.84	1056.24	1056.24	1056.14	1056.14	M	M
26	1056.34	1056.54	1057.94	1058.44	1057.94	1056.74	1056.24	1056.34	1056.14	M	M	M
27	1056.24	1056.74	1057.94	1058.64	1057.94	1056.74	1056.24	1056.24	1056.14	M	M	M
28	1056.24	1056.84	1057.94	1059.14	1057.94	1056.74	1056.24	1056.14	1056.34	M	M	M
29	1056.24	1057.14	1057.94	1059.54	1057.84	1056.74	1056.24	1056.14	1056.34	M	M	M
30	1056.34		1057.94	1059.44	1057.84	1056.74	1056.14	1056.14	1056.24	152.54	M	152.54
31	1056.64		1057.94		1057.84		1056.14	1056.14		M		M
MIN	1056.24	1056.24	1057.54	1057.64	1057.74	1056.74	1056.14	1056.14	1056.04	152.54		152.54
MAX	1056.64	1057.14	1057.94	1059.54	1059.24	1057.74	1056.64	1056.74	1056.34	1056.24		152.54
MEAN	1056.33	1056.39	1057.80	1058.37	1058.34	1057.15	1056.40	1056.21	1056.15	1021.39		

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1989 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.62	2.66	2.59	4.22	3.44	3.01	2.76	2.79	2.51	2.47	2.57	2.53
2	2.61	2.66	2.59	3.99	3.40	2.97	2.77	2.91	2.46	2.53	2.53	2.55
3	2.61	2.67	2.59	3.85	3.37	2.97	2.75	2.71	2.46	2.49	2.55	M
4	2.62	2.68	2.59	3.72	3.35	2.99	2.74	2.74	2.75	2.47	2.58	M
5	2.63	2.69	2.59	3.67	3.32	2.99	2.72	2.82	2.59	2.50	2.57	2.54
6	2.64	2.68	2.57	3.60	3.31	2.99	2.69	2.73	2.61	2.48	2.53	2.58
7	2.62	2.63	2.56	3.54	3.29	2.99	2.71	2.67	2.66	2.48	2.55	2.56
8	2.61	2.60	2.56	3.56	3.28	2.98	2.73	2.65	2.80	2.49	2.55	2.56
9	2.62	2.59	2.56	3.48	3.27	2.96	2.73	2.65	2.69	2.49	2.50	2.54
10	2.63	2.59	2.86	3.44	3.23	2.95	2.72	2.63	2.66	2.51	2.50	2.53
11	2.61	2.59	3.40	3.41	3.20	2.95	3.03	2.62	2.70	2.47	2.54	2.51
12	2.57	2.59	4.02	3.38	3.19	3.00	2.89	2.61	2.65	2.48	2.53	2.53
13	2.57	2.58	4.31	3.35	3.19	2.94	2.81	2.61	2.64	2.48	2.56	M
14	2.58	2.58	3.89	3.32	3.20	2.95	2.78	2.69	2.63	2.48	2.55	M
15	2.58	2.57	3.36	3.29	3.19	2.92	2.85	2.68	2.64	2.49	2.56	M
16	2.59	2.57	3.45	3.28	3.16	2.91	2.81	2.67	2.61	2.56	M	M
17	2.60	2.56	3.39	3.27	3.11	2.90	2.78	2.62	2.60	2.48	2.47	M
18	2.60	2.56	3.01	3.25	3.09	2.88	2.92	2.62	2.59	2.48	M	M
19	2.61	2.56	3.15	3.22	3.15	2.86	2.90	2.61	2.51	2.50	2.48	M
20	2.61	2.56	3.30	3.22	3.07	2.83	2.92	2.61	2.51	2.51	2.53	M
21	2.61	2.55	3.21	3.21	3.05	2.80	2.96	2.61	2.51	2.52	2.54	2.46
22	2.61	2.56	3.16	3.20	3.02	2.83	2.96	2.61	2.52	2.54	2.60	2.44
23	2.61	2.57	3.42	3.21	3.00	2.83	2.97	2.61	2.48	2.53	2.53	2.44
24	2.62	2.58	3.51	3.18	3.61	2.79	2.96	2.45	2.47	2.53	2.54	2.43
25	2.62	2.58	3.86	3.18	4.19	2.89	2.95	2.45	2.48	2.54	2.57	2.50
26	2.62	2.58	4.02	3.18	3.75	3.07	2.89	2.46	2.49	2.55	2.58	2.52
27	2.62	2.58	4.08	3.48	3.42	2.86	2.82	2.49	2.50	2.55	2.62	2.51
28	2.63	2.60	4.34	3.41	3.25	2.83	2.78	2.54	2.48	2.56	M	2.51
29	2.64		4.24	3.56	3.20	M	2.77	2.57	2.49	2.56	M	2.49

30	2.65		4.49	3.46	3.10	2.79	2.80	2.55	2.49	2.58	2.53	2.48
31	2.65		4.50		3.07		2.78	2.51		2.57		2.48
MIN	2.57	2.55	2.56	3.18	3.00	2.79	2.69	2.45	2.46	2.47	2.47	2.43
MAX	2.65	2.69	4.50	4.22	4.19	3.07	3.03	2.91	2.80	2.58	2.62	2.58
MEAN	2.61	2.60	3.36	3.44	3.27	2.92	2.83	2.63	2.57	2.51	2.54	2.51

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

For official flow data, please visit the USGS website listed in the Additional Links for this station. The National Weather Service information is also linked in the Additional Links for this station.

1990 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	M	2.53	2.50	2.82	2.98	3.92	4.21	4.13	3.39	2.78	2.79	2.94
2	M	2.51	2.55	2.78	2.97	3.89	4.11	3.93	3.34	2.78	2.80	2.87
3	M	2.52	2.53	2.79	2.99	4.16	4.05	3.80	3.30	2.83	2.78	2.69
4	M	2.52	2.58	2.84	3.02	4.62	3.95	3.72	3.26	2.80	2.87	2.62
5	M	2.52	2.62	2.86	3.00	4.67	3.87	3.60	3.20	2.76	2.85	2.68
6	2.46	2.53	2.60	2.82	2.99	4.51	3.78	3.52	3.16	2.78	2.81	2.79
7	2.46	2.52	2.59	2.82	2.98	4.36	3.73	3.46	3.13	2.77	2.82	2.82
8	2.46	2.52	2.68	2.60	2.96	4.22	3.69	3.40	3.20	2.76	2.81	2.82
9	2.46	2.54	2.62	2.65	3.17	4.10	3.61	3.35	3.12	2.76	2.85	2.82
10	2.46	2.53	2.69	2.92	3.14	4.02	3.59	3.31	3.08	2.77	2.82	2.83
11	2.46	2.55	2.78	2.88	3.18	3.88	3.56	3.30	3.07	2.78	2.82	2.86
12	2.47	2.55	2.86	2.81	3.31	3.83	3.61	3.25	3.04	2.80	2.80	2.88
13	2.48	2.50	3.02	2.81	3.30	3.87	3.72	3.21	3.02	2.80	2.80	2.84
14	2.49	2.48	3.14	2.83	3.22	3.88	3.64	3.20	3.00	2.80	2.84	2.84
15	2.52	2.46	3.08	2.88	3.18	3.94	3.59	3.17	2.97	2.76	2.89	2.82
16	2.51	2.48	3.07	2.88	3.25	4.10	3.53	3.15	2.97	2.76	2.90	2.84
17	2.51	2.46	3.03	2.84	3.15	5.89	3.45	3.24	2.96	2.78	2.84	2.84
18	2.51	2.47	2.99	2.84	3.13	6.03	3.42	3.14	3.07	2.77	2.84	2.67
19	2.51	2.46	2.88	2.83	3.41	6.30	3.43	3.10	3.05	2.75	2.84	2.81
20	2.52	2.44	2.94	2.86	3.45	6.65	3.84	3.11	3.01	2.79	2.84	2.81
21	2.52	2.45	2.91	2.88	3.65	6.69	3.81	3.25	2.99	2.84	2.91	2.68
22	2.54	2.46	2.95	2.84	3.78	6.74	3.81	3.36	2.95	2.83	2.91	2.76
23	2.54	2.47	2.87	2.84	3.93	6.37	3.68	3.42	2.92	2.82	2.91	2.76
24	2.54	2.43	2.84	2.86	3.82	5.87	3.58	3.47	2.93	2.81	2.86	2.75
25	2.53	2.45	2.84	2.96	3.83	5.38	3.51	3.51	2.82	2.79	2.90	2.71
26	2.52	2.48	2.83	2.95	3.82	5.01	3.54	4.07	2.82	2.79	2.88	2.68
27	2.54	2.48	2.86	2.95	3.80	4.77	3.56	3.98	2.81	2.82	2.94	2.66
28	2.52	2.46	2.85	2.99	3.79	4.62	3.62	3.84	2.80	2.72	2.69	2.66
29	2.51		2.84	2.91	3.83	4.45	4.39	3.70	2.79	2.76	2.76	2.66
30	2.52		2.83	3.00	3.93	4.33	4.34	3.57	2.78	2.78	2.83	2.65
31	2.51		2.82		3.95		4.23	3.47		2.78		2.65
MIN	2.46	2.43	2.50	2.60	2.96	3.83	3.42	3.10	2.78	2.72	2.69	2.62
MAX	2.54	2.55	3.14	3.00	3.95	6.74	4.39	4.13	3.39	2.84	2.94	2.94
MEAN	2.50	2.49	2.81	2.85	3.38	4.84	3.76	3.48	3.03	2.78	2.84	2.76

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1991 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.65	2.62	2.92	5.57	6.57	7.24	7.43	4.64	3.34	3.31	3.33	5.87
2	2.63	2.62	3.07	5.39	6.88	7.43	7.30	4.48	3.34	3.30	3.30	5.62
3	2.63	2.62	2.92	5.35	6.66	7.51	7.10	4.40	3.30	3.29	3.27	5.46
4	2.62	2.62	3.07	5.17	6.35	7.96	6.80	4.34	3.28	3.32	3.24	5.08
5	2.62	2.64	3.20	4.97	6.83	9.14	6.47	4.23	3.25	3.30	3.21	5.30
6	2.62	2.64	3.41	4.80	8.15	10.11	6.25	4.15	3.24	3.28	3.25	5.30
7	2.62	2.64	2.83	4.65	8.73	10.11	6.03	4.08	3.25	3.25	3.17	4.51
8	2.62	2.64	3.47	4.53	8.93	9.98	5.87	4.68	3.23	3.23	3.13	4.45
9	2.62	2.66	3.29	4.51	8.64	9.94	5.95	4.93	3.23	3.24	3.16	4.34
10	2.62	2.66	3.48	4.51	8.13	9.71	5.77	5.42	3.22	3.21	3.21	4.28
11	2.62	2.69	3.56	4.40	7.66	9.24	5.59	5.26	3.21	3.19	3.20	4.27
12	2.62	2.69	3.62	4.44	7.22	8.70	5.49	4.96	3.38	3.19	3.20	4.37
13	2.62	2.75	3.06	4.73	6.99	8.44	5.39	4.66	3.50	3.16	3.24	5.04
14	2.62	3.00	3.33	5.79	6.68	8.48	5.37	4.40	3.37	3.17	3.33	4.96
15	2.62	2.88	3.48	7.06	6.65	8.88	5.30	4.21	3.39	3.13	3.49	4.71
16	2.62	2.81	3.43	8.21	6.99	9.65	5.15	4.12	3.44	3.14	3.63	4.52
17	2.63	2.73	3.43	8.51	8.13	9.76	4.97	4.04	3.65	3.16	3.78	4.33
18	2.63	2.72	3.44	8.26	9.17	9.32	4.85	4.02	3.67	3.14	4.12	3.80
19	2.63	2.74	3.52	7.61	9.09	8.92	4.72	3.86	3.66	3.14	4.62	4.69
20	2.64	2.74	3.70	7.40	9.04	8.55	4.62	3.88	3.60	3.17	4.86	4.49
21	2.65	2.74	4.23	7.30	8.75	8.29	4.60	4.02	3.55	3.18	5.37	4.42
22	2.65	2.81	4.86	6.91	8.34	8.08	4.58	3.96	3.50	3.19	5.27	4.35
23	2.65	2.81	5.38	6.50	8.02	7.92	4.65	4.01	3.45	3.19	4.94	4.34
24	2.65	2.72	6.47	6.14	7.72	7.77	4.86	3.91	3.40	3.18	4.14	4.17
25	2.64	2.79	7.11	5.86	7.48	7.84	4.71	3.82	3.40	3.17	4.16	4.07
26	2.64	2.89	7.10	5.61	7.29	7.93	4.59	3.65	3.37	3.17	3.89	4.11
27	2.64	2.83	6.93	6.02	7.17	7.96	4.42	3.58	3.37	3.21	3.87	4.06
28	2.64	2.91	6.83	6.41	7.36	7.90	4.48	3.51	3.36	3.20	4.04	4.05
29	2.63		6.78	6.39	7.29	7.74	4.80	3.48	3.34	3.30	4.20	4.05
30	2.63		6.41	6.21	7.08	7.58	4.91	3.45	3.35	3.25	4.57	4.04
31	2.62		5.89		6.89		4.82	3.40		3.30		4.02
MIN	2.62	2.62	2.83	4.40	6.35	7.24	4.42	3.40	3.21	3.13	3.13	3.80
MAX	2.65	3.00	7.11	8.51	9.17	10.11	7.43	5.42	3.67	3.32	5.37	5.87
MEAN	2.63	2.74	4.33	5.97	7.64	8.60	5.41	4.18	3.39	3.21	3.81	4.55

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1992 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.99	4.03	6.42	6.49	6.32	4.86	4.50	6.06	5.16	4.21	5.20	5.42
2	4.02	4.37	6.63	6.33	6.15	4.81	4.46	5.91	5.17	4.18	5.70	5.41
3	4.05	4.70	6.78	6.15	5.97	4.77	4.45	5.75	5.08	4.16	6.30	5.36
4	4.06	5.11	6.94	6.00	5.84	4.68	5.62	5.63	5.02	4.18	6.56	5.25
5	4.06	5.10	7.00	5.87	5.68	4.65	6.15	5.46	4.96	4.20	6.50	4.85
6	4.08	5.03	7.14	5.72	5.56	4.58	6.15	5.29	5.00	3.84	6.33	4.35

7	4.09	4.98	7.56	5.62	5.43	4.52	6.15	5.20	5.05	3.89	6.14	4.22
8	4.23	4.79	7.91	5.51	5.37	4.48	6.18	5.35	5.18	4.32	5.97	4.16
9	4.74	4.24	8.13	5.48	5.29	4.43	6.03	5.75	5.26	5.72	5.88	4.33
10	4.95	4.57	8.74	5.47	5.21	4.38	6.22	5.96	5.31	6.53	5.90	4.46
11	4.93	4.39	8.93	5.53	5.13	4.33	6.44	6.06	5.28	7.04	5.89	4.55
12	4.96	3.97	8.73	5.49	5.07	4.29	6.82	5.94	5.24	7.11	5.96	4.33
13	5.02	4.17	8.43	5.40	5.01	4.25	7.16	5.92	5.18	6.90	6.00	4.55
14	4.93	4.17	7.99	5.33	5.07	4.22	7.46	5.92	5.26	6.69	5.95	4.65
15	3.69	3.99	7.64	5.29	5.10	4.17	7.69	5.93	5.22	6.52	5.89	4.79
16	3.60	4.10	7.51	5.33	5.14	4.57	7.50	5.90	5.30	6.38	5.84	4.84
17	4.00	4.42	7.44	5.55	5.31	5.62	7.39	5.91	5.17	6.27	5.78	4.75
18	4.48	5.21	7.35	5.62	5.64	5.72	7.31	6.04	5.06	6.11	5.73	4.63
19	4.69	5.33	7.25	5.63	5.80	6.07	7.00	5.98	4.93	5.97	5.66	4.57
20	4.27	5.11	7.12	6.02	5.71	5.93	6.59	5.64	4.87	5.84	5.73	4.32
21	4.03	5.19	7.01	6.97	5.55	5.51	6.32	5.39	4.78	5.76	5.86	4.23
22	4.39	5.13	6.90	7.99	5.50	5.25	6.24	5.18	4.66	5.65	5.94	4.10
23	4.43	4.84	6.78	8.55	5.38	5.10	6.23	5.04	4.61	5.58	5.92	4.20
24	4.86	4.71	6.70	8.57	5.27	4.99	6.47	4.91	4.56	5.53	5.84	4.14
25	4.30	4.66	6.57	8.38	5.19	4.87	6.64	4.77	4.50	5.49	5.77	3.84
26	4.28	4.42	6.46	7.92	5.15	4.73	6.70	4.94	4.48	5.42	5.70	3.84
27	4.09	4.44	6.35	7.41	5.11	4.59	6.59	5.44	4.46	5.33	5.64	3.75
28	4.07	5.27	6.24	7.04	5.11	4.50	6.59	5.64	4.51	5.28	5.54	3.81
29	3.88	5.98	6.22	6.74	5.05	4.41	6.54	5.51	4.50	5.23	5.28	4.01
30	3.92		6.35	6.51	4.98	4.54	6.37	5.36	4.42	5.20	5.23	4.13
31	3.94		6.56		4.93		6.18	5.24		5.13		4.08
MIN	3.60	3.97	6.22	5.29	4.93	4.17	4.45	4.77	4.42	3.84	5.20	3.75
MAX	5.02	5.98	8.93	8.57	6.32	6.07	7.69	6.06	5.31	7.11	6.56	5.42
MEAN	4.29	4.70	7.22	6.33	5.39	4.79	6.39	5.58	4.94	5.47	5.85	4.45

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1993 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	4.15	3.65	3.55	11.46	8.78	8.89	12.79	9.40	8.64	5.66	4.69	4.05
2	3.97	3.65	3.56	11.28	8.60	9.64	13.40	9.22	8.82	5.57	4.64	4.23
3	3.60	3.66	3.58	10.93	8.59	10.11	14.63	9.13	8.64	5.47	4.58	4.30
4	5.29	3.66	3.59	10.78	8.62	10.55	13.57	8.97	8.22	5.38	4.67	4.43
5	4.06	3.67	3.60	10.60	8.57	10.70	12.15	8.55	7.88	5.28	4.64	4.47
6	3.85	3.69	3.64	10.53	8.43	10.56	11.46	8.39	7.62	5.21	4.59	4.39
7	3.96	3.70	3.73	10.42	8.57	10.45	11.09	8.13	7.32	5.15	4.58	4.09
8	3.83	3.71	3.87	10.37	8.56	10.74	10.92	7.78	7.09	5.09	4.54	4.24
9	3.69	3.73	4.24	10.36	8.62	10.56	11.36	7.56	6.85	5.26	4.42	4.30
10	3.60	3.72	4.52	10.29	8.91	10.09	12.57	7.49	6.59	5.52	4.44	4.24
11	3.58	3.74	4.10	10.21	9.47	9.77	13.91	7.11	6.37	5.48	4.52	4.96
12	3.42	3.78	3.92	10.09	9.75	9.77	13.85	6.84	6.19	5.41	4.49	3.87
13	3.37	3.62	3.72	9.97	9.83	10.22	14.35	6.61	6.05	5.39	4.60	4.34
14	3.34	3.89	3.88	9.90	10.14	10.98	14.97	6.55	6.20	5.37	4.62	4.27
15	3.52	3.89	3.93	9.81	10.95	11.01	14.00	7.49	6.97	5.34	4.62	4.29
16	3.32	3.83	3.93	9.79	11.02	10.87	13.90	8.42	7.07	5.29	4.66	4.41
17	3.61	3.80	3.68	9.76	10.81	11.66	13.85	9.23	6.65	5.25	4.73	4.50
18	3.51	3.79	3.59	9.61	10.62	11.46	13.63	9.19	6.42	5.20	4.87	4.69
19	3.38	3.86	3.74	9.73	10.48	11.23	13.20	8.97	6.30	5.15	5.02	4.85
20	3.45	3.66	3.89	11.06	10.33	11.15	13.07	8.46	6.21	5.10	5.06	4.85
21	3.64	3.68	3.88	11.28	10.11	11.36	12.66	8.19	6.25	5.08	5.06	5.61
22	3.74	3.51	3.78	11.47	9.85	11.63	12.00	7.99	6.70	5.04	5.02	5.11
23	3.74	3.80	3.82	11.63	9.58	12.03	11.49	8.00	6.83	5.01	4.97	6.14

24	4.14	3.67	3.87	11.39	9.33	12.20	11.15	7.99	6.75	4.96	4.96	4.19
25	3.71	3.59	4.28	11.28	8.99	11.94	10.91	7.82	6.61	4.94	4.99	6.75
26	3.71	3.57	5.34	11.03	8.68	11.80	11.14	7.76	6.56	4.91	4.74	4.02
27	3.69	3.66	7.01	10.49	8.40	11.76	10.67	7.57	6.45	4.86	3.63	4.17
28	3.71	3.67	8.38	9.98	8.16	12.19	10.19	7.34	6.36	4.85	3.79	12.30
29	4.20		9.87	9.53	7.96	12.06	9.75	7.37	6.21	4.82	3.89	5.41
30	4.14		10.56	9.12	7.80	12.43	9.44	7.78	6.08	4.77	3.91	5.38
31	3.63		10.98		8.06		9.41	8.22		4.75		5.27
MIN	3.32	3.51	3.55	9.12	7.80	8.89	9.41	6.55	6.05	4.75	3.63	3.87
MAX	5.29	3.89	10.98	11.63	11.02	12.43	14.97	9.40	8.82	5.66	5.06	12.30
MEAN	3.76	3.71	4.78	10.47	9.24	10.99	12.31	8.05	6.90	5.18	4.60	4.91

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1994 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	5.18	3.50	4.25	5.18	6.50	4.54	8.71	4.97	4.41	3.72	4.15	3.74
2	5.18	3.43	4.30	5.10	6.61	4.46	8.40	5.15	4.38	3.74	4.10	3.75
3	5.17	3.42	4.41	5.00	6.68	4.36	8.13	4.48	4.36	3.80	4.07	3.81
4	5.04	3.42	5.22	4.93	6.69	4.31	7.95	4.40	4.50	3.82	4.04	3.91
5	5.08	3.39	5.97	4.89	6.65	4.44	7.82	4.28	4.51	3.83	4.14	3.99
6	5.15	3.38	6.93	4.83	6.64	4.90	7.53	4.22	4.53	3.86	4.33	3.61
7	5.48	3.43	6.93	4.78	6.71	5.22	7.26	4.10	4.51	4.01	4.27	2.86
8	5.36	3.50	7.27	4.67	6.78	5.39	6.91	4.01	4.50	4.16	4.17	2.70
9	5.20	3.46	7.90	4.71	6.77	5.49	6.86	3.93	4.46	4.19	4.07	2.98
10	5.03	3.41	7.57	4.68	6.64	5.56	6.65	3.94	4.41	4.16	4.04	3.23
11	5.07	3.40	7.52	4.64	6.45	5.73	6.38	3.91	4.35	4.12	4.02	3.11
12	5.02	3.39	7.07	4.74	6.27	5.85	6.14	4.88	4.28	4.02	3.98	3.18
13	4.89	3.37	6.84	4.90	6.08	6.36	6.10	5.71	4.23	3.99	3.96	3.20
14	4.87	3.34	6.84	5.53	5.93	7.25	6.76	5.99	4.15	4.00	4.05	3.13
15	10.58	3.27	6.85	5.83	5.80	7.67	8.12	6.26	4.13	3.95	4.04	3.11
16	15.22	3.25	6.85	5.85	5.66	7.63	8.59	6.42	4.06	3.97	3.98	3.06
17	4.93	3.25	6.89	5.85	5.53	7.43	8.14	6.27	4.01	3.95	3.92	3.13
18	5.08	3.23	6.93	5.88	5.40	7.01	7.79	6.23	3.96	4.15	3.93	3.15
19	4.96	4.06	7.07	5.95	5.33	6.95	7.51	6.15	3.90	4.68	3.86	3.21
20	4.88	4.98	7.04	5.96	5.25	7.12	7.04	5.99	3.84	4.79	3.87	3.07
21	4.89	5.08	6.84	5.99	5.13	7.42	6.85	5.84	3.79	4.70	3.97	3.06
22	4.79	5.19	6.60	6.02	5.04	7.95	6.80	5.64	3.83	4.64	3.91	3.35
23	4.67	5.19	6.40	5.97	4.97	8.48	6.70	5.45	4.02	4.51	3.89	3.50
24	4.61	4.97	6.22	5.86	4.92	10.33	6.39	5.28	4.22	4.49	3.94	3.51
25	4.60	4.54	6.05	5.76	4.92	11.49	6.06	5.15	4.15	4.48	3.91	3.48
26	4.47	4.52	5.87	5.67	4.90	11.39	5.78	5.05	4.04	4.42	3.81	3.50
27	4.17	4.33	5.73	5.66	4.87	10.97	5.64	4.94	3.97	4.34	3.84	3.57
28	3.97	4.22	5.60	5.85	4.80	10.33	5.46	4.81	3.91	4.29	3.92	3.58
29	3.75		5.48	6.09	4.74	9.73	5.31	4.71	3.83	4.25	3.65	3.44
30	3.65		5.39	6.31	4.71	9.14	5.02	4.59	3.78	4.23	3.53	3.55
31	3.59		5.27		4.61		4.91	4.50		4.21		3.52
MIN	3.59	3.23	4.25	4.64	4.61	4.31	4.91	3.91	3.78	3.72	3.53	2.70
MAX	15.22	5.19	7.90	6.31	6.78	11.49	8.71	6.42	4.53	4.79	4.33	3.99
MEAN	5.31	3.85	6.33	5.44	5.74	7.16	6.89	5.07	4.17	4.18	3.98	3.35

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)

River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1995 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.42	3.00	2.68	6.64	8.24	8.31	6.87	5.27	4.98	4.76	5.72	4.64
2	3.52	2.98	2.79	6.60	8.15	8.09	6.48	5.24	4.70	4.96	5.78	4.67
3	3.52	2.99	2.96	6.57	8.01	7.78	6.13	5.26	4.52	5.12	5.99	4.84
4	3.57	3.16	3.12	6.54	7.90	7.51	5.94	5.12	4.38	5.51	6.08	4.92
5	3.64	3.05	3.28	6.49	7.71	7.36	5.71	4.98	4.29	5.56	6.00	4.89
6	3.32	3.10	3.22	6.40	7.61	7.30	5.60	5.07	4.28	6.08	5.76	4.80
7	3.50	2.95	2.68	6.23	7.46	7.76	5.49	5.65	4.43	6.55	5.62	4.77
8	3.48	3.06	2.46	6.10	7.36	7.97	5.33	5.93	4.51	6.97	5.75	4.69
9	3.34	2.88	2.46	6.12	7.30	7.94	5.30	5.83	4.39	7.16	5.69	4.89
10	3.28	2.96	4.08	6.18	7.40	7.87	5.26	5.61	4.21	7.13	5.69	3.60
11	3.26	3.17	3.04	6.26	7.56	7.74	5.26	5.42	4.12	7.49	5.54	3.99
12	3.26	2.99	3.91	6.54	7.53	7.45	5.23	5.31	3.83	6.44	5.26	4.42
13	3.23	2.88	4.57	7.03	7.49	7.12	5.14	5.06	3.85	5.37	5.44	4.49
14	3.19	2.87	4.86	7.49	7.65	7.10	4.98	5.11	3.78	5.26	5.14	4.42
15	3.21	2.87	4.59	7.60	8.24	7.60	4.87	5.76	3.74	5.17	5.11	4.56
16	3.15	2.87	4.70	7.50	8.50	8.15	4.85	5.90	3.71	5.13	5.38	4.59
17	3.19	2.85	4.59	7.36	8.44	8.28	4.82	5.51	3.68	5.03	5.42	4.42
18	3.24	2.85	4.56	7.26	8.35	8.29	4.78	5.23	3.63	4.92	5.34	4.38
19	3.11	2.85	4.59	7.39	8.26	7.78	4.66	5.07	3.87	4.84	5.26	4.42
20	3.15	2.87	4.86	7.72	8.16	7.05	4.61	4.82	5.17	4.72	5.15	4.39
21	3.24	3.07	5.19	8.08	8.01	6.61	4.74	4.72	5.55	4.60	5.13	4.34
22	3.19	3.65	5.06	8.30	7.84	6.27	5.07	4.54	5.18	4.61	5.09	4.32
23	3.26	4.35	4.98	8.45	7.76	6.15	4.86	4.49	4.94	4.57	5.02	4.23
24	3.07	4.38	5.00	8.39	7.59	6.24	4.75	4.45	4.77	4.77	4.76	4.25
25	3.05	4.15	M	8.32	7.46	6.05	4.72	4.40	4.65	5.37	4.73	4.16
26	3.01	3.99	M	8.29	7.26	6.07	4.69	4.28	4.52	5.61	4.78	4.09
27	3.00	3.81	5.00	8.08	6.98	6.06	4.83	4.21	4.49	5.77	4.70	4.03
28	3.00	3.01	M	8.11	7.07	6.21	5.32	4.22	4.40	5.77	4.54	4.09
29	2.99		6.57	8.05	7.87	6.74	5.24	4.12	4.41	5.78	4.89	4.00
30	3.08		6.63	8.11	8.35	6.92	5.20	5.12	4.46	5.77	4.58	3.94
31	2.97		6.67		8.41		5.23	5.79		5.78		3.98
MIN	2.97	2.85	2.46	6.10	6.98	6.05	4.61	4.12	3.63	4.57	4.54	3.60
MAX	3.64	4.38	6.67	8.45	8.50	8.31	6.87	5.93	5.55	7.49	6.08	4.92
MEAN	3.24	3.20	4.25	7.27	7.80	7.26	5.22	5.08	4.38	5.57	5.31	4.39

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1996 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC

1	3.94	3.39	4.33	6.52	4.55	8.55	7.63	3.87	4.04	3.30	3.66	5.04
2	3.98	3.41	4.38	6.62	4.46	8.74	7.54	3.82	4.00	3.30	3.61	5.05
3	4.25	3.37	4.25	6.52	4.42	9.17	7.52	3.73	3.97	3.22	3.64	4.86
4	3.90	3.39	4.10	6.19	4.42	9.56	6.84	3.71	3.83	3.23	3.58	4.48
5	4.23	3.22	4.04	5.97	4.49	9.53	6.56	5.07	3.81	3.23	3.61	4.66
6	4.43	3.21	3.95	5.77	4.52	5.76	6.34	5.81	3.86	3.21	3.75	4.80
7	4.50	3.18	3.71	5.53	4.47	5.64	6.23	5.81	4.14	3.19	3.78	4.79
8	4.53	3.24	3.73	5.42	4.49	5.66	6.20	5.47	4.16	3.16	3.72	4.64
9	3.93	3.62	3.96	5.29	4.41	5.55	5.99	5.02	4.55	3.15	3.72	4.49
10	3.73	M	3.80	5.11	4.59	5.51	5.74	4.68	4.36	3.14	3.72	4.52
11	3.71	6.20	3.75	5.03	4.69	5.43	5.51	5.21	4.37	3.11	3.70	4.52
12	3.66	6.37	3.80	5.00	4.66	5.38	5.43	5.18	4.38	3.14	3.42	4.52
13	3.71	6.05	3.88	4.98	4.64	5.24	5.29	5.08	3.54	3.14	3.49	4.58
14	3.78	5.95	3.98	4.93	4.68	5.14	5.21	4.92	3.52	3.12	3.23	4.57
15	4.08	4.33	4.20	4.83	4.81	5.03	5.15	4.69	3.47	3.11	3.30	4.46
16	3.65	4.14	4.20	4.81	4.84	5.07	4.83	4.43	M	3.10	3.81	4.33
17	M	3.88	4.24	4.96	4.88	6.08	4.91	4.43	3.33	3.11	4.05	4.16
18	3.70	3.95	4.27	4.98	4.87	6.81	4.93	4.24	3.32	3.09	5.15	3.95
19	4.54	3.97	4.32	4.91	4.80	7.18	4.63	4.16	3.28	3.11	5.35	3.94
20	4.31	3.91	4.38	4.89	4.77	7.29	4.52	4.46	3.34	3.12	5.30	3.92
21	4.37	4.02	4.32	5.02	4.76	7.25	4.43	4.64	3.32	3.33	5.25	4.09
22	3.93	4.13	4.26	5.11	4.85	7.36	4.38	4.46	3.33	3.34	5.13	4.11
23	3.95	4.25	4.20	5.10	5.46	7.45	4.26	4.28	3.34	3.52	5.14	4.20
24	3.78	4.26	4.32	5.03	5.64	7.67	4.20	4.09	3.28	3.55	M	4.25
25	3.57	4.43	4.53	5.03	5.85	7.79	4.15	4.53	3.30	3.63	4.82	4.02
26	3.46	4.41	4.05	4.89	6.52	7.70	4.04	4.75	3.30	3.64	5.27	4.10
27	3.70	4.58	4.26	4.85	7.04	7.73	3.95	4.87	3.26	3.59	3.84	4.15
28	3.52	4.09	4.26	4.70	7.31	7.59	3.95	5.04	3.31	3.55	4.11	3.91
29	3.33	4.15	4.49	4.60	8.02	7.68	3.93	4.50	3.31	3.55	4.30	4.06
30	3.43		5.41	4.59	8.53	7.73	3.91	4.49	3.32	3.61	4.76	4.00
31	3.49		6.26		8.15		3.98	4.14		3.69		3.84
MIN	3.33	3.18	3.71	4.59	4.41	5.03	3.91	3.71	3.26	3.09	3.23	3.84
MAX	4.54	6.37	6.26	6.62	8.53	9.56	7.63	5.81	4.55	3.69	5.35	5.05
MEAN	3.90	4.18	4.25	5.24	5.31	6.94	5.23	4.63	3.67	3.30	4.15	4.36

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1997 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.81	3.39	4.32	7.97	6.36	5.66	5.77	5.75	3.46	3.02	3.08	3.12
2	3.75	3.43	4.35	8.24	6.23	5.55	5.88	5.54	3.49	3.02	3.11	3.12
3	3.75	3.38	4.52	8.46	6.37	5.44	6.06	5.29	3.50	3.02	3.07	3.12
4	3.78	3.30	4.57	8.63	6.67	5.36	6.21	5.07	3.40	2.97	3.02	3.08
5	3.83	3.27	4.08	8.91	6.72	5.28	6.26	4.88	3.35	2.99	3.06	2.60
6	3.93	3.22	3.89	9.19	6.63	5.18	6.23	4.71	3.30	2.97	3.04	2.80
7	3.87	3.21	3.89	9.51	6.59	5.12	6.20	4.62	3.29	2.99	3.04	3.02
8	3.76	3.21	4.09	9.50	6.87	5.00	6.17	4.51	3.30	3.00	3.04	3.17
9	3.66	3.23	4.68	9.63	7.50	4.90	6.16	4.40	3.23	2.96	3.06	3.10
10	3.66	3.20	5.76	9.63	7.44	4.82	6.10	4.34	3.19	2.93	3.07	3.08
11	3.76	3.21	7.15	9.56	7.19	4.76	6.06	4.23	3.19	2.94	3.07	3.08
12	3.70	3.15	7.63	9.49	6.88	4.71	6.54	4.20	3.15	2.93	3.08	3.02
13	3.52	3.32	8.30	9.37	6.59	4.67	6.48	4.18	3.17	3.21	3.11	2.94
14	3.53	3.21	8.24	9.19	6.38	4.59	6.43	4.10	3.16	3.28	3.11	2.96
15	3.42	3.20	7.04	9.13	6.22	4.53	6.50	4.10	3.15	3.60	3.13	2.97
16	3.47	3.20	6.10	9.14	6.06	4.46	6.30	4.04	3.13	3.50	2.88	3.13
17	3.59	3.17	6.45	9.14	5.99	4.40	6.03	3.96	3.18	3.40	2.80	3.01

18	3.49	3.21	6.93	8.97	5.86	4.35	5.78	3.94	3.15	3.34	2.91	3.16
19	3.39	3.58	6.81	8.68	5.81	4.34	5.59	3.88	3.13	3.30	3.04	3.16
20	3.37	3.99	6.64	8.25	5.66	4.35	5.61	3.85	3.10	3.27	3.13	3.06
21	3.31	4.59	6.92	7.96	5.58	4.43	5.51	3.83	3.10	3.22	3.08	2.86
22	3.43	4.22	7.21	7.77	5.48	4.71	5.38	3.80	3.06	3.19	3.16	2.91
23	3.64	4.19	7.36	7.57	5.39	5.03	5.80	3.80	3.17	3.18	3.06	3.17
24	3.33	4.33	7.24	7.39	5.36	5.01	6.59	3.73	3.17	3.18	2.91	3.17
25	3.43	4.35	7.19	7.21	5.45	5.20	6.64	3.71	3.19	3.16	2.96	3.05
26	3.32	4.27	7.18	6.99	5.93	5.71	6.37	3.69	3.18	3.13	3.21	2.95
27	3.30	4.30	7.12	6.82	6.17	5.75	6.12	3.65	3.17	3.10	3.11	2.89
28	3.49	4.22	7.13	6.67	6.05	5.76	6.78	3.62	3.13	3.08	3.11	2.85
29	3.32		7.26	6.49	5.93	5.76	6.98	3.54	3.11	3.07	3.12	3.02
30	3.23		7.47	6.42	5.88	5.80	6.45	3.52	3.04	3.10	3.13	3.05
31	3.25		7.76		5.77		6.05	3.54		3.07		3.17
MIN	3.23	3.15	3.89	6.42	5.36	4.34	5.38	3.52	3.04	2.93	2.80	2.60
MAX	3.93	4.59	8.30	9.63	7.50	5.80	6.98	5.75	3.50	3.60	3.21	3.17
MEAN	3.55	3.59	6.30	8.40	6.23	5.02	6.16	4.19	3.21	3.13	3.06	3.03

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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1998 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.77	2.82	4.96	6.70	5.66	5.23	5.63	3.39	3.68	2.80	4.92	5.20
2	3.10	2.82	4.84	6.81	5.55	5.13	5.32	3.34	3.63	2.81	4.84	5.18
3	3.19	2.66	4.67	6.83	5.40	5.05	5.09	3.36	3.65	2.87	4.75	5.13
4	2.85	2.84	4.55	6.88	5.29	4.96	4.98	3.36	3.64	2.92	4.65	5.10
5	2.80	2.84	4.45	6.85	5.21	4.92	4.83	3.42	3.62	3.03	4.58	5.04
6	3.04	2.78	4.44	6.80	5.14	4.82	4.78	3.50	3.59	3.06	4.53	4.98
7	3.15	2.74	4.33	7.06	5.05	4.72	4.83	3.62	3.56	3.09	4.48	4.92
8	3.08	2.74	4.34	7.36	4.98	4.68	4.80	4.90	3.49	3.11	4.43	4.86
9	3.01	2.83	3.84	7.50	4.90	4.70	4.61	4.97	3.38	3.09	4.41	4.82
10	2.84	2.84	3.65	7.48	4.84	4.75	4.53	4.79	3.35	3.10	4.50	4.77
11	2.73	2.88	3.54	7.26	4.77	4.86	4.37	4.63	3.30	3.23	4.67	4.71
12	2.85	2.86	3.89	7.02	4.73	5.02	4.25	4.48	3.30	3.25	5.28	4.69
13	2.94	2.85	4.18	6.92	4.71	4.98	4.21	4.37	3.28	3.24	5.40	4.63
14	2.80	2.85	4.22	6.76	4.66	4.86	4.13	4.27	3.28	3.24	5.42	4.60
15	2.72	2.89	3.85	6.69	4.61	5.01	4.14	4.19	3.24	3.31	5.35	4.54
16	2.73	3.08	3.84	6.95	6.07	5.69	4.14	4.08	3.10	3.31	5.39	4.52
17	2.74	3.61	3.84	7.53	6.22	5.69	4.33	4.06	3.04	3.42	5.40	4.50
18	2.73	4.28	3.79	7.48	5.92	5.82	4.22	4.00	3.03	3.85	5.34	4.50
19	2.75	4.93	3.79	7.08	5.56	5.73	4.23	3.95	3.00	4.58	5.32	4.43
20	2.75	5.01	3.63	6.83	5.25	5.96	4.13	3.89	3.01	4.44	5.31	4.21
21	2.75	5.18	3.88	6.86	5.09	6.11	4.09	3.84	2.94	4.28	5.26	4.30
22	2.74	4.89	3.88	7.12	4.95	5.71	4.09	3.87	2.91	4.14	5.28	3.70
23	2.74	4.81	3.98	6.88	4.83	5.36	4.06	3.84	2.87	4.05	5.26	3.52
24	2.77	4.88	3.94	6.55	4.90	5.70	3.97	3.80	2.94	4.01	5.31	3.57
25	2.74	4.84	3.91	6.28	5.32	6.94	3.89	3.77	2.93	3.98	5.34	3.85
26	2.78	4.76	3.99	6.09	5.58	M	3.83	3.73	2.94	3.96	5.32	4.24
27	2.80	4.95	4.37	5.95	5.57	6.85	3.83	3.68	2.88	3.99	5.28	4.15
28	2.85	4.99	4.68	5.94	5.37	6.66	3.60	3.67	2.84	4.09	5.26	4.09
29	2.82		5.76	5.85	5.61	6.09	3.53	3.68	2.85	4.85	5.28	4.06
30	2.83		6.48	5.76	5.93	5.93	3.50	3.82	2.86	4.99	5.26	4.20
31	2.85		6.70		5.58		3.45	3.70		5.13		4.30
MIN	2.72	2.66	3.54	5.76	4.61	4.68	3.45	3.34	2.84	2.80	4.41	3.52
MAX	3.19	5.18	6.70	7.53	6.22	6.94	5.63	4.97	3.68	5.13	5.42	5.20
MEAN	2.85	3.66	4.33	6.80	5.27	5.45	4.30	3.93	3.20	3.65	5.06	4.49

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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1999 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	4.07	3.32	4.52	4.70	7.19	5.99	6.52	4.48	2.97	2.68	2.69	2.66
2	4.20	3.32	4.85	4.70	7.03	5.92	6.32	4.34	2.95	2.71	2.65	2.67
3	3.99	3.35	4.70	4.83	6.89	6.17	6.28	4.26	2.94	2.73	2.63	2.68
4	4.02	4.19	4.54	4.80	6.81	6.22	6.04	4.14	2.94	2.72	2.64	2.68
5	4.01	3.37	4.64	4.77	6.73	6.28	6.13	4.06	2.94	2.74	2.66	2.65
6	3.83	3.37	4.58	5.69	6.70	6.19	6.00	3.88	2.93	2.72	2.62	2.63
7	4.08	3.43	4.43	6.65	6.80	6.24	5.92	3.83	2.92	2.73	2.65	2.64
8	3.86	3.50	4.39	6.88	6.92	6.78	5.84	3.76	2.95	2.72	2.66	2.66
9	3.85	3.69	3.95	6.78	7.29	6.56	5.72	3.68	2.89	2.72	2.68	2.63
10	3.81	4.05	4.35	7.11	7.52	6.61	5.59	3.62	2.86	2.71	2.67	2.66
11	3.83	4.61	4.59	7.45	7.48	6.90	5.37	3.58	2.90	2.72	2.65	2.60
12	3.72	4.93	4.27	7.50	7.30	7.54	5.20	3.54	2.89	2.73	2.64	2.67
13	3.71	4.92	4.24	7.38	7.10	8.23	5.04	3.49	2.90	2.71	2.65	2.64
14	3.65	4.59	4.25	7.33	6.97	8.49	4.92	3.45	2.86	2.68	2.64	2.57
15	3.67	4.81	4.31	7.36	6.81	8.45	4.79	3.41	2.75	2.70	2.62	2.64
16	3.55	4.82	4.38	7.63	6.67	7.98	4.66	3.38	2.74	2.70	2.71	2.51
17	3.49	4.69	4.67	8.00	6.70	7.41	4.68	3.32	2.79	2.66	2.71	2.51
18	3.44	4.68	5.76	8.17	6.71	6.93	4.76	3.30	2.77	2.66	2.69	2.51
19	3.39	4.52	5.82	8.19	6.99	6.59	4.85	3.22	2.78	2.66	2.68	2.55
20	3.31	4.54	5.49	8.06	7.12	6.36	4.83	3.21	2.78	2.66	2.66	2.51
21	3.29	4.43	5.39	7.91	6.96	6.25	5.13	3.20	2.75	2.67	2.66	2.51
22	3.29	4.37	5.40	8.09	6.89	6.16	6.24	3.16	2.75	2.68	2.66	2.51
23	3.25	4.39	5.32	8.34	6.87	6.13	6.52	3.30	2.77	2.63	2.71	2.51
24	3.24	4.11	5.19	8.69	6.73	6.00	6.21	3.19	2.76	2.64	2.69	2.51
25	3.26	4.22	5.07	8.66	6.55	5.79	5.80	3.15	2.76	2.66	2.73	2.51
26	3.24	4.33	4.97	8.30	6.42	5.66	5.49	3.14	2.76	2.65	2.71	2.51
27	3.27	4.64	4.87	7.91	6.37	5.71	5.20	3.10	2.74	2.66	2.70	2.51
28	3.29	4.65	4.85	7.66	6.41	6.40	5.01	3.08	2.73	2.66	2.68	2.51
29	3.29		4.80	7.54	6.26	6.93	4.88	3.04	2.70	2.66	2.66	2.57
30	3.30		4.76	7.36	6.10	6.85	4.70	3.00	2.70	2.81	2.65	2.59
31	3.30		4.73		6.04		4.57	2.99		2.69		2.61
MIN	3.24	3.32	3.95	4.70	6.04	5.66	4.57	2.99	2.70	2.63	2.62	2.51
MAX	4.20	4.93	5.82	8.69	7.52	8.49	6.52	4.48	2.97	2.81	2.73	2.68
MEAN	3.60	4.21	4.78	7.15	6.82	6.66	5.46	3.49	2.83	2.69	2.67	2.58

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2000 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.63	2.27	3.41	2.76	2.79	4.22	3.71	3.75	3.07	2.71	3.16	3.22
2	2.64	2.34	3.70	2.74	2.77	4.20	3.69	3.68	3.06	2.70	3.18	3.20
3	2.63	2.37	3.18	2.76	2.77	4.14	4.18	3.57	3.05	2.70	3.15	3.11
4	2.39	2.36	2.98	2.70	2.77	4.22	4.68	3.52	3.01	2.72	3.13	2.97
5	2.50	2.34	2.96	2.74	2.76	4.25	4.56	3.44	2.99	2.73	3.14	3.61
6	2.55	2.28	2.93	2.53	2.75	4.43	4.44	3.59	2.94	2.69	3.20	2.95
7	2.49	2.28	2.89	2.65	2.74	4.45	4.29	3.54	2.94	2.70	3.39	3.23
8	2.59	2.28	2.86	2.75	2.77	4.37	4.15	3.58	2.92	2.70	3.91	3.46
9	2.57	2.19	2.87	2.77	2.76	4.24	4.01	3.51	2.91	2.70	3.91	3.04
10	2.60	2.20	2.85	2.66	2.73	4.17	4.10	3.56	2.87	2.71	3.80	3.16
11	2.54	2.26	2.84	2.79	2.74	4.10	5.76	3.51	2.87	2.73	3.70	4.09
12	2.25	1.67	2.84	2.79	2.77	4.02	6.28	3.40	2.83	2.74	3.66	4.07
13	2.42	2.14	2.87	2.81	2.68	3.97	5.89	3.36	2.82	2.75	3.61	3.54
14	2.51	2.14	2.83	2.79	2.69	4.47	5.78	3.31	2.90	2.76	3.57	3.44
15	2.56	2.14	2.69	2.74	2.68	5.15	5.47	3.30	2.85	2.79	3.51	3.31
16	2.44	2.30	2.81	2.73	2.73	5.15	5.15	3.23	2.81	2.73	3.59	3.27
17	2.49	2.14	2.85	2.75	2.66	4.90	5.50	3.40	2.79	2.82	3.52	3.19
18	4.31	2.07	2.85	2.75	2.85	4.74	5.16	4.22	2.80	2.81	3.15	3.09
19	2.54	2.16	2.84	2.93	3.17	4.52	4.83	3.99	2.77	2.83	3.45	3.05
20	2.50	M	2.84	2.89	4.83	4.52	4.65	3.72	2.81	2.85	3.20	M
21	2.65	2.20	2.82	2.81	4.65	4.33	4.45	3.55	2.77	2.81	3.03	M
22	2.58	2.20	2.81	2.83	4.32	4.18	4.30	3.45	2.77	2.80	3.25	M
23	2.71	2.31	2.79	2.84	4.23	4.06	4.22	3.47	2.84	2.87	3.38	M
24	2.66	2.48	2.82	2.83	4.38	4.00	4.10	3.60	2.79	2.87	3.35	M
25	2.73	2.64	2.81	2.84	4.41	3.88	3.98	3.49	2.78	2.90	3.37	M
26	2.69	2.80	2.80	2.84	4.37	3.84	3.94	3.40	2.77	2.92	3.37	M
27	2.81	2.81	2.80	2.85	4.38	3.82	4.23	3.31	2.76	2.89	3.34	M
28	2.22	2.76	2.77	2.84	4.26	3.86	4.38	3.25	2.73	2.89	3.24	M
29	2.37	3.40	2.77	2.80	4.28	3.83	4.16	3.19	2.73	2.85	3.33	M
30	2.38		2.81	2.80	4.28	3.79	3.96	3.14	2.72	2.95	3.30	M
31	2.66		2.79		4.20		3.86	M		2.99		M
MIN	2.22	1.67	2.69	2.53	2.66	3.79	3.69	3.14	2.72	2.69	3.03	2.95
MAX	4.31	3.40	3.70	2.93	4.83	5.15	6.28	4.22	3.07	2.99	3.91	4.09
MEAN	2.60	2.34	2.89	2.78	3.39	4.26	4.58	3.50	2.86	2.79	3.40	3.32

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2001 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	M	2.78	2.74	7.83	9.96	7.34	6.01	4.82	2.96	2.74	2.71	3.46
2	M	3.18	2.74	8.50	10.22	7.15	6.33	4.64	2.94	2.72	2.70	3.34
3	M	2.81	2.73	8.52	11.00	6.99	5.88	4.51	2.95	2.72	2.69	3.38
4	2.82	2.78	2.72	8.36	11.59	6.83	5.84	4.39	2.90	2.69	2.68	3.33
5	2.82	2.78	M	8.33	11.61	6.74	5.83	4.26	2.87	2.69	2.67	3.35
6	M	2.79	2.72	8.34	11.76	6.69	5.75	4.15	2.87	2.66	2.69	3.47
7	2.85	2.78	2.72	8.50	11.39	6.60	5.54	4.04	2.89	2.67	2.69	3.47
8	2.84	2.78	2.74	8.80	10.91	6.46	5.49	3.92	2.95	2.66	2.71	3.48
9	2.82	2.79	2.76	9.11	10.47	6.35	5.37	3.84	2.89	2.68	2.71	3.52
10	2.84	3.32	2.76	9.07	10.09	6.30	5.32	3.72	2.86	2.76	2.70	3.46
11	2.85	2.76	2.96	9.22	9.86	6.21	4.94	3.64	2.83	2.74	2.67	3.43
12	2.85	2.77	2.85	9.84	9.46	6.13	4.83	3.48	2.82	2.71	2.67	3.47

13	2.86	2.76	2.78	10.56	9.01	6.55	4.69	3.41	2.79	2.79	2.73	3.53
14	2.87	2.76	2.82	10.64	8.76	6.75	4.56	3.34	2.79	2.78	2.73	3.55
15	2.83	2.74	2.91	10.78	8.50	7.94	4.49	3.30	2.84	2.74	2.71	3.54
16	2.81	2.74	3.02	10.86	8.28	9.12	4.38	3.54	2.83	2.72	2.71	3.47
17	2.83	3.17	3.01	11.07	8.02	9.53	4.34	3.37	2.86	2.70	2.70	3.47
18	2.81	2.73	3.12	10.88	7.75	9.70	4.24	3.36	2.84	2.70	2.71	3.49
19	2.97	2.75	3.44	10.57	7.41	9.60	4.22	3.29	2.84	2.68	2.72	3.50
20	2.97	2.74	3.89	10.14	7.13	9.29	4.08	3.29	2.83	2.68	2.72	3.26
21	2.85	2.75	5.05	9.96	7.14	8.76	4.01	3.28	2.80	2.69	2.70	3.23
22	2.84	2.74	6.21	10.10	7.82	8.30	3.95	3.25	2.84	2.69	2.75	3.42
23	2.86	2.72	7.18	9.80	8.48	7.93	4.04	3.23	2.85	2.76	2.79	2.95
24	2.83	2.74	7.30	9.84	8.70	7.60	4.18	3.20	2.86	2.74	2.89	2.89
25	2.81	2.76	7.18	9.77	8.51	7.31	5.17	3.20	2.81	2.73	2.93	2.85
26	2.82	2.73	6.93	10.00	8.30	7.00	6.06	3.22	2.79	2.68	2.96	3.02
27	2.80	2.70	6.72	9.87	8.18	6.76	5.75	3.09	2.78	2.66	3.37	3.07
28	2.79	2.76	6.61	9.85	8.12	6.50	5.28	3.04	2.75	2.68	3.59	3.16
29	2.78		6.67	9.87	7.98	6.33	5.16	3.01	2.74	2.69	3.63	3.28
30	2.80		6.88	9.87	7.73	6.39	5.09	3.12	2.74	2.67	3.56	3.24
31	2.80		7.24		7.49		5.00	2.97		2.69		3.20
MIN	2.78	2.70	2.72	7.83	7.13	6.13	3.95	2.97	2.74	2.66	2.67	2.85
MAX	2.97	3.32	7.30	11.07	11.76	9.70	6.33	4.82	2.96	2.79	3.63	3.55
MEAN	2.84	2.81	4.31	9.63	9.08	7.37	5.03	3.58	2.84	2.71	2.84	3.33

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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2002 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.10	2.83	3.03	3.83	4.65	4.30	3.76	2.81	3.84	2.84	3.43	3.20
2	3.09	2.92	2.80	3.98	4.67	4.28	3.66	2.76	3.76	2.86	3.44	3.14
3	3.07	2.83	3.02	4.08	4.63	4.28	3.58	2.75	3.67	2.93	3.44	3.21
4	2.99	2.94	3.06	4.25	4.68	4.37	3.50	3.12	3.51	3.20	3.41	2.97
5	3.00	2.95	2.94	4.29	4.68	4.41	3.49	3.30	3.41	3.54	3.39	3.11
6	2.99	2.80	3.01	4.16	4.53	4.45	3.43	3.20	3.35	3.73	3.44	3.02
7	3.03	2.80	2.97	4.12	4.57	4.35	3.40	3.48	3.27	3.60	3.42	3.07
8	2.98	2.88	2.98	4.09	4.49	4.31	3.36	3.39	3.15	3.55	3.47	3.19
9	3.01	2.88	2.95	4.00	4.45	4.30	3.19	3.43	3.12	3.53	3.52	3.24
10	2.99	2.86	3.12	4.00	4.34	4.32	3.21	3.42	3.09	3.52	3.55	3.10
11	3.00	2.80	2.84	3.97	4.37	4.35	3.21	3.39	3.03	3.55	3.51	3.14
12	3.04	2.82	2.89	4.04	4.91	4.75	3.17	3.47	3.01	3.55	3.46	3.15
13	3.04	2.76	2.98	4.26	5.26	5.92	3.13	3.82	3.00	3.53	3.41	3.10
14	3.09	2.79	3.07	4.30	5.21	5.72	3.08	3.98	3.04	3.51	3.39	3.04
15	3.04	2.90	3.12	4.31	5.17	5.31	3.04	3.78	3.02	3.53	3.37	3.08
16	3.03	2.93	2.96	4.28	5.08	5.00	3.03	3.56	M	3.51	3.36	3.12
17	2.99	2.96	3.18	4.27	M	4.78	2.99	3.79	2.97	3.49	3.36	3.10
18	2.98	3.08	3.39	4.30	4.88	4.60	2.97	3.83	2.97	3.50	3.36	3.13
19	3.01	3.13	3.63	4.31	4.80	4.47	2.94	3.61	3.00	3.46	3.37	3.17
20	2.99	3.18	3.53	4.29	4.71	4.35	2.93	3.42	2.87	3.46	3.33	3.17
21	2.95	3.15	3.66	4.21	4.63	4.26	2.90	3.32	2.84	3.48	3.36	3.11
22	2.99	3.05	2.96	4.18	4.55	4.21	3.00	3.43	2.83	3.46	3.35	2.85
23	3.01	3.08	3.52	4.17	4.50	4.14	2.90	3.74	2.85	3.43	3.33	2.81
24	2.93	3.17	3.91	4.24	4.42	4.06	2.85	4.04	2.81	3.46	3.47	2.89
25	2.89	3.19	3.53	4.22	4.40	4.00	2.86	4.36	2.81	3.47	3.43	2.95
26	2.95	2.64	3.33	4.18	4.35	4.01	2.89	4.29	2.85	3.46	3.17	2.92
27	3.02	2.73	3.37	4.17	4.21	4.02	2.92	4.24	2.86	3.44	3.16	2.94
28	2.94	2.86	3.46	4.22	4.17	4.03	2.88	4.23	2.86	3.43	3.07	3.00
29	2.89		3.48	4.43	4.20	3.96	2.89	4.15	M	3.44	3.26	3.03

30	2.79		3.53	4.62	4.39	3.86	2.85	4.04	2.86	3.44	2.91	3.05
31	2.80		3.69		4.34		2.84	3.92		3.43		2.97
MIN	2.79	2.64	2.80	3.83	4.17	3.86	2.84	2.75	2.81	2.84	2.91	2.81
MAX	3.10	3.19	3.91	4.62	5.26	5.92	3.76	4.36	3.84	3.73	3.55	3.24
MEAN	2.99	2.93	3.22	4.19	4.61	4.44	3.12	3.62	3.09	3.43	3.36	3.06

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2003 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.97	2.64	2.63	3.51	4.88	6.09	6.32	3.68	2.92	2.84	2.84	2.64
2	2.99	2.65	2.76	3.44	4.94	M	5.98	3.63	2.91	2.85	2.87	2.64
3	2.81	2.68	2.62	3.41	4.86	5.86	5.73	3.55	2.90	2.87	2.90	2.53
4	2.95	3.00	2.61	3.45	4.75	5.87	5.44	3.45	2.87	2.82	2.96	2.54
5	3.01	2.64	M	3.41	5.46	5.82	5.54	3.53	2.87	2.83	2.90	M
6	3.01	2.63	2.61	3.41	6.04	5.81	5.98	3.45	2.86	2.83	2.88	2.64
7	2.93	2.71	2.64	3.49	5.91	6.41	5.87	3.40	2.86	2.83	2.92	2.68
8	2.97	2.65	2.62	3.49	5.70	6.71	M	3.35	2.86	2.83	2.86	2.72
9	3.00	2.63	2.56	3.42	5.72	6.77	7.20	3.31	2.86	2.84	2.80	2.73
10	3.12	2.65	2.58	3.38	5.81	6.74	7.60	3.28	2.84	2.82	2.85	2.41
11	2.91	2.62	2.61	3.57	5.78	5.83	7.32	3.28	2.86	2.84	2.91	2.58
12	2.91	2.63	2.64	3.85	5.95	5.82	M	3.25	2.94	2.84	2.89	2.58
13	2.93	2.62	2.63	3.95	6.09	5.78	M	3.22	2.95	2.82	2.86	2.58
14	2.91	2.63	2.67	3.99	6.16	5.73	M	3.19	2.95	2.84	2.85	2.60
15	2.89	2.61	2.77	3.94	6.09	5.50	M	3.18	2.90	2.82	2.85	2.58
16	2.73	2.61	3.02	3.93	6.03	5.40	M	3.14	2.88	2.81	2.87	2.59
17	2.77	2.60	3.24	3.90	6.08	5.23	5.21	3.13	2.90	2.81	2.88	2.56
18	2.71	2.64	3.38	M	5.92	5.21	4.98	3.13	2.89	2.82	2.90	2.59
19	2.69	2.62	3.25	M	5.90	5.23	4.85	3.09	2.89	2.83	2.90	2.57
20	2.69	2.63	3.31	M	5.84	5.22	4.70	3.10	2.89	2.84	2.86	2.57
21	2.67	2.66	3.30	M	5.77	5.01	4.67	3.08	2.92	2.81	2.62	2.58
22	2.65	2.66	3.50	4.56	5.95	4.90	4.48	3.05	2.95	2.81	2.62	2.58
23	2.66	2.91	3.48	0.00	5.91	4.86	4.34	3.05	2.94	2.82	2.63	2.58
24	2.63	2.62	3.43	4.94	5.88	5.33	4.29	3.03	2.92	2.84	2.25	2.50
25	2.62	2.66	3.41	5.03	5.74	6.25	4.17	3.02	2.90	2.86	2.53	2.53
26	2.64	2.63	3.37	5.01	5.69	7.58	4.08	3.01	2.89	2.82	2.61	2.58
27	2.62	2.64	3.35	5.05	5.67	7.96	4.00	2.98	2.89	2.85	2.65	2.59
28	2.61	2.64	3.40	5.01	5.64	7.90	3.93	2.98	2.87	2.88	2.64	2.62
29	2.60		3.79	4.92	6.24	7.23	3.87	2.96	2.87	2.84	2.58	2.65
30	M		3.75	4.96	6.22	6.70	3.81	2.94	2.85	2.85	2.68	2.55
31	2.63		3.62		6.10		3.71	2.93		2.90		2.60
MIN	2.60	2.60	2.56	0.00	4.75	4.86	3.71	2.93	2.84	2.81	2.25	2.41
MAX	3.12	3.00	3.79	5.05	6.24	7.96	7.60	3.68	2.95	2.90	2.96	2.73
MEAN	2.81	2.66	3.05	3.89	5.77	6.03	5.12	3.21	2.89	2.84	2.78	2.59

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2004 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.51	2.42	3.07	4.16	3.76	5.92	5.88	4.54	3.22	5.50	4.09	4.16
2	3.45	2.43	3.29	4.03	3.74	5.83	5.69	4.53	3.22	5.40	4.09	4.07
3	3.44	2.43	3.62	3.98	3.66	5.80	5.62	4.36	3.18	5.37	4.12	4.07
4	2.50	2.42	3.54	3.94	3.64	5.77	5.62	4.31	3.17	5.20	4.19	4.09
5	2.68	2.43	3.69	3.95	3.63	5.71	5.54	4.33	3.15	5.11	4.21	4.11
6	2.60	2.41	3.99	3.89	3.55	5.82	5.46	4.47	3.13	4.95	4.16	4.12
7	2.54	2.40	4.08	3.79	3.47	5.86	6.15	4.34	3.07	4.88	4.15	4.09
8	2.46	2.43	3.98	3.82	3.58	5.95	6.59	4.27	3.05	4.82	4.09	4.07
9	2.47	2.43	3.94	3.71	3.47	6.00	6.57	4.20	3.05	4.88	4.02	4.02
10	2.45	2.42	3.95	3.57	3.44	6.04	6.22	4.12	2.98	5.08	4.01	4.02
11	2.45	2.41	3.98	3.53	3.40	6.30	5.91	4.04	2.98	4.94	3.96	4.00
12	2.47	2.40	3.35	3.46	3.39	6.51	5.79	4.02	2.97	4.80	3.93	3.97
13	2.47	2.42	3.79	3.45	3.40	6.98	6.00	3.93	2.94	4.72	3.90	3.93
14	2.46	2.44	3.75	3.42	3.37	6.96	6.36	3.88	3.07	4.64	3.87	3.62
15	2.45	2.41	3.76	3.37	3.36	6.70	6.55	3.88	3.25	4.59	3.82	4.07
16	2.50	2.43	3.91	3.36	3.37	6.43	6.62	3.82	5.41	4.51	3.81	3.49
17	2.51	2.43	3.84	3.36	3.31	6.36	6.48	3.82	6.71	4.44	3.85	4.18
18	2.70	2.40	3.84	3.33	3.23	6.18	6.10	3.79	7.40	4.36	3.86	3.61
19	2.54	2.43	3.80	3.40	3.15	6.04	5.80	3.92	8.00	4.35	3.89	4.74
20	2.45	2.46	3.82	3.31	3.19	5.93	5.62	3.85	8.16	4.29	3.94	4.64
21	2.46	2.46	3.77	M	3.33	5.89	5.50	3.81	7.63	4.27	4.24	3.35
22	2.73	2.47	3.77	3.53	3.97	5.81	5.46	3.70	6.89	4.24	4.37	3.93
23	2.47	2.47	3.68	3.47	7.04	5.81	5.50	3.65	6.54	4.25	4.38	3.85
24	2.43	2.46	3.60	3.42	7.67	5.90	5.37	3.57	6.79	4.24	4.33	3.96
25	2.44	2.47	3.49	3.66	8.35	6.04	5.26	3.53	6.92	4.16	4.26	3.61
26	2.47	2.48	3.61	3.93	7.81	6.14	5.14	3.50	6.87	4.08	4.23	3.58
27	2.52	2.53	3.72	4.06	7.16	6.22	5.01	3.46	6.46	4.02	M	3.60
28	2.43	2.67	3.93	3.99	6.41	6.28	4.90	3.33	6.16	4.00	4.16	3.60
29	2.44	2.93	4.48	3.97	6.18	6.22	4.84	3.28	5.84	4.02	4.22	3.52
30	2.40		4.42	3.84	6.03	6.09	4.74	3.24	5.68	4.08	4.19	3.55
31	2.40		4.27		6.02		4.64	3.23		4.06		3.58
MIN	2.40	2.40	3.07	3.31	3.15	5.71	4.64	3.23	2.94	4.00	3.81	3.35
MAX	3.51	2.93	4.48	4.16	8.35	6.98	6.62	4.54	8.16	5.50	4.38	4.74
MEAN	2.59	2.46	3.80	3.68	4.49	6.12	5.71	3.89	4.93	4.59	4.08	3.91

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2005 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.51	3.07	3.04	5.06	5.34	5.88	5.37	4.16	3.21	7.31	5.07	4.91
2	3.45	3.07	3.41	4.96	5.22	5.81	5.24	4.05	3.14	7.34	4.94	4.81
3	3.44	3.11	3.74	4.85	5.14	5.70	5.19	3.91	3.10	7.15	4.91	3.99
4	3.36	3.13	3.65	4.74	5.06	5.65	5.00	3.86	3.06	6.97	4.85	3.98
5	3.40	3.23	3.60	4.67	4.98	5.61	4.88	3.73	3.02	6.79	4.85	4.56
6	3.42	3.37	3.51	4.61	4.90	5.56	4.78	3.62	3.03	6.67	4.81	4.42

7	3.47	3.14	3.56	4.55	4.93	5.52	4.68	3.54	3.03	6.60	4.76	4.71
8	3.36	3.22	3.53	4.53	5.20	5.56	4.55	3.50	3.02	6.62	4.65	4.64
9	3.29	2.95	3.56	4.52	6.65	5.62	4.47	3.49	3.11	6.63	4.63	4.90
10	3.28	3.13	3.49	4.46	7.58	5.77	4.52	3.45	3.19	6.73	4.58	5.32
11	3.24	3.03	3.56	4.56	7.55	6.46	4.41	3.48	3.31	6.69	4.47	4.63
12	3.23	3.17	3.59	4.61	7.40	6.63	4.39	3.46	3.33	6.64	4.41	4.73
13	3.22	3.36	3.46	5.22	7.74	6.70	4.30	3.46	3.35	6.56	4.37	4.99
14	3.53	3.91	3.44	5.84	8.53	6.48	4.24	3.40	3.30	6.48	4.35	4.99
15	3.48	4.98	3.49	5.89	8.81	6.29	4.16	3.34	3.27	6.38	4.35	4.95
16	3.32	5.48	3.47	5.84	8.89	6.14	M	3.30	3.23	6.25	4.37	4.97
17	3.25	4.63	3.52	5.86	8.75	5.99	M	3.25	3.41	6.15	4.24	5.19
18	3.35	4.25	3.50	5.86	8.78	5.94	4.02	3.29	3.61	6.04	4.27	5.44
19	3.11	4.28	3.55	5.95	8.44	5.79	3.86	3.20	3.86	5.93	4.20	5.73
20	3.02	4.18	3.39	6.26	7.85	5.68	3.84	3.18	3.99	5.82	4.05	5.81
21	3.04	4.06	3.33	6.44	7.50	5.62	3.78	3.54	4.02	5.73	4.29	5.37
22	3.19	3.96	3.45	6.42	7.32	5.77	3.69	3.71	3.96	5.69	4.40	4.94
23	3.05	3.92	3.52	6.58	7.13	6.02	3.67	3.61	3.89	5.61	4.37	4.52
24	3.00	3.83	3.49	6.59	6.95	5.78	3.72	3.48	3.92	5.55	4.33	4.59
25	3.01	3.89	3.60	6.25	6.77	5.80	3.77	3.40	4.18	5.45	4.27	4.59
26	3.00	3.78	3.65	6.07	6.62	6.17	3.82	3.32	4.36	5.37	4.16	4.57
27	3.01	M	3.86	5.90	6.55	5.88	3.86	3.30	6.04	5.33	4.16	4.57
28	3.09	3.78	4.12	5.69	6.49	5.73	3.87	3.35	6.64	5.27	4.06	4.53
29	3.06		4.51	5.56	6.38	5.73	3.89	3.34	7.02	5.17	4.31	4.48
30	3.07		4.85	5.43	6.18	5.52	4.01	3.34	7.21	5.09	4.81	4.46
31	3.09		4.96		6.00		4.20	3.28		5.10		4.44
MIN	3.00	2.95	3.04	4.46	4.90	5.52	3.67	3.18	3.02	5.09	4.05	3.98
MAX	3.53	5.48	4.96	6.59	8.89	6.70	5.37	4.16	7.21	7.34	5.07	5.81
MEAN	3.24	3.70	3.66	5.46	6.83	5.89	4.28	3.49	3.89	6.16	4.48	4.80

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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2006 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	4.46	6.07	4.66	6.59	7.98	5.65	4.89	3.19	2.89	3.02	2.78	2.86
2	4.50	5.74	4.76	7.27	8.69	5.55	4.82	3.23	2.86	3.00	2.78	2.41
3	4.49	5.86	4.64	7.68	8.69	5.45	4.66	3.60	2.89	2.98	2.78	3.09
4	4.50	5.95	4.59	8.09	8.83	5.42	4.61	4.12	2.84	2.97	2.81	2.72
5	4.54	5.77	4.59	8.36	8.89	5.36	4.51	3.86	2.84	2.92	2.78	2.98
6	4.58	5.56	4.61	8.54	9.00	5.24	4.44	3.82	2.84	2.89	2.80	3.12
7	4.56	5.40	4.58	8.86	8.76	5.17	4.32	3.72	2.82	2.88	2.83	3.45
8	4.66	5.28	4.66	8.81	8.74	5.05	4.26	3.66	2.82	2.87	2.83	2.97
9	4.64	5.23	4.81	8.73	8.65	5.01	4.22	3.72	2.81	2.86	2.83	2.94
10	4.95	5.33	5.07	8.69	8.43	5.00	4.08	3.84	2.91	2.85	2.83	3.00
11	4.49	5.34	5.23	8.72	8.40	4.96	4.01	3.83	2.87	2.88	2.86	2.99
12	4.56	5.26	5.21	9.14	8.26	4.84	3.97	3.66	2.86	2.86	2.85	2.97
13	4.53	5.05	5.28	9.71	8.12	4.76	3.90	3.56	2.83	2.84	2.88	2.91
14	4.46	4.86	5.25	9.69	7.89	4.72	3.91	3.51	2.81	2.82	2.90	2.94
15	4.43	5.14	5.07	9.45	7.68	4.71	3.88	3.26	2.80	2.82	2.88	2.97
16	4.48	4.97	4.98	9.25	7.47	4.70	3.81	3.21	2.81	2.91	2.89	2.97
17	4.47	4.36	4.95	9.20	7.25	4.68	3.77	3.19	2.97	2.87	2.90	2.98
18	4.31	4.02	4.96	9.10	7.11	4.69	3.68	3.14	2.83	2.87	2.96	2.88
19	4.36	4.27	5.03	9.18	6.99	4.88	3.67	3.18	2.85	2.86	3.14	2.71
20	4.41	4.42	5.05	9.06	6.90	4.89	3.66	3.19	2.87	2.85	3.12	2.83
21	4.30	4.51	5.05	8.83	6.73	5.05	3.57	3.15	2.85	2.86	3.14	2.99
22	4.31	4.55	5.00	8.65	6.53	5.53	3.53	3.12	2.96	2.83	3.11	3.04
23	4.56	4.78	4.92	8.38	6.42	5.58	3.51	3.07	2.97	2.82	3.07	3.14

24	4.28	4.94	4.87	8.08	6.33	5.60	3.49	3.00	3.09	2.81	3.10	3.04
25	4.42	5.00	4.84	7.87	6.29	5.56	3.46	2.99	3.16	2.81	3.14	3.24
26	4.09	4.94	4.79	7.65	6.27	5.46	3.41	2.99	3.13	2.83	3.12	2.91
27	4.26	4.62	4.78	7.43	6.08	5.36	3.44	2.99	3.11	2.82	3.12	3.09
28	4.40	4.65	4.96	7.25	6.04	5.15	3.39	3.04	3.06	2.81	3.10	3.30
29	4.64		5.36	7.14	5.94	5.07	3.31	3.00	3.04	2.80	3.15	3.25
30	5.13		5.62	7.30	5.79	5.00	3.25	2.96	3.03	2.81	3.17	3.19
31	5.36		5.95		5.71		3.20	2.95		2.83		3.27
MIN	4.09	4.02	4.58	6.59	5.71	4.68	3.20	2.95	2.80	2.80	2.78	2.41
MAX	5.36	6.07	5.95	9.71	9.00	5.65	4.89	4.12	3.16	3.02	3.17	3.45
MEAN	4.52	5.07	4.97	8.42	7.45	5.14	3.89	3.35	2.91	2.87	2.95	3.00

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2007 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.53	3.23	3.03	7.29	6.25	5.08	3.87	2.96	5.51	4.74	6.49	3.95
2	3.86	3.29	2.97	7.94	6.05	5.28	3.73	2.94	5.25	6.26	6.38	3.92
3	4.15	3.33	2.93	8.24	5.89	5.33	3.67	2.92	5.01	6.95	6.23	4.74
4	4.33	3.31	3.07	8.43	5.80	5.39	3.70	2.92	4.77	6.94	6.07	3.85
5	4.31	3.10	2.86	8.13	5.69	5.38	3.67	3.29	4.59	6.58	6.00	4.35
6	4.31	3.02	2.99	7.77	5.71	5.28	3.64	3.18	4.46	6.14	5.93	4.79
7	4.24	2.91	2.88	7.45	6.38	5.43	3.61	3.11	4.38	5.78	5.82	4.25
8	3.93	3.05	2.92	7.21	7.29	5.32	3.55	3.10	4.45	5.85	5.73	4.70
9	4.13	3.00	2.95	7.00	7.67	5.22	3.52	2.85	4.51	6.19	5.66	4.28
10	3.95	3.00	3.00	6.70	7.55	5.12	3.48	2.82	4.51	6.57	5.57	4.18
11	4.02	2.96	3.05	6.61	7.33	5.02	3.44	2.79	4.47	6.46	5.53	4.17
12	3.83	2.97	3.23	6.77	7.02	4.93	3.43	2.76	4.44	6.26	5.47	4.27
13	3.67	2.95	4.49	6.76	6.76	4.80	3.23	2.74	4.44	6.07	5.38	4.25
14	3.23	3.09	6.50	6.81	6.51	4.75	3.22	2.75	4.31	6.03	5.34	4.50
15	3.56	3.01	8.75	6.95	6.37	4.66	3.20	2.75	4.19	6.42	5.28	4.57
16	3.56	3.01	10.14	7.02	6.22	4.60	3.17	2.75	4.15	6.94	5.20	4.27
17	4.11	2.95	10.11	7.07	6.03	4.53	3.13	2.72	4.11	7.32	5.13	4.43
18	3.65	2.92	9.76	7.12	5.83	4.48	3.10	3.15	4.08	7.59	5.04	4.03
19	3.73	2.91	9.48	7.00	5.71	4.46	3.15	3.85	4.27	7.93	4.94	4.19
20	3.75	2.84	8.97	6.51	5.61	4.39	3.11	5.58	4.39	8.46	4.93	4.05
21	3.59	2.85	8.69	6.38	5.51	4.36	3.11	6.30	4.45	8.72	4.90	4.05
22	3.52	2.87	8.72	6.30	5.39	4.42	3.09	9.12	4.39	8.77	4.84	4.02
23	3.53	2.89	8.68	6.31	5.27	4.68	3.06	9.13	4.30	8.52	4.77	4.70
24	3.43	2.93	8.50	6.34	5.40	4.70	3.04	8.91	4.26	8.21	4.67	3.77
25	3.40	2.90	8.46	6.81	5.75	4.54	3.00	8.82	4.29	7.86	4.52	3.96
26	3.34	2.87	8.22	7.21	5.72	4.41	2.99	8.37	4.41	7.57	4.45	3.98
27	3.38	2.92	7.99	7.13	5.58	4.28	3.11	7.62	4.48	7.33	4.63	3.87
28	3.55	2.94	7.69	6.89	5.42	4.17	3.07	6.80	4.44	7.12	4.46	3.82
29	3.42		7.44	6.61	5.30	4.09	3.04	6.26	4.36	6.91	4.52	3.82
30	3.40		7.14	6.42	5.20	3.98	3.02	5.99	4.36	6.77	4.31	4.36
31	3.40		7.05		5.15		2.97	5.77		6.65		3.72
MIN	3.23	2.84	2.86	6.30	5.15	3.98	2.97	2.72	4.08	4.74	4.31	3.72
MAX	4.33	3.33	10.14	8.43	7.67	5.43	3.87	9.13	5.51	8.77	6.49	4.79
MEAN	3.74	3.00	6.21	7.04	6.04	4.77	3.29	4.68	4.47	6.96	5.27	4.19

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)

River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2008 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.86	3.20	2.97	5.67	6.51	7.81	6.32	4.11	3.03	2.88	3.09	3.16
2	3.71	3.22	3.02	6.20	6.45	7.64	6.23	4.03	3.02	2.86	3.10	2.97
3	4.05	3.21	3.14	5.88	6.37	7.54	6.01	3.99	2.98	2.88	3.14	3.36
4	3.73	3.20	3.08	5.65	6.65	7.05	5.87	3.93	2.98	2.85	3.17	3.09
5	3.65	3.19	3.08	5.52	7.15	8.18	5.72	3.95	2.97	2.87	3.14	2.98
6	3.71	3.24	3.01	5.48	7.30	7.80	5.57	3.85	3.01	2.86	3.16	3.02
7	3.72	3.20	2.95	5.42	7.36	7.57	5.62	3.83	3.00	2.87	3.22	3.13
8	3.71	3.17	3.13	5.32	7.13	8.34	6.02	3.78	3.03	2.85	3.24	3.05
9	3.67	3.17	3.04	5.24	6.99	9.44	5.93	3.70	3.00	2.80	3.20	3.01
10	3.66	3.64	3.00	5.12	6.86	9.38	5.59	3.63	2.96	2.79	3.23	3.11
11	3.67	3.19	3.02	5.44	6.71	9.29	5.37	3.60	2.94	2.79	3.22	3.07
12	3.66	3.17	3.41	6.43	6.66	9.04	5.17	3.41	2.96	2.79	3.26	3.13
13	3.72	3.13	4.47	6.94	6.84	9.21	4.96	3.42	2.96	2.80	3.25	3.14
14	3.54	3.09	5.21	6.74	6.74	10.81	4.84	3.39	2.94	2.84	3.26	3.19
15	3.73	3.17	5.57	6.40	6.56	10.26	4.70	3.37	2.95	2.92	3.35	3.27
16	3.75	3.07	6.03	6.17	6.42	9.76	4.56	3.34	2.93	2.90	3.40	3.13
17	3.51	3.07	5.40	6.01	6.31	9.34	4.44	3.31	2.93	2.88	3.44	3.11
18	3.87	3.10	5.07	5.86	6.19	8.93	4.51	3.29	2.94	2.86	3.41	3.07
19	3.87	3.36	4.98	5.83	6.10	8.41	4.52	3.25	2.95	2.92	3.36	3.16
20	3.66	3.15	5.15	5.88	5.96	8.14	4.55	3.24	2.93	2.90	3.34	3.00
21	3.48	3.05	5.56	5.90	5.82	7.93	5.13	3.21	2.90	2.83	2.97	3.21
22	3.50	3.02	5.66	5.82	5.72	7.73	4.97	3.20	2.91	2.83	2.97	3.19
23	3.53	2.99	5.29	5.72	5.72	7.50	4.85	3.19	2.91	2.90	3.06	2.99
24	3.64	2.97	4.99	5.64	5.65	7.14	4.65	3.14	2.91	3.01	3.26	2.95
25	3.80	2.97	4.80	6.39	5.54	6.88	4.60	3.13	2.89	3.12	3.24	2.92
26	3.45	3.01	4.80	6.55	5.57	6.67	4.51	3.09	2.88	3.16	3.27	2.90
27	3.33	2.95	4.74	7.01	5.43	6.52	4.40	3.09	2.89	3.14	3.46	2.95
28	3.32	2.96	4.72	7.20	5.29	6.41	4.34	3.20	2.86	3.16	3.17	2.94
29	3.32	2.97	4.59	6.93	5.29	6.44	4.30	3.14	3.00	3.16	3.27	2.90
30	3.69		4.67	6.64	7.66	6.41	4.25	3.07	2.97	3.17	3.53	2.89
31	3.31		4.85		7.57		4.20	3.03		3.18		2.98
MIN	3.31	2.95	2.95	5.12	5.29	6.41	4.20	3.03	2.86	2.79	2.97	2.89
MAX	4.05	3.64	6.03	7.20	7.66	10.81	6.32	4.11	3.03	3.18	3.53	3.36
MEAN	3.64	3.13	4.30	6.03	6.40	8.12	5.05	3.45	2.95	2.93	3.24	3.06

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2009 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC

1	M	2.68	3.38	4.74	5.02	4.22	4.47	3.77	3.03	2.99	5.29	4.53
2	2.85	2.68	3.43	4.70	4.94	4.14	4.37	3.74	3.00	2.89	5.19	4.49
3	2.82	3.06	3.40	4.65	4.90	4.05	4.31	3.68	2.96	2.94	5.05	4.43
4	2.83	2.67	3.35	4.59	4.80	4.00	4.29	3.65	2.96	3.04	4.95	4.27
5	2.80	2.68	3.53	4.53	4.75	3.95	4.31	3.61	2.93	2.99	4.93	4.33
6	2.78	2.68	3.70	4.49	4.71	3.92	4.29	3.56	2.94	3.04	4.92	4.04
7	2.78	2.66	3.89	4.63	4.80	3.91	4.23	3.56	2.93	3.02	4.90	3.76
8	2.76	2.74	4.09	4.62	4.95	3.96	4.29	3.52	2.94	3.04	4.84	3.66
9	2.75	2.87	4.05	4.56	5.05	4.17	4.56	3.51	2.94	3.08	4.78	3.64
10	2.74	4.17	4.11	4.56	5.22	4.52	4.73	3.46	2.82	3.15	4.69	3.52
11	2.72	4.81	3.25	4.53	5.28	4.63	5.48	3.41	2.82	3.19	4.62	3.27
12	2.73	5.05	3.57	4.49	5.24	4.61	6.02	3.38	2.82	3.19	4.57	3.66
13	2.90	5.51	3.78	4.45	5.23	4.55	5.77	3.34	2.84	3.17	4.57	3.75
14	2.77	5.22	3.82	4.46	5.18	4.52	5.43	3.30	2.82	3.16	4.55	3.82
15	2.84	4.83	3.89	4.44	5.18	4.53	5.25	3.26	2.82	3.20	4.50	4.34
16	2.84	4.68	4.07	4.41	5.11	4.63	5.17	3.28	2.80	3.22	4.46	4.40
17	2.76	4.40	4.15	4.36	4.95	4.59	5.14	3.23	2.79	3.25	4.38	3.90
18	2.74	4.44	4.36	4.35	4.89	4.60	5.01	3.20	2.78	3.29	4.34	3.89
19	2.73	3.96	4.56	4.40	4.82	4.82	4.85	3.21	2.79	3.35	4.32	3.88
20	2.71	3.96	4.50	4.38	4.72	4.86	4.76	3.33	2.78	3.37	4.29	3.84
21	2.72	3.89	4.51	4.35	4.67	4.79	4.67	3.28	2.78	3.38	4.26	3.81
22	2.71	3.80	4.46	4.31	4.60	4.76	4.68	3.22	2.86	3.52	4.24	3.78
23	2.73	3.69	4.52	4.28	4.62	4.71	4.57	3.20	2.81	4.08	4.19	3.74
24	2.83	3.62	4.91	4.22	4.63	4.75	4.53	3.29	2.80	4.85	4.24	3.74
25	2.72	3.74	5.48	4.26	4.77	4.93	4.41	3.16	2.87	5.40	4.36	3.69
26	2.69	3.70	5.52	4.29	4.70	4.93	4.18	3.12	2.87	5.33	4.69	3.60
27	2.69	3.62	5.32	4.52	4.63	4.83	4.07	3.11	2.85	5.12	4.76	3.55
28	2.68	3.51	5.12	5.12	4.63	4.73	4.00	3.10	2.83	4.97	4.72	3.59
29	2.69		5.03	5.20	4.54	4.61	3.92	3.10	2.84	4.88	4.64	4.03
30	2.65		4.92	5.15	4.41	4.57	3.91	3.06	2.84	5.04	4.57	3.87
31	2.66		4.86		4.30		3.83	3.05		5.21		3.69
MIN	2.65	2.66	3.25	4.22	4.30	3.91	3.83	3.05	2.78	2.89	4.19	3.27
MAX	2.90	5.51	5.52	5.20	5.28	4.93	6.02	3.77	3.03	5.40	5.29	4.53
MEAN	2.75	3.76	4.24	4.53	4.85	4.49	4.63	3.34	2.86	3.69	4.63	3.89

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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2010 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.89	3.65	3.30	9.84	6.62	4.96	11.30	6.60	3.69	8.91	6.08	5.22
2	4.13	3.67	3.28	9.50	6.43	4.91	10.60	6.33	3.79	9.27	6.02	5.13
3	4.47	3.85	3.24	9.26	6.24	4.87	10.03	6.08	3.73	9.54	5.96	4.79
4	4.32	3.49	3.27	8.98	6.08	4.86	9.60	6.02	3.65	9.58	5.86	4.75
5	4.57	3.47	3.28	8.77	5.98	4.89	9.28	5.91	3.58	9.58	5.77	4.79
6	4.26	3.47	3.19	8.53	5.85	5.00	8.94	5.74	3.52	9.51	5.70	4.61
7	4.01	3.48	3.35	8.30	5.73	4.89	8.67	5.58	3.45	9.63	5.61	4.63
8	4.06	3.48	3.36	8.03	5.75	4.88	8.57	5.40	3.41	9.60	5.53	4.55
9	3.88	3.44	3.49	7.80	5.81	4.85	8.45	5.38	3.41	9.59	5.45	4.07
10	4.01	3.49	3.78	7.57	5.77	4.76	8.21	5.64	3.46	9.44	5.37	4.39
11	3.74	3.64	4.59	7.37	5.76	4.86	7.77	5.93	3.70	9.28	5.32	4.86
12	3.63	3.45	5.55	7.21	5.94	5.36	7.38	6.28	4.00	9.08	5.27	4.78
13	3.58	3.45	6.63	7.45	6.44	6.32	7.12	6.14	4.23	8.68	5.43	3.70
14	3.57	3.43	7.52	8.41	6.80	6.59	6.86	5.84	4.24	8.34	5.44	3.50
15	3.55	3.39	8.95	8.60	6.83	6.53	6.72	5.58	4.38	8.15	5.50	3.98
16	3.48	3.36	10.19	8.28	6.74	6.44	6.44	5.23	4.39	7.92	5.48	3.96
17	3.52	3.51	11.69	7.84	6.64	6.54	6.25	5.07	4.47	7.71	5.47	4.44

18	3.50	3.40	11.16	7.51	6.51	6.85	6.28	4.90	4.60	7.40	5.60	4.51
19	3.51	3.31	11.12	7.27	6.38	7.79	6.50	4.80	4.69	7.20	5.70	4.51
20	3.49	3.35	11.05	7.05	6.27	7.09	6.50	4.68	4.67	6.92	5.68	4.18
21	3.48	3.30	10.81	6.86	6.15	6.80	6.15	4.59	4.64	6.67	5.64	4.18
22	3.46	3.32	10.87	6.77	6.08	6.57	6.17	4.46	4.68	6.48	5.61	4.20
23	3.49	3.41	10.76	6.64	6.01	8.66	7.22	4.41	4.68	6.32	5.39	4.15
24	3.52	3.50	10.72	6.60	5.89	7.74	8.16	3.97	5.04	6.24	5.34	4.15
25	3.53	3.41	10.53	6.49	5.78	8.39	8.31	3.95	6.35	6.23	5.17	4.12
26	3.60	3.33	10.35	6.49	5.67	10.50	7.93	3.98	7.05	6.25	5.17	4.20
27	3.66	3.31	10.19	6.53	5.51	11.19	7.52	3.89	7.47	6.30	4.87	4.33
28	3.94	3.32	10.23	6.68	5.36	11.52	7.07	3.81	7.77	6.34	4.88	4.48
29	3.84		10.17	6.62	5.24	12.07	6.75	3.75	8.09	6.35	4.92	4.17
30	3.75		10.14	6.59	5.13	12.06	6.60	3.69	8.39	6.31	5.16	4.15
31	3.68		9.91		5.06		6.83	3.64		6.23		4.31
MIN	3.46	3.30	3.19	6.49	5.06	4.76	6.15	3.64	3.41	6.23	4.87	3.50
MAX	4.57	3.85	11.69	9.84	6.83	12.07	11.30	6.60	8.39	9.63	6.08	5.22
MEAN	3.78	3.45	7.63	7.66	6.01	6.96	7.75	5.07	4.77	7.90	5.48	4.38

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2011 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	4.75	3.33	4.51	9.83	7.53	8.09	9.19	6.41	3.70	2.99	2.96	2.99
2	5.31	3.42	4.41	9.82	7.34	7.95	8.93	6.29	3.66	3.00	2.94	2.86
3	4.39	3.60	4.23	9.83	7.29	7.79	8.68	6.12	3.70	2.99	2.95	2.88
4	4.69	3.48	4.53	9.74	6.99	7.77	8.60	5.96	3.66	2.98	2.94	2.86
5	4.25	3.24	4.44	9.43	6.88	7.61	8.31	5.83	3.61	2.98	2.94	2.96
6	4.14	3.19	4.25	9.23	6.80	7.53	8.20	5.65	3.55	2.96	2.97	2.84
7	4.18	3.18	4.33	8.83	6.63	7.40	8.00	5.66	3.51	2.96	2.95	2.77
8	4.24	3.59	4.31	8.84	6.58	7.20	7.72	5.50	3.49	2.96	2.94	2.94
9	4.40	3.54	4.23	8.52	6.48	6.99	7.48	5.35	3.47	2.95	2.93	2.90
10	4.13	3.54	4.14	8.46	6.31	6.85	7.26	5.24	3.44	2.93	2.91	2.80
11	4.00	3.23	4.06	8.92	6.28	7.05	7.19	5.13	3.40	2.93	2.91	2.88
12	4.18	3.23	4.51	8.77	6.22	7.51	7.17	5.00	3.39	2.94	2.92	2.91
13	4.40	3.21	5.13	8.47	6.20	7.37	7.61	4.89	3.34	2.96	2.93	2.91
14	4.28	3.20	5.26	8.22	6.18	6.96	7.75	4.78	3.31	2.99	2.93	2.95
15	3.73	3.26	5.09	7.93	6.16	7.02	8.00	4.68	3.27	2.96	2.92	3.00
16	4.00	3.57	5.07	7.93	6.14	7.56	8.37	4.59	3.28	2.95	2.90	2.84
17	3.81	4.35	5.91	7.82	6.23	7.88	8.80	4.51	3.26	2.94	2.89	2.93
18	3.64	4.95	6.63	7.74	6.26	8.20	9.04	4.43	3.26	2.94	2.94	2.96
19	3.75	5.70	7.08	7.84	6.17	8.45	9.07	4.29	3.26	2.94	2.91	2.98
20	3.76	6.50	7.32	8.24	6.21	8.87	8.83	4.23	3.16	2.94	2.91	2.94
21	3.99	7.07	7.32	8.75	6.51	9.15	8.56	4.14	3.14	2.97	2.90	2.93
22	3.97	7.24	7.42	8.78	7.08	9.75	8.23	4.07	3.12	2.98	3.02	2.89
23	3.99	6.96	7.62	8.50	7.56	9.89	8.13	4.12	3.11	2.97	2.98	2.77
24	3.86	6.34	7.83	8.45	7.89	9.93	7.99	4.06	3.11	2.96	2.98	2.83
25	3.47	5.59	8.05	8.07	7.97	10.12	7.85	3.99	3.10	2.97	3.00	2.96
26	3.45	4.98	8.22	7.99	8.24	10.00	7.70	3.91	3.11	2.97	3.02	2.90
27	3.44	4.88	8.49	7.97	8.77	10.04	7.39	3.86	3.09	2.97	3.00	2.93
28	3.40	4.74	8.72	8.00	8.95	10.06	7.17	3.81	3.07	2.95	2.98	2.87
29	3.39		9.01	7.89	8.95	M	6.92	3.75	3.06	2.94	2.98	2.93
30	3.44		9.16	7.71	8.80	9.46	6.70	3.74	3.01	2.96	2.96	2.98
31	3.36		9.58		8.48		6.57	3.72		2.95		2.98
MIN	3.36	3.18	4.06	7.71	6.14	6.85	6.57	3.72	3.01	2.93	2.89	2.77
MAX	5.31	7.24	9.58	9.83	8.95	10.12	9.19	6.41	3.70	3.00	3.02	3.00
MEAN	3.99	4.40	6.16	8.55	7.10	8.29	7.98	4.76	3.32	2.96	2.95	2.91

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2012 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.98	2.83	4.90	3.42	3.66	6.68	4.32	3.16	2.85	2.77	2.82	2.84
2	2.63	2.84	5.37	3.39	3.78	6.82	4.22	3.15	2.83	2.80	2.81	2.82
3	2.74	2.87	4.70	3.40	3.83	6.81	4.11	3.12	2.82	2.77	2.82	2.82
4	2.88	2.88	4.26	3.37	3.85	6.85	4.04	3.14	2.84	2.78	2.80	2.80
5	2.91	2.87	3.56	3.33	4.16	6.80	3.95	3.07	2.90	2.75	2.84	2.78
6	2.95	2.88	3.86	3.28	4.38	6.77	3.89	3.05	2.84	2.75	2.84	2.80
7	2.92	2.89	3.79	3.29	5.07	6.82	3.89	3.02	2.95	2.75	2.82	2.80
8	2.88	2.84	4.07	3.20	5.58	6.83	3.87	3.00	2.90	2.77	2.81	2.80
9	2.91	2.76	3.96	3.22	5.81	6.62	3.76	3.00	2.81	2.79	2.83	2.78
10	2.94	2.77	3.80	3.19	5.86	6.41	3.70	2.99	2.82	2.79	2.83	2.63
11	2.97	2.99	3.77	3.16	5.80	6.36	3.62	2.97	2.83	2.79	2.86	2.69
12	2.82	2.76	3.69	3.14	5.76	6.13	3.58	2.95	2.79	2.76	2.81	2.72
13	2.70	2.83	3.64	3.15	5.81	5.99	3.55	2.99	2.87	2.78	2.80	2.80
14	2.82	2.85	3.67	3.21	5.77	5.79	3.51	2.96	2.79	2.86	2.82	2.80
15	2.82	2.82	3.65	3.31	5.77	5.64	3.45	2.95	2.77	2.78	2.84	2.95
16	2.84	2.81	3.72	3.30	5.69	5.65	3.44	2.95	2.75	2.79	2.84	2.89
17	2.80	2.81	3.76	3.43	5.49	5.64	3.40	2.92	2.77	2.80	2.84	2.81
18	2.72	2.80	3.72	3.58	5.20	5.52	3.37	2.90	2.76	2.78	2.83	2.81
19	2.77	2.78	3.66	3.50	5.02	5.32	3.33	2.89	2.75	M	2.84	2.81
20	2.75	2.82	3.71	3.72	4.91	5.13	3.31	2.90	2.74	2.80	2.84	2.69
21	2.75	2.91	3.70	4.09	4.79	5.18	3.29	2.88	2.74	2.81	2.82	2.55
22	2.76	2.95	3.73	4.12	4.73	5.62	3.30	2.87	2.74	2.81	2.83	2.68
23	2.76	3.19	3.71	4.00	4.57	5.71	3.29	2.86	2.72	2.82	2.80	2.74
24	2.75	3.11	3.67	3.90	4.56	5.49	3.26	2.85	2.72	2.83	2.77	2.73
25	2.75	3.00	3.63	3.88	4.71	5.20	3.21	2.87	2.73	3.05	2.78	2.68
26	2.77	2.72	3.60	3.81	5.76	4.95	3.19	2.89	2.73	2.87	2.82	2.67
27	2.78	2.61	3.55	3.68	6.20	4.77	3.20	2.90	2.74	2.83	2.68	2.65
28	2.77	2.98	3.50	3.70	6.57	4.65	3.21	2.90	2.75	2.84	2.72	2.67
29	2.80	3.26	3.45	3.71	6.39	4.52	3.24	2.89	2.76	2.83	2.84	2.67
30	2.81		3.48	3.66	6.54	4.41	3.24	2.89	2.77	2.82	2.85	2.66
31	2.82		3.51		6.58		3.20	2.84		2.82		2.71
MIN	2.63	2.61	3.45	3.14	3.66	4.41	3.19	2.84	2.72	2.75	2.68	2.55
MAX	2.98	3.26	5.37	4.12	6.58	6.85	4.32	3.16	2.95	3.05	2.86	2.95
MEAN	2.82	2.88	3.83	3.50	5.25	5.84	3.55	2.96	2.79	2.81	2.82	2.75

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2013 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.63	2.61	2.71	4.58	4.36	7.88	6.98	3.41	3.04	2.84	2.88	3.00
2	2.69	2.63	2.59	4.12	4.65	7.50	6.92	3.39	3.00	2.83	2.87	2.98
3	2.66	2.70	2.71	3.67	4.93	6.94	6.87	3.40	2.98	2.83	2.85	2.73
4	2.65	2.67	2.65	3.61	5.65	6.47	6.85	3.34	2.98	2.92	2.87	2.81
5	2.69	2.68	2.73	3.53	5.80	6.17	6.66	3.32	2.97	2.88	2.87	2.65
6	2.68	2.64	2.64	3.49	5.48	6.58	6.40	3.30	2.95	2.87	2.97	2.65
7	2.66	2.68	2.64	3.43	5.23	6.62	6.17	3.28	2.93	2.91	2.95	2.60
8	2.65	2.62	2.67	3.41	5.01	6.32	5.96	3.26	2.93	2.95	2.91	2.62
9	2.70	2.64	3.06	3.41	4.94	6.14	5.84	3.23	2.93	2.90	2.94	2.60
10	2.66	2.67	3.52	3.68	4.82	6.34	5.67	3.24	2.91	2.88	2.92	2.59
11	2.74	2.68	3.54	M	4.71	6.80	5.57	3.27	2.91	2.87	2.93	2.62
12	2.75	2.65	4.04	M	4.71	6.88	5.38	3.35	2.89	2.87	2.89	2.58
13	2.58	2.66	4.64	M	4.75	6.72	5.25	3.27	2.86	2.83	2.85	2.58
14	2.72	2.71	4.42	2.26	4.71	6.65	5.12	3.27	2.86	2.83	2.95	2.59
15	2.67	2.53	4.07	2.24	4.65	6.63	4.98	3.29	2.87	2.95	2.97	2.59
16	2.68	2.69	4.11	4.17	4.61	7.31	4.88	3.35	2.85	2.91	2.91	2.61
17	2.64	2.67	4.10	4.00	4.59	8.30	4.76	3.31	2.86	2.89	2.97	2.62
18	2.68	2.73	4.74	4.14	4.49	7.93	4.62	3.26	2.93	2.90	2.97	2.60
19	2.73	2.58	3.94	4.73	5.50	7.21	4.43	3.23	2.90	2.88	3.05	2.62
20	2.58	2.82	3.66	4.84	5.60	6.68	4.26	3.21	2.89	2.87	3.18	2.58
21	2.69	2.69	3.47	4.67	5.95	6.25	4.12	3.19	2.86	2.88	3.23	2.62
22	2.66	2.62	3.49	4.49	5.86	6.08	4.07	3.21	2.85	2.95	3.15	2.61
23	2.72	2.72	3.56	4.48	5.60	6.22	3.94	3.26	2.86	2.91	2.92	2.64
24	2.64	2.67	3.62	4.93	5.47	7.07	3.90	3.20	2.86	2.91	2.86	2.62
25	2.63	2.70	3.49	4.98	5.40	7.67	3.81	3.18	2.87	2.88	2.99	2.58
26	2.61	2.69	3.47	4.78	5.20	8.05	3.84	3.17	2.87	2.90	3.07	2.54
27	2.62	2.67	3.60	4.64	7.42	8.03	3.70	3.12	2.87	2.87	2.99	2.58
28	2.65	2.67	3.81	4.55	8.55	7.64	3.62	3.09	2.86	2.88	3.01	2.59
29	2.66		4.34	4.45	9.07	7.38	3.54	3.07	2.86	2.89	2.96	2.66
30	2.67		5.05	4.38	8.85	7.09	3.52	3.06	2.83	2.88	2.94	2.56
31	2.65		4.97		8.39		3.46	3.04		2.88		2.53
MIN	2.58	2.53	2.59	2.24	4.36	6.08	3.46	3.04	2.83	2.83	2.85	2.53
MAX	2.75	2.82	5.05	4.98	9.07	8.30	6.98	3.41	3.04	2.95	3.23	3.00
MEAN	2.67	2.67	3.61	4.06	5.64	6.98	5.00	3.24	2.90	2.89	2.96	2.64

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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2014 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.58	2.50	2.54	4.02	3.89	3.35	10.80	3.61	3.95	3.71	3.46	2.88
2	2.56	2.48	2.49	4.12	3.93	3.58	10.48	3.54	4.86	3.99	3.44	2.77
3	2.57	2.46	2.52	4.11	3.86	5.55	9.54	3.47	4.71	4.26	3.47	2.84
4	2.52	2.49	2.57	4.17	3.77	5.90	9.12	3.41	4.40	4.33	3.47	3.10
5	2.54	2.51	2.50	4.02	3.71	5.85	8.77	3.36	4.21	4.34	3.42	3.09
6	2.59	2.49	2.53	4.04	3.76	5.49	8.28	3.31	4.01	4.23	3.40	3.09
7	2.63	2.51	2.57	4.12	3.72	5.27	7.94	3.33	3.86	4.12	3.36	3.06
8	2.52	2.46	2.52	4.09	3.72	5.09	7.30	3.29	3.75	4.01	3.35	3.06
9	2.53	2.46	2.56	4.42	3.75	5.03	7.06	3.23	3.71	3.90	3.36	3.03
10	2.50	2.47	2.63	4.43	3.70	4.90	6.67	3.18	3.70	3.83	3.35	3.04
11	2.48	2.49	3.04	4.43	3.71	4.75	6.43	3.15	3.67	3.80	3.35	3.06
12	2.54	2.47	3.08	4.43	3.84	4.71	6.17	3.15	3.69	3.76	3.31	3.07

13	2.48	2.51	2.93	4.33	4.56	4.58	5.81	3.21	3.66	3.76	2.99	3.10
14	2.53	2.51	3.30	4.24	4.47	4.43	5.63	3.13	3.68	3.78	2.93	3.21
15	2.51	2.51	3.55	4.21	4.34	4.58	5.39	3.07	3.67	3.74	3.20	3.29
16	2.53	2.51	3.88	4.06	4.26	6.03	5.18	3.05	3.62	3.72	3.23	3.29
17	2.56	2.50	3.81	3.50	4.17	7.53	5.01	3.00	3.70	3.68	2.97	3.02
18	2.55	2.52	3.88	3.40	4.11	10.02	4.79	2.96	3.67	3.63	2.94	2.99
19	2.53	2.51	3.80	3.41	4.05	12.87	4.68	3.31	3.64	3.61	3.17	3.42
20	2.57	2.63	3.73	3.46	4.03	13.22	4.42	3.28	3.67	3.58	2.98	3.52
21	2.49	2.53	3.79	3.54	3.98	13.09	4.33	3.27	3.89	3.56	2.88	3.48
22	2.55	2.52	3.54	3.60	3.88	12.83	4.17	3.25	4.07	3.53	2.95	3.55
23	2.64	2.46	3.59	3.55	3.86	12.89	4.04	3.24	3.90	3.56	3.05	3.47
24	2.54	2.48	4.03	3.49	3.78	12.58	4.07	3.35	3.93	3.58	3.14	3.47
25	2.56	2.54	3.71	3.47	3.74	12.00	4.01	3.74	3.83	3.72	2.50	3.45
26	2.55	2.49	3.79	3.42	3.70	10.57	3.99	3.58	3.79	3.69	2.70	3.54
27	2.51	2.46	3.81	3.45	3.72	10.11	4.02	3.53	3.79	3.66	2.94	3.58
28	2.66	2.52	3.91	3.55	3.67	9.89	3.97	3.47	3.73	3.67	2.73	3.15
29	2.49		4.07	3.68	3.48	10.16	3.92	3.68	3.65	3.58	3.02	3.12
30	2.48		4.00	3.73	3.42	10.14	3.83	3.80	3.63	3.55	3.07	2.86
31	2.48		4.02		3.41		3.71	3.71		3.51		2.63
MIN	2.48	2.46	2.49	3.40	3.41	3.35	3.71	2.96	3.62	3.51	2.50	2.63
MAX	2.66	2.63	4.07	4.43	4.56	13.22	10.80	3.80	4.86	4.34	3.47	3.58
MEAN	2.54	2.50	3.31	3.88	3.87	7.90	5.92	3.34	3.87	3.79	3.14	3.17

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2015 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	3.46	2.71	2.50	3.21	3.99	5.39	5.00	3.39	5.98	4.17	4.46	6.70
2	3.41	2.83	2.51	3.29	3.94	5.26	4.81	3.48	5.56	4.14	4.42	6.62
3	3.42	2.64	2.50	3.46	3.90	5.11	4.68	3.48	5.22	4.09	4.41	6.46
4	3.25	2.83	2.48	3.48	3.89	5.03	4.55	3.46	4.93	4.06	4.38	6.33
5	3.16	3.11	2.53	3.43	3.87	4.91	4.43	3.43	4.73	4.02	4.34	6.22
6	3.31	2.83	2.50	3.42	3.88	4.82	4.36	3.37	4.58	3.98	4.30	6.16
7	3.20	2.83	2.50	3.40	3.88	4.82	4.33	3.32	4.49	3.94	4.25	6.19
8	3.18	2.83	2.76	3.45	3.90	5.61	4.28	3.27	4.45	3.92	4.21	6.27
9	3.01	2.83	3.00	3.49	3.80	5.49	4.48	3.24	4.99	3.88	4.18	6.37
10	2.92	2.85	3.21	4.05	3.81	5.36	4.84	3.25	5.35	3.85	4.12	6.46
11	2.85	2.85	3.36	5.11	3.90	5.29	4.92	3.25	5.23	3.82	4.09	6.52
12	2.84	2.71	3.73	4.94	3.99	5.83	4.97	3.26	5.02	3.82	4.24	6.64
13	2.82	2.58	3.87	4.70	3.98	6.20	5.00	3.20	4.89	3.75	4.97	6.71
14	2.76	2.69	3.71	4.58	3.94	6.01	4.96	3.17	4.75	3.72	5.32	7.14
15	2.71	2.76	3.63	4.50	4.20	5.73	4.87	3.14	4.59	3.69	5.40	7.91
16	2.70	2.65	3.54	4.40	4.68	5.84	4.74	3.10	4.44	3.64	5.34	8.64
17	2.70	2.64	3.52	4.29	5.01	5.64	4.63	3.46	4.35	3.58	5.33	8.92
18	2.70	2.79	3.69	4.26	5.32	5.40	4.45	5.31	4.26	3.55	5.87	8.89
19	2.71	2.75	3.58	4.35	5.56	5.23	4.25	6.25	4.19	3.55	6.45	8.54
20	2.73	2.57	3.48	4.87	5.39	5.04	4.09	6.89	4.12	3.54	6.88	7.89
21	2.75	2.59	3.42	5.11	5.24	5.10	3.97	7.07	4.05	3.51	7.10	7.32
22	2.78	2.77	3.36	4.91	5.19	5.09	3.86	6.87	3.99	3.49	7.12	7.00
23	2.78	2.72	3.35	4.68	5.19	5.54	3.74	6.52	3.93	3.48	7.00	6.87
24	2.79	2.52	3.32	4.50	5.18	5.71	3.66	6.21	3.91	3.53	6.88	6.73
25	2.84	2.52	3.37	4.43	5.16	5.60	3.59	5.94	3.93	3.55	6.78	6.63
26	2.85	2.58	3.33	4.37	5.16	5.46	3.57	5.60	3.94	3.58	6.79	6.51
27	2.93	2.64	3.35	4.24	5.12	5.43	3.51	5.32	3.92	3.69	6.98	6.37
28	3.05	2.59	3.31	4.19	5.31	5.42	3.48	5.18	3.99	3.97	7.19	5.97
29	3.11		3.31	4.13	5.27	5.33	3.49	6.36	4.12	4.25	7.05	5.97

30	2.89		3.28	4.07	5.38	5.17	3.42	6.74	4.16	4.46	6.76	5.70
31	2.75		3.23		5.43		3.37	6.48		4.44		5.49
MIN	2.70	2.52	2.48	3.21	3.80	4.82	3.37	3.10	3.91	3.48	4.09	5.49
MAX	3.46	3.11	3.87	5.11	5.56	6.20	5.00	7.07	5.98	4.46	7.19	8.92
MEAN	2.95	2.72	3.20	4.18	4.60	5.40	4.27	4.61	4.54	3.83	5.55	6.84

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2016 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	5.27	4.50	6.74	7.01	8.98	6.84	5.19	4.43	3.43	5.97	5.58	4.98
2	5.33	4.56	6.62	7.23	9.45	6.93	5.08	4.33	3.40	5.78	5.48	4.99
3	5.59	4.52	6.42	7.38	9.56	6.96	5.03	4.25	3.35	5.60	5.38	5.01
4	5.52	4.44	6.36	3.67	9.36	6.92	4.95	4.17	3.32	5.43	5.31	5.11
5	5.36	4.51	6.36	7.04	9.31	6.84	4.86	4.09	3.31	5.58	5.18	5.16
6	5.45	4.30	6.31	6.90	9.05	6.71	4.80	4.00	3.35	6.72	5.13	5.17
7	5.49	4.35	6.34	6.79	8.71	6.66	4.75	3.93	3.43	7.30	5.08	M
8	5.51	4.36	6.52	6.64	8.38	6.53	4.70	3.88	5.83	7.54	5.03	30.69
9	5.43	15.94	6.70	6.48	8.14	6.38	4.79	3.81	5.89	7.52	4.96	4.68
10	4.41	4.38	6.82	6.33	8.06	6.32	4.74	3.75	5.70	7.38	4.91	4.42
11	4.42	4.46	6.84	6.22	8.09	6.17	4.68	3.91	5.65	7.11	4.89	4.27
12	4.60	4.19	6.76	6.06	8.24	6.14	4.76	4.04	5.24	6.77	4.83	4.63
13	4.85	4.19	6.70	5.96	8.29	6.08	4.83	4.09	4.97	6.59	4.79	4.57
14	4.52	4.08	6.71	5.86	8.43	6.00	4.81	3.93	4.75	6.37	4.76	4.66
15	4.85	4.11	6.79	5.79	8.48	6.19	4.73	3.79	4.53	6.22	4.70	5.00
16	5.12	4.15	6.85	5.65	8.38	6.37	4.66	3.71	5.05	6.11	4.68	5.06
17	5.18	4.16	6.84	5.60	8.09	6.64	4.69	3.66	6.69	5.98	4.61	5.18
18	5.23	4.12	6.76	5.50	7.80	6.45	4.72	3.60	6.97	5.88	4.60	5.17
19	5.96	4.21	6.59	5.47	7.54	6.20	6.00	3.55	6.61	5.73	4.54	5.19
20	5.58	5.41	6.46	5.42	7.39	6.07	6.62	3.75	6.08	5.62	4.52	4.55
21	4.73	6.20	6.31	5.51	7.22	6.07	6.70	3.69	5.55	5.50	4.47	4.24
22	4.59	6.87	6.21	5.70	7.04	6.03	6.52	3.57	5.36	5.43	4.41	4.41
23	4.65	7.33	6.11	5.72	6.86	6.02	6.11	3.50	5.25	5.36	4.49	4.49
24	4.60	7.14	6.11	5.70	6.73	6.16	5.83	3.61	6.57	5.27	4.60	4.42
25	4.60	7.15	5.98	5.76	6.58	6.02	5.56	4.23	7.11	5.19	4.60	4.53
26	4.59	6.75	6.04	6.57	6.53	5.84	5.31	3.91	7.42	5.16	4.63	4.77
27	4.53	M	6.36	7.22	6.45	5.68	5.10	3.75	7.49	5.50	4.63	5.23
28	4.51	6.44	6.76	7.43	6.49	5.53	4.94	3.67	7.17	6.10	4.71	5.18
29	4.53	6.64	7.04	7.90	6.50	5.38	4.81	3.59	6.74	6.11	4.82	5.24
30	4.47		6.94	8.42	6.56	5.29	4.68	3.52	6.27	5.89	4.90	5.07
31	4.52		6.85		6.84		4.55	3.48		5.71		4.96
MIN	4.41	4.08	5.98	3.67	6.45	5.29	4.55	3.48	3.31	5.16	4.41	4.24
MAX	5.96	15.94	7.04	8.42	9.56	6.96	6.70	4.43	7.49	7.54	5.58	30.69
MEAN	4.97	5.48	6.55	6.30	7.86	6.25	5.15	3.84	5.42	6.08	4.84	5.70

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2017 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	5.01	4.60	5.57	5.95	6.54	8.05	6.78	4.56	5.48	4.42	6.47	5.07
2	4.86	4.89	5.57	5.89	7.18	7.79	7.12	4.51	5.39	4.54	6.44	5.05
3	4.85	4.66	5.62	5.80	7.55	7.71	7.11	4.47	5.29	4.50	6.32	5.04
4	5.46	4.78	5.43	5.76	7.58	7.57	6.90	4.42	5.20	4.68	6.24	5.02
5	5.37	4.55	5.50	5.74	7.57	7.28	6.80	4.38	5.10	5.13	6.17	5.01
6	6.03	4.49	5.86	5.72	7.35	7.08	6.63	4.32	4.99	6.03	6.13	5.00
7	6.00	4.52	6.38	5.61	7.29	6.88	6.61	4.30	4.89	6.79	6.08	4.67
8	6.03	4.58	6.55	5.53	7.27	6.74	6.52	4.23	4.82	7.50	5.98	4.55
9	6.26	4.57	6.36	5.46	7.31	6.67	6.44	4.20	4.74	8.04	5.91	4.46
10	4.39	4.49	5.97	5.40	7.24	6.60	6.33	4.20	4.69	8.43	5.89	4.46
11	4.54	4.36	5.65	5.28	7.19	6.56	6.19	4.18	4.65	8.52	5.81	4.83
12	4.66	4.67	5.46	5.18	7.13	6.30	6.13	4.15	4.58	8.55	5.66	4.89
13	4.49	4.97	5.22	5.91	6.90	6.21	5.98	4.14	4.54	8.56	5.53	4.75
14	4.52	5.24	4.70	5.89	6.83	6.26	5.88	4.24	4.48	8.62	5.45	5.00
15	4.18	5.22	4.80	5.86	6.69	6.48	5.76	4.17	4.42	8.63	5.59	4.95
16	4.05	5.18	4.81	5.98	6.62	6.67	5.66	4.29	4.38	8.54	5.62	4.99
17	4.17	5.12	4.88	6.00	6.67	6.72	5.55	4.39	4.36	8.56	5.58	4.84
18	4.18	5.28	5.15	5.94	7.26	6.76	5.48	4.45	4.31	8.50	5.53	4.80
19	4.24	5.43	5.33	5.99	7.47	6.90	5.40	4.78	4.31	8.43	5.36	4.86
20	4.42	5.54	5.37	6.27	7.62	6.83	5.31	4.98	4.41	8.30	5.29	4.88
21	4.63	5.89	5.41	6.56	8.23	6.70	5.18	5.14	4.32	8.16	5.27	4.83
22	4.81	6.31	5.33	6.55	9.07	6.61	5.17	5.57	4.26	7.88	5.15	M
23	5.11	6.15	5.32	6.50	9.47	6.53	5.16	6.39	4.26	7.79	5.17	M
24	5.00	6.09	5.33	6.49	9.63	6.47	5.06	6.25	4.24	7.70	5.14	M
25	4.84	5.69	5.33	6.46	9.57	6.50	4.98	5.92	4.23	7.48	5.06	4.28
26	4.65	5.69	5.42	6.43	9.19	6.32	4.92	5.73	4.29	M	5.17	4.13
27	4.61	5.60	5.48	6.40	9.06	6.11	4.88	5.80	4.28	M	5.14	4.03
28	4.63	5.40	5.43	6.34	8.78	5.99	4.81	6.03	4.29	6.97	5.14	4.28
29	4.55		5.39	6.28	8.51	5.99	4.75	5.89	4.39	6.86	5.10	4.40
30	4.59		5.49	6.23	8.41	6.55	4.67	5.74	4.47	6.70	5.09	4.46
31	4.58		5.76		8.34		4.61	5.62		6.55		4.43
MIN	4.05	4.36	4.70	5.18	6.54	5.99	4.61	4.14	4.23	4.42	5.06	4.03
MAX	6.26	6.31	6.55	6.56	9.63	8.05	7.12	6.39	5.48	8.63	6.47	5.07
MEAN	4.83	5.14	5.48	5.98	7.79	6.73	5.77	4.89	4.60	7.29	5.62	4.71

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

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2018 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	M	4.09	4.15	9.53	10.37	9.28	12.54	7.14	5.66	9.49	7.14	5.84
2	4.65	4.10	4.27	9.64	10.35	8.86	12.25	6.90	5.57	9.48	7.05	5.92
3	4.50	M	4.64	9.51	10.70	8.17	11.94	6.61	5.50	9.29	6.94	5.87
4	4.56	4.04	5.04	9.40	11.07	7.82	11.68	6.43	5.40	9.23	6.86	5.65
5	4.43	4.02	5.72	M	11.13	7.54	11.66	6.24	6.49	8.95	6.83	5.55
6	4.66	4.03	6.10	8.80	10.86	7.25	13.01	6.39	8.23	8.85	6.86	5.45

7	4.38	4.02	6.01	8.71	10.53	7.02	13.31	6.27	9.33	8.60	6.87	5.48
8	M	M	5.49	8.58	10.24	6.86	12.89	6.08	9.16	8.63	6.87	5.57
9	4.34	3.99	5.43	8.42	9.98	6.78	12.39	5.97	8.57	8.88	6.87	5.28
10	4.32	3.95	5.33	8.35	9.55	6.80	11.79	5.92	7.83	9.43	6.73	4.96
11	4.38	3.97	5.33	8.04	9.21	6.68	11.39	5.84	7.36	9.76	6.72	5.10
12	M	3.96	5.13	7.89	9.64	6.75	11.26	5.71	6.99	10.02	6.64	5.26
13	M	3.94	5.01	7.82	10.19	6.96	11.46	5.57	6.68	9.98	6.47	5.45
14	4.26	3.95	5.07	8.03	10.28	6.78	11.92	5.43	6.43	9.69	6.37	5.49
15	M	3.97	5.30	8.47	10.34	7.55	11.94	5.32	6.23	9.46	6.31	5.30
16	4.15	3.92	5.79	8.76	10.40	8.00	11.78	5.22	6.04	9.30	6.36	5.37
17	M	3.94	5.97	9.16	10.19	7.48	11.59	5.22	5.90	9.10	6.39	5.35
18	4.09	3.95	5.98	9.22	9.82	7.24	11.32	5.15	5.77	8.98	6.29	5.29
19	4.06	3.95	6.30	9.18	9.25	7.23	11.02	5.18	5.73	8.80	6.20	5.30
20	4.11	3.97	6.34	9.00	8.89	7.60	10.61	5.29	7.23	8.91	6.08	5.39
21	4.10	3.97	6.57	8.82	8.55	8.39	10.31	5.94	9.91	8.91	M	5.35
22	4.17	3.95	6.53	9.07	8.35	10.23	10.06	6.34	12.49	8.76	5.97	5.28
23	4.16	3.93	6.45	9.63	8.08	11.60	9.67	6.28	12.71	8.66	5.99	5.23
24	4.13	3.89	6.72	10.19	7.96	12.21	9.35	6.17	12.64	8.47	6.15	5.17
25	4.12	3.88	7.09	10.52	8.44	12.12	9.04	5.98	12.29	8.31	6.24	5.14
26	4.10	3.87	7.25	10.66	8.80	11.90	8.71	5.84	11.75	8.03	6.13	5.18
27	4.14	3.90	7.23	10.45	9.01	12.15	8.49	5.70	11.32	7.87	5.93	5.46
28	4.19	3.98	7.23	10.53	8.75	12.51	8.21	5.62	10.60	7.69	5.79	6.88
29	4.20		7.57	10.47	8.40	12.30	8.03	6.10	10.02	7.54	5.65	7.69
30	4.15		8.29	10.59	8.76	12.08	7.73	6.12	9.66	7.38	5.56	7.46
31	4.15		9.09		9.22		7.42	5.84		7.24		6.62
MIN	4.06	3.87	4.15	7.82	7.96	6.68	7.42	5.15	5.40	7.24	5.56	4.96
MAX	4.66	4.10	9.09	10.66	11.13	12.51	13.31	7.14	12.71	10.02	7.14	7.69
MEAN	4.26	3.97	6.08	9.22	9.59	8.80	10.80	5.93	8.32	8.83	6.42	5.62

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2019 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	6.14	4.84	3.98	12.80	10.28	11.46	7.44	6.35	4.32	6.18	7.07	5.97
2	5.97	4.63	3.94	12.47	10.24	11.72	7.25	6.22	4.29	6.43	7.04	6.58
3	5.66	4.80	3.98	12.13	10.27	11.75	7.13	6.05	4.23	7.08	6.86	6.64
4	M	5.02	4.13	11.91	10.20	11.75	7.19	5.92	4.21	7.43	6.77	6.49
5	5.77	5.55	4.08	11.84	10.01	11.49	7.76	5.78	4.16	7.54	6.69	6.30
6	M	5.08	3.99	11.48	9.92	11.15	8.46	5.65	4.13	8.04	6.61	6.24
7	5.83	4.83	M	11.38	9.69	10.71	8.35	5.64	4.09	8.36	6.51	6.26
8	5.85	4.73	3.95	11.26	9.61	10.44	8.07	5.61	4.05	8.67	6.43	6.19
9	M	4.60	3.94	10.88	9.80	10.30	7.80	5.42	4.03	8.63	6.39	6.14
10	5.47	4.47	3.96	10.60	10.29	9.85	7.69	5.27	4.07	8.57	6.22	6.05
11	M	4.45	3.92	10.58	10.46	9.29	7.52	5.20	4.16	8.24	6.27	5.79
12	5.51	4.42	4.03	10.80	10.32	8.84	7.46	5.08	4.27	8.02	6.04	4.99
13	5.43	4.42	4.29	10.96	10.23	8.57	7.51	5.00	4.81	7.94	6.06	5.12
14	5.49	4.34	7.17	10.96	9.99	8.29	7.41	4.92	5.51	7.84	5.68	5.29
15	5.41	4.35	7.95	10.94	9.81	8.01	7.26	4.84	6.18	7.65	5.75	5.57
16	5.35	4.32	8.99	10.86	9.55	8.15	7.12	4.80	6.37	7.43	5.89	5.38
17	5.20	4.25	10.27	10.67	9.50	8.01	7.16	4.70	6.48	7.27	5.92	5.38
18	5.07	4.23	11.55	10.53	9.31	8.28	7.57	4.72	6.64	7.17	6.01	5.54
19	4.54	4.25	13.06	10.27	9.28	8.44	8.07	4.67	6.91	7.01	6.02	5.21
20	4.24	4.18	14.20	10.15	9.37	8.41	7.86	5.02	7.32	6.91	5.91	5.38
21	4.55	4.17	13.68	10.10	9.31	8.05	7.37	4.83	7.58	6.81	M	5.58
22	4.65	4.12	12.47	10.00	9.41	7.78	7.58	5.05	7.69	6.78	M	M
23	4.67	4.13	12.09	9.90	9.37	7.65	7.55	4.89	7.92	6.97	6.30	5.53

24	4.86	4.08	12.00	10.07	9.86	7.54	7.31	4.83	7.91	7.30	6.28	5.44
25	5.02	4.01	11.92	10.07	10.34	7.84	7.19	4.77	7.87	7.41	6.15	5.44
26	4.81	4.00	12.49	10.10	10.46	8.07	7.07	4.70	7.72	7.42	6.14	5.41
27	4.78	3.94	13.21	10.16	10.24	7.95	7.10	4.62	7.46	7.43	6.12	5.30
28	4.74	4.00	13.61	10.12	10.42	7.71	7.19	4.57	6.99	7.38	6.03	5.23
29	4.70		13.51	10.22	10.49	7.90	7.05	4.51	6.68	7.38	5.90	5.70
30	4.73		13.25	10.23	10.92	7.73	6.88	4.46	6.37	7.33	5.87	6.31
31	4.65		12.94		11.07		6.58	4.40		7.22		6.50
MIN	4.24	3.94	3.92	9.90	9.28	7.54	6.58	4.40	4.03	6.18	5.68	4.99
MAX	6.14	5.55	14.20	12.80	11.07	11.75	8.46	6.35	7.92	8.67	7.07	6.64
MEAN	5.15	4.44	8.75	10.81	10.00	9.10	7.45	5.11	5.81	7.48	6.25	5.76

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2020 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	6.16	4.83	5.46	8.74	6.07	8.42	6.56	5.23	3.57	3.14	3.19	3.03
2	6.13	4.86	6.08	8.65	5.99	8.07	6.40	5.08	3.56	3.12	3.17	3.05
3	5.95	4.88	6.52	8.61	5.98	7.80	6.30	4.98	3.54	3.12	3.21	3.23
4	5.91	4.90	7.19	8.54	5.92	7.62	6.23	4.92	3.49	3.11	3.20	3.31
5	5.82	4.86	6.91	8.53	5.84	7.52	6.13	4.80	3.44	3.13	3.22	3.29
6	5.77	4.91	7.45	8.55	5.83	7.37	6.01	4.66	3.56	3.12	3.19	3.31
7	5.64	4.79	7.50	8.55	5.81	7.20	5.91	4.65	3.49	3.11	3.18	3.22
8	5.47	4.81	7.53	8.37	5.82	7.02	5.82	4.57	3.49	3.10	3.24	3.29
9	5.44	4.65	7.67	8.23	5.80	6.82	5.81	4.74	3.59	3.11	3.18	3.22
10	5.48	4.89	7.77	8.13	5.76	6.73	6.05	4.57	3.62	3.10	3.37	3.20
11	5.26	4.65	8.21	7.86	5.73	6.96	5.98	4.53	3.63	3.09	3.28	3.22
12	4.93	4.61	8.50	7.76	5.74	6.95	5.88	4.48	3.60	3.17	3.30	3.23
13	4.77	4.61	8.69	7.54	5.66	6.73	5.78	4.43	3.61	3.16	3.24	3.20
14	5.15	4.41	8.54	7.32	5.60	6.65	5.54	4.37	3.59	3.14	3.25	3.04
15	5.04	4.62	8.50	7.27	5.63	6.43	5.41	4.36	3.60	3.19	3.29	2.92
16	5.25	4.46	8.28	7.12	5.58	6.37	5.33	4.32	3.62	3.17	3.23	3.05
17	4.65	4.45	7.98	7.08	5.91	6.26	5.19	4.30	3.61	3.18	3.23	3.14
18	4.59	4.53	7.70	7.05	6.77	6.20	5.11	4.23	3.63	3.15	3.23	3.14
19	4.73	4.56	7.52	7.15	7.88	6.16	5.05	4.19	3.65	3.11	3.27	3.16
20	4.38	4.59	8.03	7.22	8.46	6.99	4.94	4.15	3.71	3.12	3.27	3.04
21	4.72	4.52	8.79	7.05	8.63	7.23	4.95	4.09	3.72	3.14	3.21	3.14
22	4.72	4.42	8.99	6.93	8.42	6.99	4.88	4.17	3.80	3.16	3.23	3.15
23	4.76	4.59	8.37	6.77	8.24	6.88	4.79	4.06	3.77	3.22	3.23	3.18
24	4.85	5.40	8.32	6.68	8.26	7.00	5.03	4.02	3.89	3.17	3.31	M
25	4.85	6.08	8.16	6.58	8.33	6.93	5.20	3.98	3.97	3.17	3.34	3.32
26	4.89	5.96	8.03	6.46	8.80	6.76	5.42	3.69	4.09	3.17	3.30	2.96
27	4.88	5.60	8.02	6.34	8.92	7.09	5.56	3.67	3.96	3.19	3.28	2.96
28	4.88	5.52	8.13	6.31	9.14	7.00	5.65	3.63	4.12	3.19	3.26	2.95
29	4.86	5.27	8.20	6.24	9.19	6.83	5.59	3.62	3.17	3.18	3.26	2.94
30	4.85		8.38	6.18	9.05	6.73	5.50	3.61	3.18	3.18	3.21	2.96
31	4.80		8.66		8.77		5.35	3.61		3.20		2.94
MIN	4.38	4.41	5.46	6.18	5.58	6.16	4.79	3.61	3.17	3.09	3.17	2.92
MAX	6.16	6.08	8.99	8.74	9.19	8.42	6.56	5.23	4.12	3.22	3.37	3.32
MEAN	5.15	4.87	7.87	7.46	7.02	6.99	5.59	4.31	3.64	3.15	3.25	3.13

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)

River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

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2021 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.94	2.98	2.90	4.67	4.13	4.47	3.51	3.10	3.47	3.91	5.90	4.60
2	2.93	3.00	2.93	4.63	4.13	4.53	3.46	3.04	3.37	4.03	5.80	4.62
3	2.93	2.99	3.22	4.51	4.17	4.53	3.44	3.03	3.55	4.72	5.77	4.59
4	2.95	3.03	3.35	4.43	4.06	4.48	3.44	3.05	3.81	4.67	5.74	4.55
5	2.95	2.97	3.43	4.42	4.02	4.41	3.39	3.03	4.25	4.59	5.67	4.50
6	2.97	2.95	3.58	4.38	3.97	4.35	3.34	2.98	4.32	4.51	5.63	4.48
7	2.97	M	3.79	4.30	3.92	4.27	3.47	2.96	4.33	4.42	5.54	3.96
8	2.98	3.51	4.17	4.32	3.88	4.20	3.35	2.99	4.29	4.38	5.46	4.06
9	2.99	3.74	4.06	4.35	3.94	4.11	3.26	2.96	4.35	4.35	5.38	4.14
10	3.00	4.88	4.21	4.36	3.91	4.04	3.31	3.09	4.33	4.30	5.29	4.25
11	2.99	2.91	4.31	4.46	3.90	3.96	3.46	2.99	4.29	4.24	5.27	3.95
12	2.99	2.89	4.52	4.56	3.85	3.93	3.62	2.94	4.21	4.19	5.24	4.03
13	3.01	2.89	4.57	4.62	3.83	3.85	3.49	2.92	4.02	4.16	5.21	4.26
14	3.03	2.87	4.49	4.74	3.81	3.80	3.41	2.88	4.00	4.15	5.17	4.34
15	3.01	2.89	4.47	4.81	3.81	3.75	3.46	2.86	3.91	4.12	5.12	4.47
16	3.00	2.86	4.35	4.74	3.83	3.69	3.53	2.85	3.83	4.08	5.00	4.53
17	2.94	2.85	4.29	4.66	3.86	3.62	3.49	2.85	3.77	4.09	5.01	4.74
18	3.02	2.85	4.22	4.60	3.84	3.59	3.41	2.86	3.74	4.11	4.92	4.63
19	3.03	2.83	4.17	4.56	3.83	3.54	3.39	2.86	3.69	4.02	4.93	4.66
20	2.96	2.82	4.14	4.52	3.83	3.49	3.41	2.85	3.65	3.99	4.94	4.70
21	3.03	2.83	4.11	4.45	3.88	3.46	3.37	3.41	3.67	3.99	4.87	4.64
22	M	2.84	4.09	4.37	3.98	3.41	3.34	3.10	3.60	4.00	4.77	4.47
23	2.94	2.85	4.13	4.28	4.05	3.40	3.29	2.97	3.60	4.03	4.81	4.69
24	3.00	2.86	4.35	4.26	4.10	3.35	3.26	2.86	3.62	4.01	4.78	4.96
25	2.96	2.86	4.55	4.23	4.06	3.32	3.21	2.85	3.62	4.16	4.69	5.05
26	2.96	2.86	4.52	4.21	3.99	3.33	3.19	2.83	3.66	4.39	4.46	4.84
27	2.97	2.89	4.56	4.17	3.94	3.44	3.15	3.13	3.91	4.64	4.66	4.71
28	2.94	2.94	4.68	4.11	3.98	3.54	3.12	3.03	3.97	4.84	4.56	4.63
29	2.99		4.77	4.11	4.11	3.47	3.11	3.37	3.93	5.32	4.33	4.44
30	2.99		4.82	4.14	4.20	3.56	3.06	3.38	3.89	6.09	4.60	4.20
31	3.00		4.75		4.37		3.16	3.58		6.06		4.22
MIN	2.93	2.82	2.90	4.11	3.81	3.32	3.06	2.83	3.37	3.91	4.33	3.95
MAX	3.03	4.88	4.82	4.81	4.37	4.53	3.62	3.58	4.35	6.09	5.90	5.05
MEAN	2.98	3.02	4.15	4.43	3.97	3.83	3.35	3.02	3.89	4.41	5.12	4.48

West Fork Des Moines River at Humboldt, IA
Gage Zero - 1053.54 Ft. NGVD29
Flood Stage - 10 Ft.
Record High Stage - 15.4 Ft. (04/14/1969)
River Mile - 334.3 miles above the mouth of the Des Moines River
Location of Gage -

Located in Humboldt County IA. on the left bank 5 ft downstream from First Ave, 700 ft downstream from Humboldt Water Plant, .84 miles downstream of the dam, 3.2 miles upstream from Indian Creek and 3.9 miles upstream from the East Fork of the Des Moines River.

This gage is cooperatively operated by the US Army Corps of Engineers (Rock Island District), the US Geological Survey (Iowa District) and the Iowa Department of Transportation.

For official flow data, please visit the USGS website listed in the Additional Links for this station. The National Weather Service information is also linked in the Additional Links for this station.

2022 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC

1	4.13	3.60	3.40	4.49	5.04	5.80	4.91	3.97	3.31	2.95	2.84	2.70
2	4.20	3.57	3.51	4.63	5.29	6.40	4.80	3.89	3.29	2.94	2.83	2.75
3	3.80	3.57	3.73	4.61	5.63	6.64	4.71	3.85	3.25	2.94	2.83	2.65
4	4.11	3.54	3.86	4.50	5.93	6.53	4.64	3.80	3.21	2.94	2.86	2.79
5	4.41	3.51	3.96	4.54	6.08	6.43	4.56	3.74	3.18	2.94	2.85	2.78
6	4.44	3.51	3.94	4.59	6.17	6.41	4.58	3.69	3.15	2.94	2.84	2.81
7	4.52	3.49	3.79	4.60	6.21	6.40	4.81	3.72	3.13	2.92	2.80	2.75
8	4.87	3.45	3.65	4.60	6.18	6.60	5.45	3.75	3.11	2.91	2.81	2.73
9	4.20	3.43	3.69	4.65	6.15	6.56	5.36	4.02	3.08	2.91	2.83	2.73
10	4.00	3.42	3.63	4.52	6.09	6.49	5.99	3.98	3.32	2.92	2.87	2.77
11	4.00	3.45	3.51	4.47	6.00	6.39	6.14	3.89	3.17	2.92	2.82	2.77
12	3.92	3.65	3.43	4.49	5.94	6.40	6.04	3.83	3.09	2.96	2.86	2.79
13	3.94	3.49	3.45	4.69	5.97	6.42	5.89	3.79	3.07	2.89	2.85	2.82
14	3.92	3.48	3.86	4.71	6.51	6.30	5.72	3.73	3.05	2.89	2.86	2.87
15	3.86	3.45	3.86	4.67	6.69	6.28	5.56	3.68	3.06	2.88	2.88	2.92
16	3.81	3.44	4.01	4.67	6.65	6.64	5.41	3.65	3.04	2.88	2.86	2.63
17	3.78	3.42	3.96	4.58	6.59	6.93	5.31	3.62	3.04	2.88	2.80	2.76
18	3.81	3.43	4.00	4.54	6.57	6.84	5.19	3.55	3.03	2.86	2.68	2.70
19	3.85	3.48	4.03	4.39	6.61	6.53	5.07	3.51	3.02	2.86	2.68	2.77
20	4.01	3.39	4.05	4.47	6.66	6.26	4.98	3.54	3.01	2.86	2.78	2.78
21	4.02	3.44	4.09	4.58	6.71	6.06	4.85	3.53	2.99	2.88	2.87	2.73
22	3.81	3.44	4.17	4.50	6.73	5.94	4.75	3.67	2.95	2.87	2.88	2.74
23	3.79	3.50	4.33	4.62	6.62	5.78	4.65	3.57	2.96	2.85	2.89	2.59
24	3.71	3.43	4.55	4.78	6.44	5.63	4.56	3.52	3.01	2.85	2.93	2.37
25	3.72	3.41	4.72	4.84	6.33	5.49	4.45	3.49	3.01	2.86	2.92	2.26
26	3.74	3.39	4.74	4.89	6.21	5.43	4.37	3.46	2.95	2.85	2.97	2.72
27	3.65	3.37	4.73	4.89	6.12	5.37	4.30	3.41	2.94	2.85	2.92	2.58
28	3.65	3.35	4.68	4.76	6.08	5.27	4.23	3.50	2.92	2.84	2.85	2.67
29	3.70		4.54	4.69	5.97	5.14	4.17	3.45	2.96	2.84	2.88	2.68
30	3.64		4.47	4.89	5.87	5.00	4.12	3.43	2.96	2.84	2.54	2.68
31	3.63		4.47		5.76		4.04	3.35		2.84		2.68
MIN	3.63	3.35	3.40	4.39	5.04	5.00	4.04	3.35	2.92	2.84	2.54	2.26
MAX	4.87	3.65	4.74	4.89	6.73	6.93	6.14	4.02	3.32	2.96	2.97	2.92
MEAN	3.96	3.47	4.03	4.63	6.19	6.15	4.96	3.66	3.08	2.89	2.84	2.71

West Fork Des Moines River at Humboldt, IA
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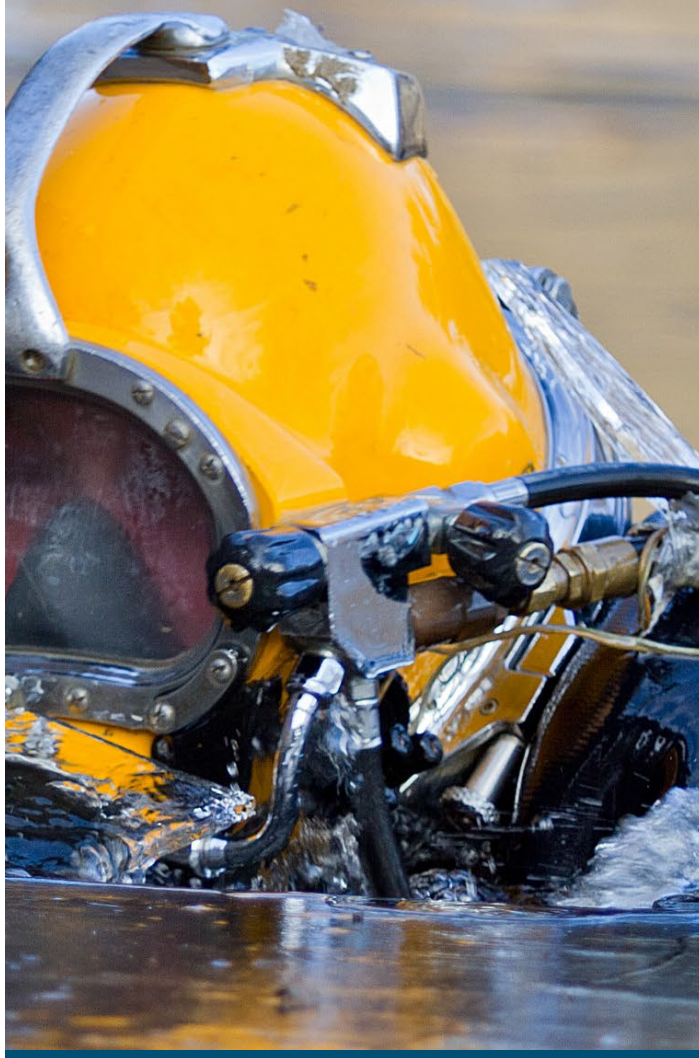
2023 Stage (Ft)

Day	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	2.72	2.83	5.88	5.40								
2	2.76	2.81	5.92	5.68								
3	2.80	2.72	5.50	5.75								
4	2.79	2.78	5.27	5.93								
5	2.77	2.79	5.09	6.19								
6	2.72	2.77	5.61	6.25								
7	2.72	2.78	5.39	6.12								
8	2.70	2.79	5.50	5.84								
9	2.73	2.80	5.34	5.78								
10	2.72	2.76	5.02	5.97								
11	2.73	2.81	4.87	6.27								
12	2.72	2.80	4.77	6.51								
13	2.69	2.81	4.54	6.65								
14	2.71	2.84	4.52									
15	2.73	4.59	4.45									
16	2.77	4.56	4.42									
17	3.08	3.96	5.13									

18	3.10	3.95	4.69	
19	2.84	4.22	5.13	
20	2.93	4.04	5.31	
21	2.94	3.67	5.38	
22	2.96	3.75	5.27	
23	2.89	3.73	5.84	
24	2.91	3.48	6.09	
25	2.90	3.48	6.01	
26	2.79	3.44	6.19	
27	2.93	4.42	6.18	
28	2.83	5.58	6.05	
29	2.78		5.70	
30	2.82		5.52	
31	2.80		5.40	
MIN	2.69	2.72	4.42	5.40
MAX	3.10	5.58	6.19	6.65
MEAN	2.82	3.43	5.35	6.03

Underwater Inspection Report



Inspection Performed For:

Humboldt County Conservation

Prepared by:

Marine Professionals Since 1919
BRENNAN

818 Bainbridge St.
La Crosse, WI 54603
608.784.7173
www.jfbrennan.com

Owner: Humboldt County Conservation
Structure(s): Reasoner Dam
Location: Humboldt, Iowa
Body of Water: Des Moines River
Inspection Dates: August 23, 2022

Table of Contents

Executive Summary

Project:	Underwater general condition assessment of the Reasoner Dam in Humboldt, Iowa.
Scope of Work:	Inspection included an overall structure condition assessment of the upstream and downstream portions of the Reasoner Dam.
Inspection Team:	Dive Supervisor: Sean McMullen Diver / Tender: Max Roozen Diver / Tender: Tanner Parenteau
Inspection Date:	August 23, 2022
Weather:	Partly Cloudy, 80°F
Water Visibility:	Fair, 1-foot.
Coordinates:	42.726678°, -94.229271°
Dive Mode:	Surface Supplied Air via Boat.
Access Location:	42°43'36.00"N, 94°13'44.21"W
Gauge Height:	3.55-feet on 12:00 August 23, 2022 at USGS 05476750 Des Moines River at Humboldt, Iowa.
Discharge:	280-CFS on 12:00 August 23, 2022 at USGS 05476750 Des Moines River at Humboldt, Iowa.

Summary of Findings:

- The upstream portion of the Eastern Bypass experienced two bands of scaling as well as an area spalling.
- The upstream portion of the Control Gates experienced a vertical crack in the corner of the East Pier.
    - The West Pier experienced scaling, spalling, and a vertical crack.
- The Control Gate was in poor condition with large holes present at waterline.
    - Throughout the Gate, the metal experienced multiple thin spots as well.
- The upstream portion of the Spillway Center Pier experienced heavy scaling with exposed rebar, and an area of spalling below the waterline.
- The upstream portion of Spillway 3 had two areas where a section of the lip was missing.
- Downstream portion of the Eastern Bypass experienced an area of spalling with exposed rebar.
- The downstream East Wingwall experienced multiple bands of scaling and two areas of spalling.
- The drainpipe on the East Wingwall experienced an area undermining with 92-inches of loss.
- Three areas of spalling and one area of scaling with exposed rebar were present on the downstream portion of the Control Gates.
- Two areas of undermining were present on the step-out of the apron of Spillway 1.
- The downstream West Wingwall experienced two areas of spalling.
- A large amount of timber debris was present throughout the dam.

Summary of Recommendations:

- Repair the areas of undermining on the downstream portion of Spillway 1.
- Repair the area of undermining present underneath the downstream drainpipe.
- Repair the holes and thin sections of metal on the Control Gate.
- Repair the areas of spalling and scaling with exposed rebar present.
- Remove the buildup of timber debris present along the upstream portion of the dam.

- Monitor the areas of spalling and scaling present on the upstream and downstream portions of the dam.
- Reinspect within 60 months unless a significant event occurs before then. This could include high water events, or anything that could alter the structural soundness of the dam.

1. Introduction/Background

J.F. Brennan Company, Inc. (Brennan) performed an underwater inspection of the Reasoner Dam at Humboldt County Conservation's facility near Humboldt, Iowa (See 'Appendix A, Figure 1'). A dive inspection was conducted on the upstream and downstream portions of the in-water structures to determine the general condition of the underwater components. Specific attention was given towards determining if scour, undermining, and/or piping were present along any portions of the structure. Environmental conditions, such as channel bed material, biological growth, and drift/debris, were also generally noted.

Structure Data:

Owner:	Humboldt County Conservation
Structure:	Reasoner Dam
Location:	Humboldt, Iowa
Waterway:	Des Moines River

2. Method of Investigation

A Level I visual and tactile inspection of the structure and surrounding riverbed was used to observe signs of distress and deterioration including, but not limited to; movement, cracks, delamination, scaling, spalling, exposed reinforcing steel, collision damage, scour, and undermining.

The inspection was conducted using surface-supplied air with equipment including a Kirby Morgan dive helmet with full diver-to-surface communications; and a helmet-mounted Outland Video Camera / Light combo with a video recorder providing live streaming onto the boat.

The dive team began on the upstream portion of the dam. The diver first inspected the eastern bypass, then moved to the west and inspected the control gates and the spillways. On the downstream portion of the dam, the diver began on the eastern bypass. Then the diver inspected the east wingwall, control gates, and the spillways.

All dives were conducted in accordance with Brennan's Safe Diving Practices Manual as well as all pertinent ADCI, OSHA, and USCG regulations. Additionally, all dives adhered to the dive schedules and decompression tables outlined in the U.S. Navy Dive Manual, Rev. 7.

All measurements referenced hereinafter were approximate and reflect the conditions on-site at the time of the inspection.

The three (3) levels of underwater inspections are described as:

- **Level I** - A simple visual or tactile (by feel) inspection, without the extensive use of tools or measuring devices. It is usually employed to gain an overview of the structure and will precede or verify the need for a more detailed Level II or Level III inspection.
- **Level II** - A detailed inspection which involves physically cleaning or removing growth from portions of the structure. In this way, hidden damage may be detected and assessed for severity. This level is usually performed on at least a portion of a structure, supplementing a Level I.
- **Level III** - A highly detailed inspection of a structure which is warranted if extensive repair or replacement is being considered. This level requires extensive cleaning, detailed measurements, and testing techniques that may be either destructive or non-destructive in nature.

3. Inspection Findings

*To view/download the footage from the inspection please follow the instructions below. The SharePoint site will remain active for 30 days, during this period please download the files if you want to keep them for your record. After the 30-day period, the site will be removed, and you will no longer be able to access the videos through the SharePoint link.

- Reasoner Dam (Click and follow link directly. Your email address must have been given access for you to open the folder. If you do not have access and need it, please reach out so we can get your email address added.)

Upstream, Eastern Bypass

- **Station 1:** A band of scaling was present across the entire span at waterline (See 'Appendix A, Figure 3').
  - The band measured 10-feet wide by 2 to 3-feet tall with 3-inches of loss.
- **Station 2:** An area of spalling was present 2-feet above waterline at the east corner of the gate (See 'Appendix A, Figure 4').
  - The spalling measured 65-inches wide by 21-inches tall with up to 2-feet of loss.
- **Station 3:** The timbers on the wood gate appeared weathered but felt firm to the touch (See 'Appendix A, Figure 5').
  - The metal frame experienced light rust and was in satisfactory condition.
- **Station 4:** A band of scaling was present at the freeze/thaw band along the corner of the gate and the headwall (See 'Appendix A, Figure 6').
  - The band of scaling measured 25-inches tall with 1 to 5-inches of loss.
- Water depth at this location was 4-feet.

Upstream, Control Gates

- **Station 5:** A vertical crack was present in the corner of the East Pier (See 'Appendix A, Figure 8').
  - The crack measured 58-inches tall by 0.25 to 5-inches wide with up to 4-inches of loss.
- **Station 6:** The gate was in poor condition with large holes present at waterline (See 'Appendix A, Figures 10-12').
  - The gate experienced thin metal throughout.
  - Water was leaking through the holes at waterline.
  - **It is recommended that this area be considered for repairs.**
- Left Stoplog Groove: The steel imbed appeared to be in satisfactory condition with light rust present.
- Middle Support: The support was in satisfactory condition.
- Right Stoplog Groove: The steel imbed appeared to be in satisfactory condition with light rust present.
- A large amount of debris was present in front of the gate. The diver was unable to see the sill.
- **Station 7:** An area of heavy scaling was present at waterline on the West Pier (See 'Appendix A, Figure 13').
  - The scaling measured 2-feet wide by 4-feet tall with 2-inches of loss.
- **Station 8:** An area of spalling was present at waterline on the West Pier (See 'Appendix A, Figure 14').
  - The spalling measured 4-feet wide by 27-inches tall with 32-inches of loss.
- **Station 9:** A vertical crack was present above waterline on the West Pier (See 'Appendix A, Figure 15').
  - The crack measured 0.5 to 2-inches wide by 5-inches tall with 17-inches of loss.

Upstream, Spillways 1 and 2

- The substrate mainly consisted of sand and mud.
- The spillway had a 1-foot lip.
- The spillway was in satisfactory condition.
- **Station 10:** Heavy scaling was present on the east side of the center pier (See 'Appendix A, Figure

17').
    - The scaling measured 57-inches wide by 46-inches tall with 0.5-inches to 6.5-inches of loss.
- **Station 11:** Heavy scaling with exposed rebar was present on the west side of the center pier (See 'Appendix A, Figure 19').
    - The scaling measured 4-feet wide by 4.5-inches tall with 7-inches of loss.
- **Station 12:** An area of spalling was present on the tip of the pier just below the end of the armor.
    - The spalling was present 3-feet below waterline and measured 4-feet wide by 3-inches tall with 16-inches of loss.
- Spillway 2: The spillway was in satisfactory condition.
- Water depth along Spillways 1 and 2 was 5-feet.

Upstream, Cell Sections 1-7

- Light rust was present throughout.
- A band of delamination was present throughout each of the cells (See 'Appendix A, Figures 21-26').
    - The delamination extended 3-feet above and 4-feet below waterline and experienced 1/16-inch of loss.
    - No spilt knuckles or holes were found.
- Water depth at these locations varied from 7 to 11-feet.

Upstream, Spillway 3

- Multiple areas of timber debris were present across the Spillway.
- **Station 13:** A quarter of the way across the spillway, a section of the lip of the spillway was missing.
    - The section measured 15-feet wide and the top 3-inches of the lip was missing.
- **Station 14:** Halfway across the spillway, a section of the lip of the spillway was missing.
    - The section measured 15-feet wide and the top 3-inches of the lip was missing.
- Upstream West Wingwall: The wingwall was in satisfactory condition throughout.

Downstream, Eastern Bypass

- The concrete appeared to be in satisfactory condition throughout.
- The downstream vertical supports, that hold the timbers, experienced heavy rust with delamination present at waterline (See 'Appendix A, Figure 35').
- **Station 15:** An area of spalling with exposed rebar was present 1.5-feet upstream from the downstream corner.
    - The spalling was 1-foot below waterline and measured 6-feet wide by 1.5-feet tall with 2 to 7-inches of loss.

Downstream, East Wingwall

- **Station 16:** A band of scaling was present at the freeze/thaw zone (See 'Appendix A, Figure 36').
    - The scaling extended from the drainpipe to the east end of the wall and measured 23-inches tall with up to 7-inches of loss.
- **Station 17:** An area of undermining was present under the drainpipe (See 'Appendix A, Figure 38').
    - The undermining measured 8-feet wide by 15-inches tall with up to 92-inches of loss under the drain.
    - **It is recommended that that this area be considered for repairs.**
- **Station 18:** A band of moderate to heavy scaling was present (See 'Appendix A, Figure 39').
    - The scaling measured 2-feet tall with 0.5 to 9-inches of loss.
    - The loss was most significant towards the bottom of the scaling.
- **Station 19:** An area of spalling was present.
    - The spalling measured 35-inches wide by 38-inches tall with up to 2-feet of loss.
- **Station 20:** A band of heavy scaling was present.
    - The scaling had up to 2-inches of loss.

- **Station 21:** A man made hole was present on the wall (See 'Appendix A, Figure 41').
- **Station 22:** An area of spalling was present on the corner of the wall (See 'Appendix A, Figure 43').
  - The spalling measured 42-inches wide by 28-inches tall with 13-inches of loss.

Downstream, Control Gates

- **Station 23:** An area of spalling was present on the inside of the gate tailrace (See 'Appendix A, Figure 44').
  - The spalling measured 6-feet wide by 3-feet tall with up to 4-inches of loss.
- **Station 24:** An area of spalling was present (See 'Appendix A, Figure 44').
  - The spalling measured 2-feet wide by 9-inches tall with 1-inch of loss.
- **Station 25:** An area of spalling was present at waterline (See 'Appendix A, Figure 45').
  - The spalling measured 15-inches wide by 9-inches tall with 1-foot of loss.
- **Station 26:** An area of heavy scaling with exposed rebar was present above waterline (See 'Appendix A, Figure 46').
  - The scaling had up to 1-foot of loss.

Downstream, Spillway 1

- **Station 27:** An area of undermining was present on the step-out of the apron.
  - The undermining measured 30-feet wide by 3-feet tall with up to 2.5-feet of loss.
  - **It is recommended that that this area be considered for repairs.**
- **Station 28:** An area of undermining was present on the step-out of the apron.
  - The undermining measured 20-feet wide by 3-feet tall with up to 2-feet of loss.
  - **It is recommended that that this area be considered for repairs.**
- **Station 29:** An area of heavy scaling with exposed rebar was present on the Center Pier (See 'Appendix A, Figure 50').
  - The area of scaling experienced 4-inches of loss.

Downstream, Cell Sections

- The cells experienced light to moderate rust throughout.
- The cells experienced sporadic areas of delamination with 1/16 to 1/4-inch of loss (See 'Appendix A, Figure 52').

Downstream, Spillways 2 and 3

- No areas of undermining were found along either of the spillways.

Downstream, West Wingwall

- **Station 30:** A band of spalling ran the entire length of the wingwall.
  - The spalling was 5-inches below waterline and measured 8-inches tall with 7-inches of loss.
- **Station 31:** An area of spalling was present on the downstream corner of the wingwall at waterline.
  - The spalling measured 19-inches wide by 20-inches tall with 17-inches of loss.

4. Channel Bottom and Scour Assessment

At the time of inspection, the Des Moines River was experiencing generally normal flow conditions. The bottom substrate mainly consisted of sand, mud, and timber debris. Two areas of undermining were present on the downstream portion of Spillway 1.

5. Evaluation and Summary

Based on the underwater inspection findings at the time of inspection, the Reasoner Dam was considered to be in fair condition. Limited minor to moderate defects or deterioration were observed with localized

areas of moderate to advanced deterioration present.

The upstream portion of the Eastern Bypass experienced a band of scaling as well as an area of spalling on the east concrete wall. A band of scaling was present at waterline along the west portion of the gate and extended along the headwall. The upstream portion of the Control Gates experienced a vertical crack in the corner of the East Pier. The gate itself was in poor condition with large holes present at waterline. The gate had areas of thin metal throughout. The West Pier experienced heavy scaling, spalling, and a vertical crack. The upstream portion of Spillway 1 was in satisfactory condition. The center pier experienced heavy scaling on both sides of the pier. An area of exposed rebar was present on the west side of the pier. An area of spalling was present below waterline. The cell sections 1-7 experienced a band of delamination 3-feet above and 4-feet below waterline with up to 1/4-inch of loss. The upstream portion of Spillway 3 had two areas where a section of the lip was missing.

The downstream of the Eastern Bypass experienced an area of spalling with exposed rebar 1.5-feet upstream from the downstream corner. The downstream East Wingwall experienced multiple bands of scaling along the freeze/thaw line. An area of undermining was present beneath the drainpipe. Two areas of spalling were present as well. Downstream of the control gates experienced 3 areas of spalling as well as an area of heavy scaling with exposed rebar. Two areas of undermining were present on the downstream portion of Spillway 1. The downstream portion of the West Wingwall experienced two areas of spalling.

Refer to ‘Routine Underwater Condition Assessment Rating Descriptions’ below for explanations of above noted condition rating(s).

6. Recommendations

It is recommended that the following areas are considered for repairs: The two areas of undermining on the downstream portion of Spillway 1, the area of undermining present underneath the drainpipe, the holes and thin sections of metal on the Control Gate, and the various areas of scaling and spalling with exposed rebar present. It is also suggested that the timber debris be removed from the upstream portion of the dam.

It is also recommended that the following areas be periodically monitored to determine if further deterioration has occurred: the areas of spalling and scaling present throughout the dam.

Brennan recommends that the entire underwater sections of the facility, be inspected within a 60-month maximum interval. An immediate post-event inspection should be conducted on the structure after any significant or unusual event, including, but not limited to: flood, earthquake, storm, vessel impact, or other event that has potential to cause damage to the structure. Drift and debris material should be cleared to prevent scour and undermining or any further damage to the structure.

Routine Underwater Condition Assessment Rating Descriptions

Good: No visible or only minor damage was noted. Structural elements may show very minor deterioration, but no overstressing was observed. No repairs are required.

Satisfactory: Limited minor to moderate defects or deterioration are observed, but no overstressing was observed. No repairs are required.

Fair: All primary structural elements are sound, but minor to moderate defects or deterioration was observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs recommended, but the priority of the recommended repairs was low.

Poor: Advanced deterioration or overstressing was observed on widespread portions of the structure but does not significantly reduce the load-bearing capacity of the structure. Repairs may need to be carried out with moderate urgency.

Serious: Advanced deterioration overstressing, or breakage may have significantly affected the load-bearing capacity of primary structural components. Local failures are possible and loading restriction may be necessary. Repairs may be carried out on a high-priority basis with urgency.

Critical: Very advanced deterioration, overstressing or breakage has resulted in localized failure(s) of primary structure components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a very high priority basis with strong urgency.

We appreciate the opportunity to work with Humboldt County Conservation on this project. If you have any questions or concerns regarding the information in this report or if Brennan can be of any further assistance, please do not hesitate to contact me directly.

Respectfully submitted,

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Dive Division
cell 608.799.1978
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Marine Professionals Since 1919
BRENNAN

Appendix A – Photographs

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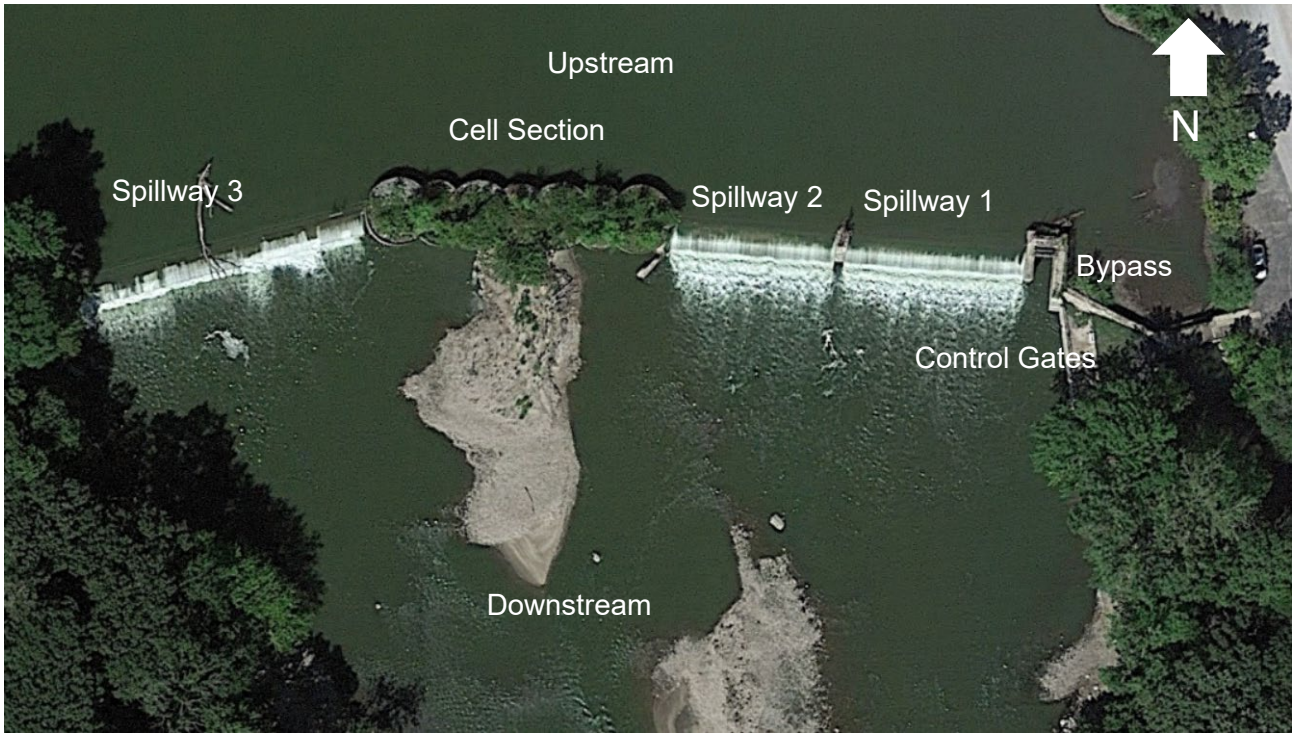

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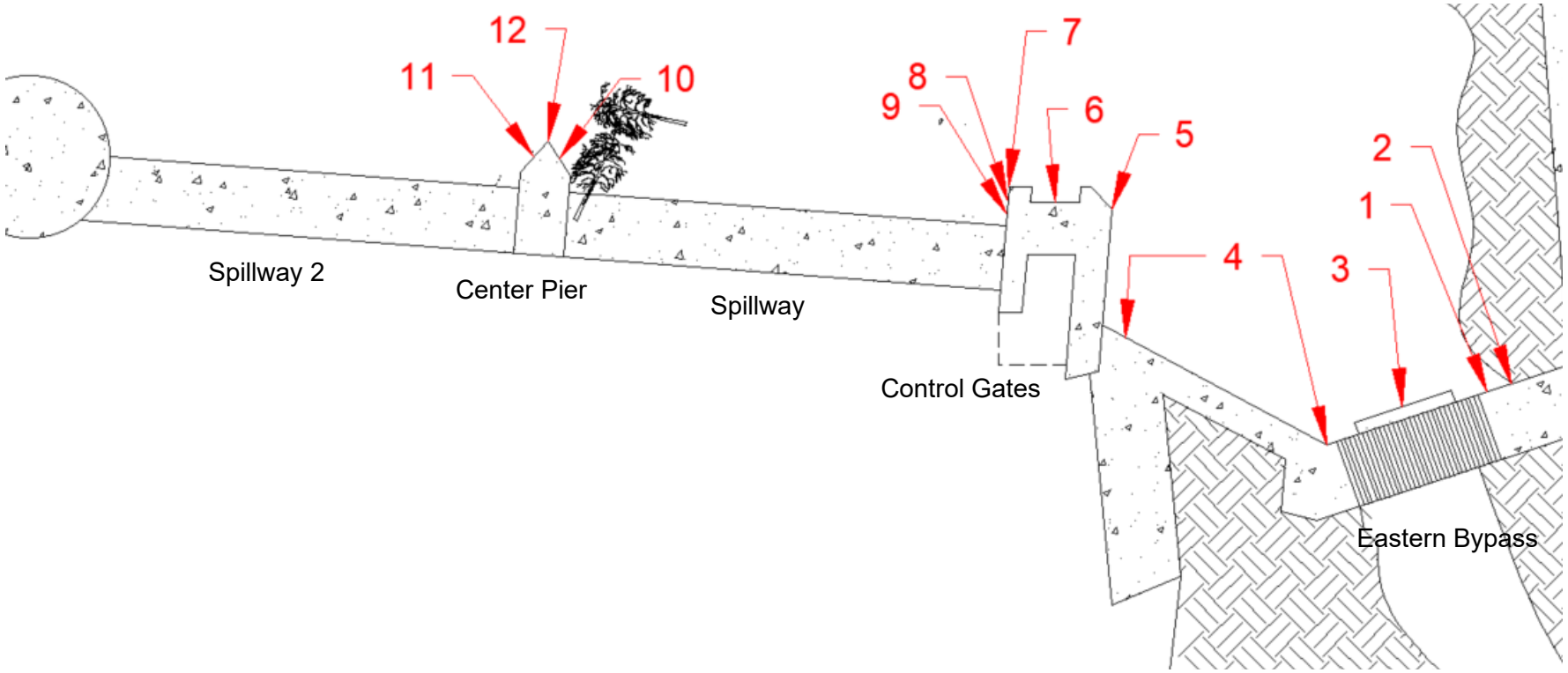
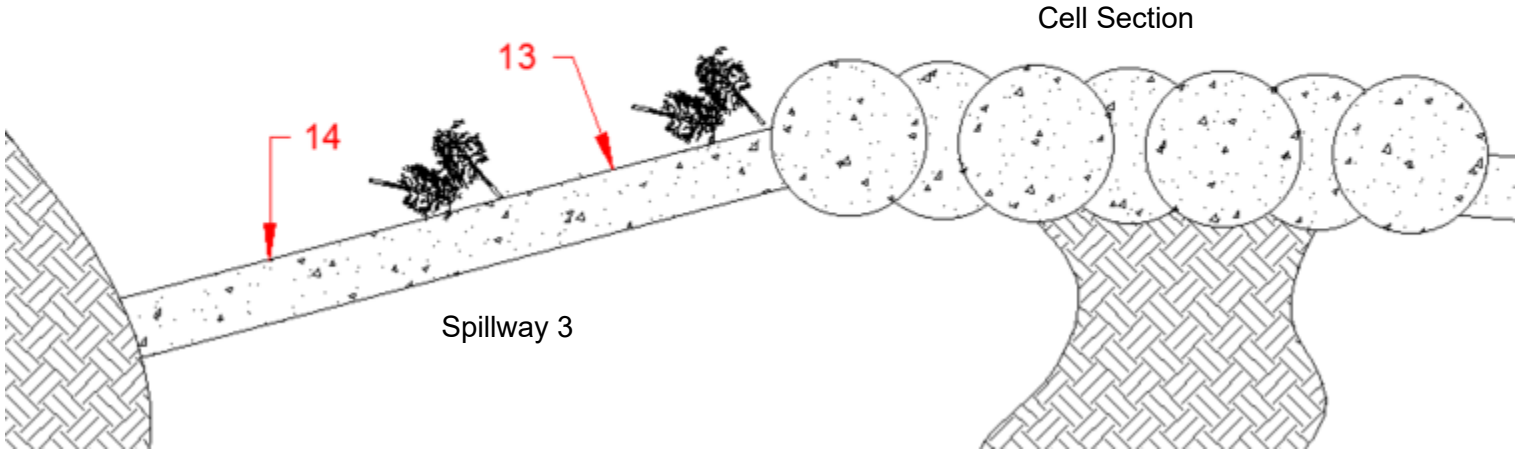


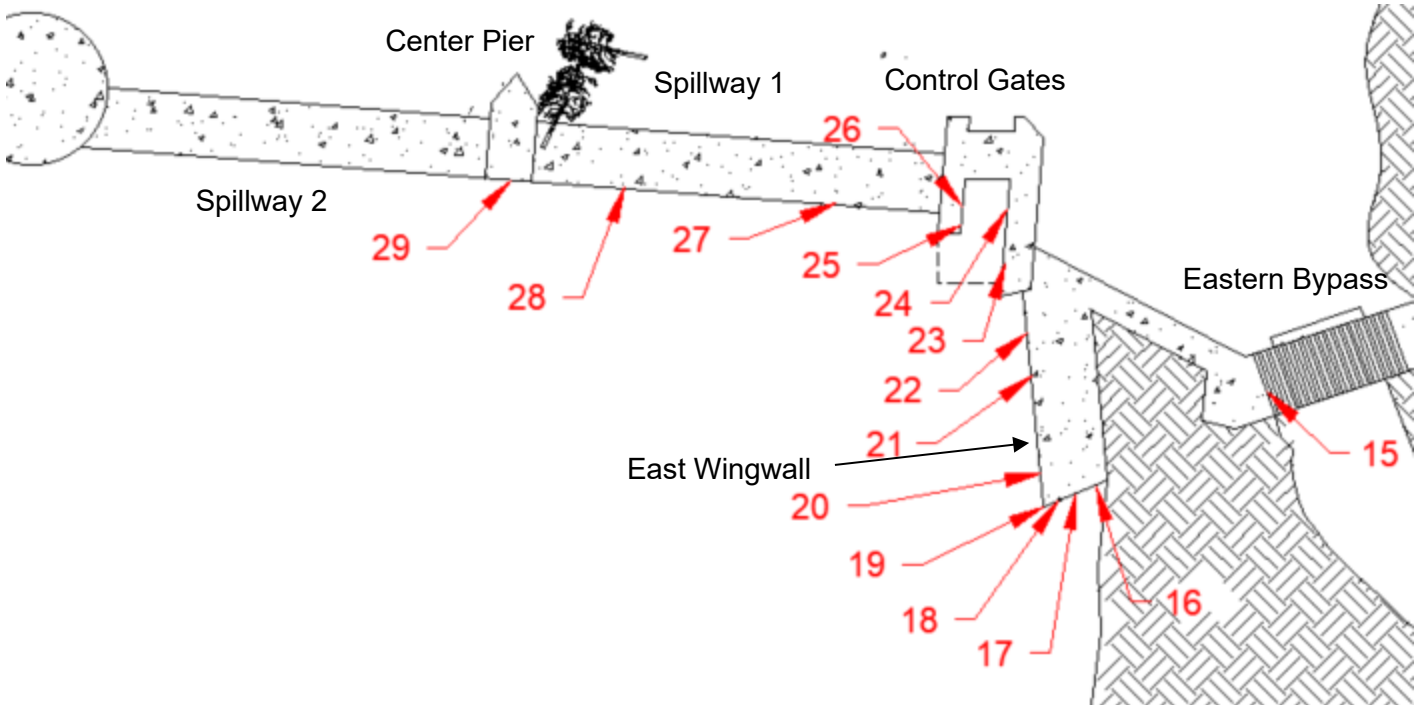
Stationing 1 – Upstream Stationing: Eastern Bypass, Control Gates, Spillways 1 and 2

Station	Deficiency Type	Width	Height	Loss	Comments
1	Scaling	10’	Varied	3”	Height varied from 2 to 3-feet
2	Spall	65”	21”	2’	East Corner of the Wall
3	Weathered Timber	N/A	N/A	N/A	Timber appeared weathered, felt firm to the touch
4	Scaling	N/A	25”	Varied	Loss varied 1 to 5-inches, extended from corner of gate along headwall
5	Vertical Crack	Varied	58”	4”	Width varied from 0.25 to 5-inches
6	Holes in Gate	N/A	N/A	N/A	Holes were present near waterline
7	Scaling	2’	4’	2”	At waterline, West Pier
8	Spall	4’	27”	32”	At waterline, West Pier
9	Vertical Crack	Varied	5”	17”	Above Waterline, West Pier
10	Scaling	57”	46”	Varied	Loss varied from 0.5 to 6.5-inches, Center Pier
11	Scaling – Exposed Rebar	4’	4.5”	7”	West side of Center Pier
12	Spall	4’	3”	16”	3-feet below waterline



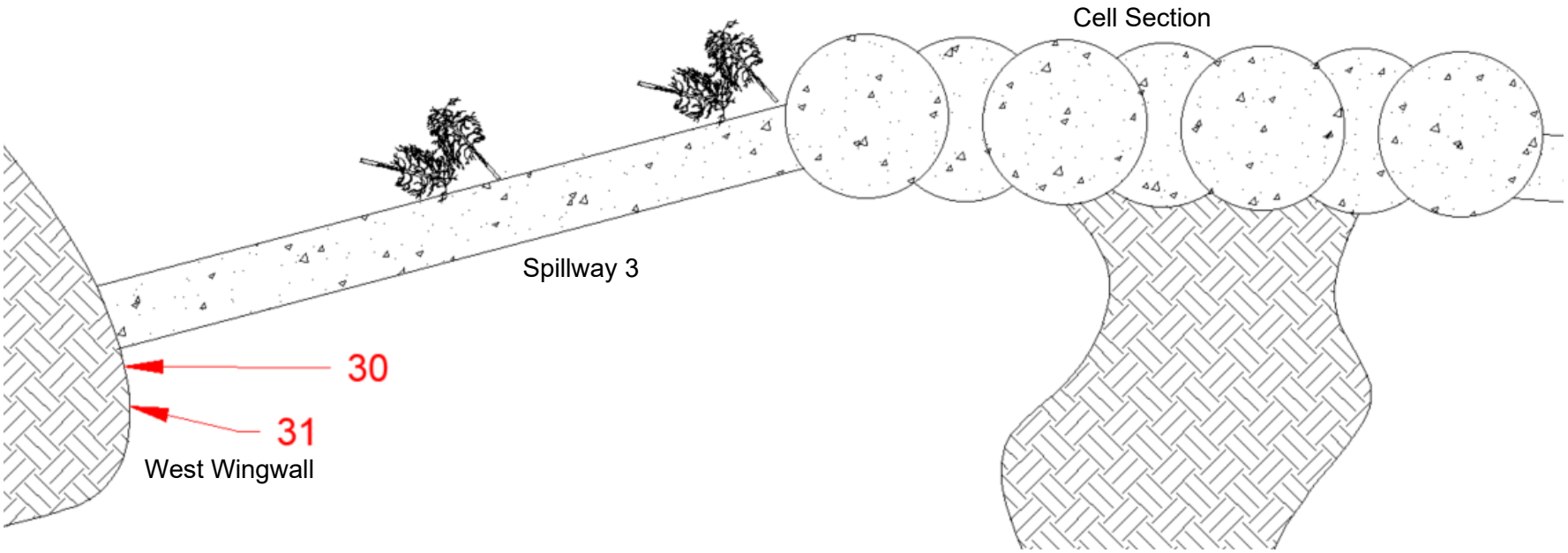
Stationing 2 – Upstream Stationing: Cell Section and Spillway 3

Station	Deficiency Type	Width	Height	Loss	Comments
13	Missing Lip Section	15’	N/A	3”	15-foot section of missing lip from the Spillway
14	Missing Lip Section	15’	N/A	3”	15-foot section of missing lip from the Spillway



Stationing 3 – Downstream Stationing: Eastern Bypass, East Wingwall, Control Gates, Spillways 1 and 2

Station	Deficiency Type	Width	Height	Loss	Comments
15	Spall – Exposed Rebar	6’	1.5’	Varied	Loss varied from 2 to 7-inches
16	Scale	N/A	23”	7”	Scale extended from drainpipe to end of wall
17	Undermining	8’	15”	92”	Undermining was present underneath the drainpipe
18	Scaling	N/A	2’	Varied	Loss varied from 0.5 to 9-inches
19	Spall	35”	38”	2’	
20	Scaling	N/A	N/A	2”	
21	Manmade hole	N/A	N/A	N/A	At waterline
22	Spall	42”	28”	13”	Present in the corner of the wall
23	Spall	6’	3’	4”	Above waterline
24	Spall	2’	9”	1”	
25	Spall	15”	9”	1’	
26	Scaling – Exposed Rebar	N/A	N/A	1’	Above waterline
27	Undermining	30’	3’	2.5’	Undermining was on step-out of the apron of Spillway 1
28	Undermining	20’	3’	2’	Undermining was on step-out of the apron of Spillway 1
29	Scaling – Exposed Rebar	N/A	N/A	4”	Present on the Center Pier of Spillway



Stationing 4 – Downstream Stationing: Cell Section, Spillway 3, West Wingwall

Station	Deficiency Type	Width	Height	Loss	Comments
30	Spall	N/A	8”	7”	5-inches below waterline, extended length of wingwall
31	Spall	19”	20”	17”	At waterline, on downstream corner

DAM
CONSTRUCTION SERVICES

Marine Professionals Since 1919
BRENNAN

Marine Professionals Since 1919

J.F. Brennan Company, Inc. (Brennan) is a marine construction and environmental remediation firm that specializes in dam construction and repair projects located throughout the inland waters of the United States. We provide quality construction services on several types of dam structures for utility companies, paper mills, municipalities, the U.S. Army Corps of Engineers, and more.

What sets Brennan apart?

- Everything we do takes place around the water, and as a result we have the right people, equipment, and programs necessary to mitigate associated risks.
- We provide construction services both above and below the waterline, enabling us to self-perform construction and repair services on the entire structure.
- Our fleet of well-maintained marine equipment is the largest of its kind in the Upper Midwest. We can offer both portable equipment for remote jobsites as well as load-line equipment for navigable waterways.

Our Services

- Concrete Placement
- Gates and Actuators
- Intakes and Headworks
- Underwater Construction
- Cofferdams
- Scour and Erosion Remediation
- Underwater Inspections and Survey

Our Goal

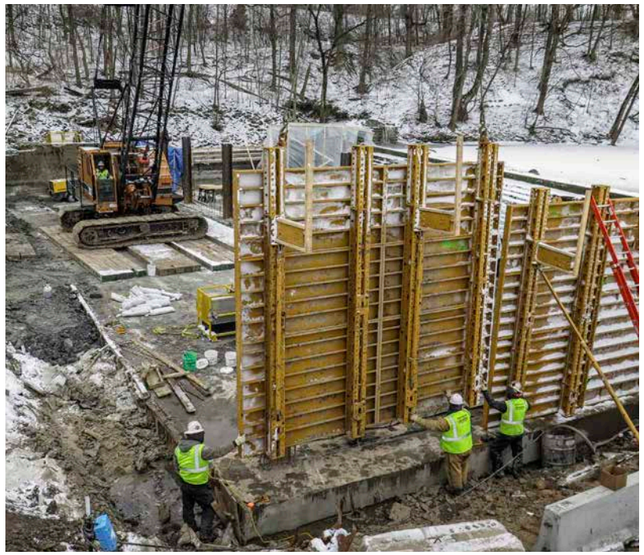
At Brennan we strive to successfully complete challenging projects safely and on time, and provide services that deliver maximum quality and value to dam owners and engineers.

Brennan has the ability to place concrete using several different methods, without applying unnecessary stress on dam structures. From mass pours, to small repair patches, we can offer several solutions to fit the unique scope of each individual project. This includes traditional concrete placement methods, precast attachments, preplaced aggregate concrete, and more.

OUR SPECIALTY!

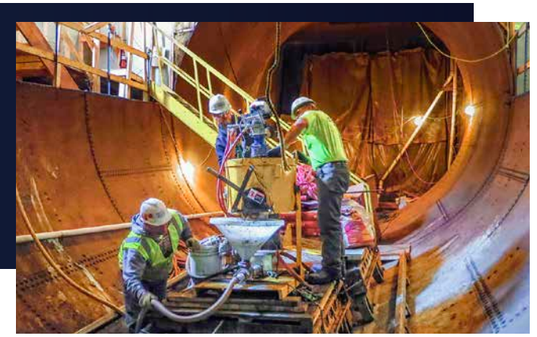
We work on every part of the dam! Brennan has the experience needed to construct new or rehabilitate existing:

- Canals
- Flowlines
- Intakes
- Lock Chambers
- Outflows
- Penstocks
- Piers
- Powerhouses
- Sills
- Spillways
- Tailraces



Grouting

Grouting is an effective way to consolidate a structure when voids are found within. It can be accomplished above and below the waterline, and often results in crucial re-strengthening of critical structures. It is also extremely effective in stopping leaks!



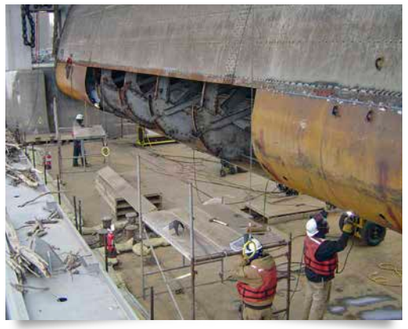
Our large fleet of specialty marine equipment provides safe working platforms even during the most challenging conditions. We specialize in finding innovative solutions that increases safety for our crews, the quality of our work, and the value delivered to our clients.

GATES & ACTUATORS

Gate Replacements & Installation

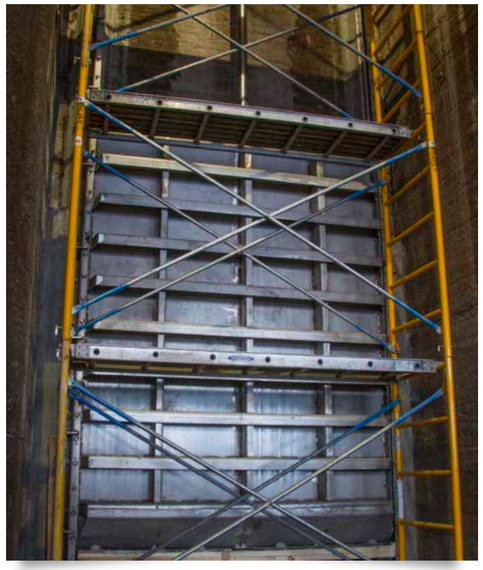
From large roller gates to small sluice gates, Brennan can replace or rehabilitate mechanical water control components of all sizes and designs by using innovative and cost effective approaches. This includes total replacement, repairs, and even complete rebuilds while left in place.

- Bascule
- Crest
- Headgates
- Inflatable
- Lift
- Roller
- Sluice
- Tainter (Radial)
- Miter
- Wicket



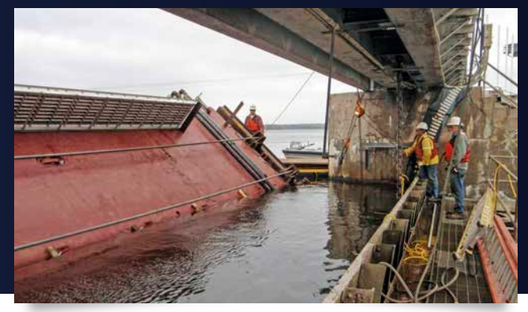
Mechanical and Millwright Services

Brennan can also provide millwright and mechanical services to gate control equipment. This includes hoists, chains, trunnion pins and bushings, actuators, and more. Our ability to think creatively has led to several innovative solutions that have provided economic benefits to our clients. We have developed proprietary processes and tools that have increased the effectiveness and safety of our work on gates, actuating equipment, seals, seal heaters, deicing systems, and the surrounding structure.



No Bulkheads? No Problem!

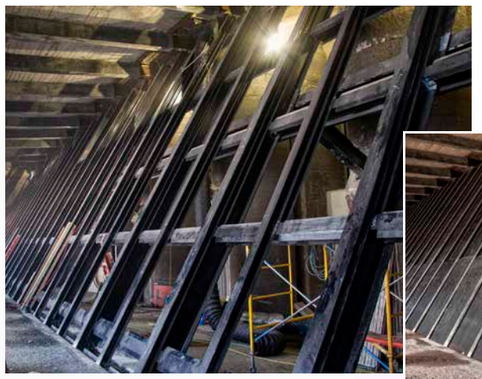
Our patented floating bulkhead system can be configured to fit several types of spillway bay sizes and pier nose shapes. We also have several types and sizes of box-type cofferdams that can be temporarily set and dewatered to allow access to gate structures.



Structural Steel

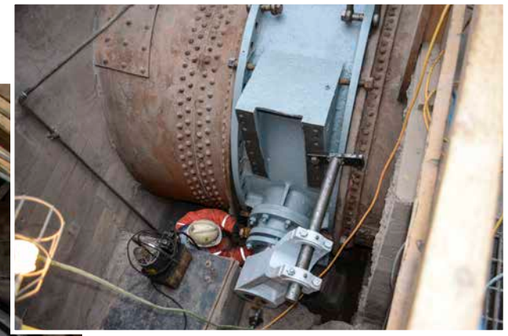
Brennan can also implement construction and replacement of structural steel components. We often work closely with both dam owners and engineers to develop feasible construction processes and cost analyses on difficult rehabilitations and installations.

- Bulkheads and Slots
- Diversions
- Fish Ladders
- Flow Lines
- Inflatable Dams
- Penstocks
- Rail Systems
- Screens
- Service Bridges
- Stop Logs and Slots
- Tailraces
- Trash Racks



Steel and Mechanical

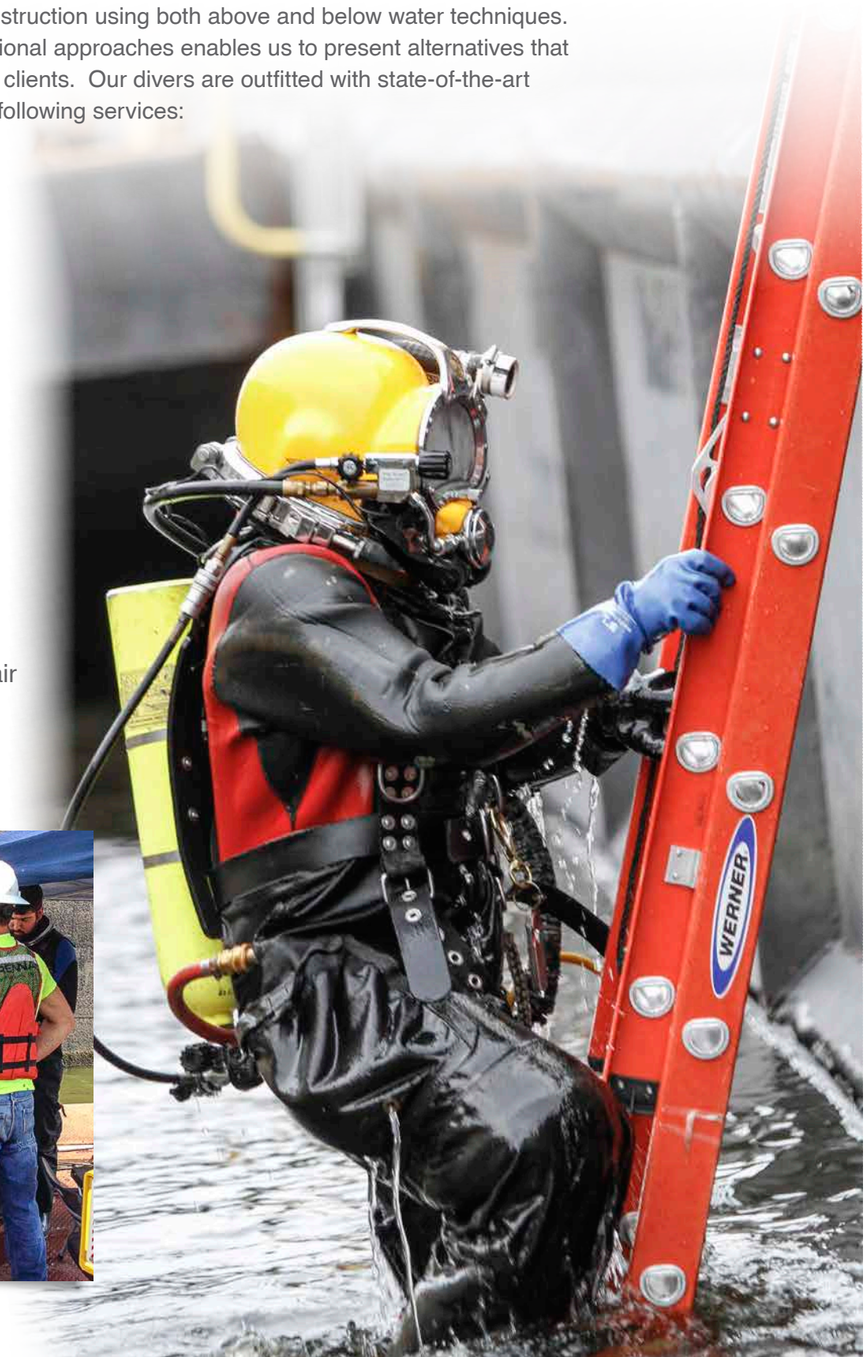
Our mechanical services don't just pertain to gate equipment. Brennan has rehabilitated several key areas on dam structures requiring precision manufacturing, alignment, and placement. We excel at providing turnkey installations and reliable maintenance to several types of water control structures. This includes trash rakes, control valves, fish protection screens, recesses, access equipment, powerhouse work, and more.

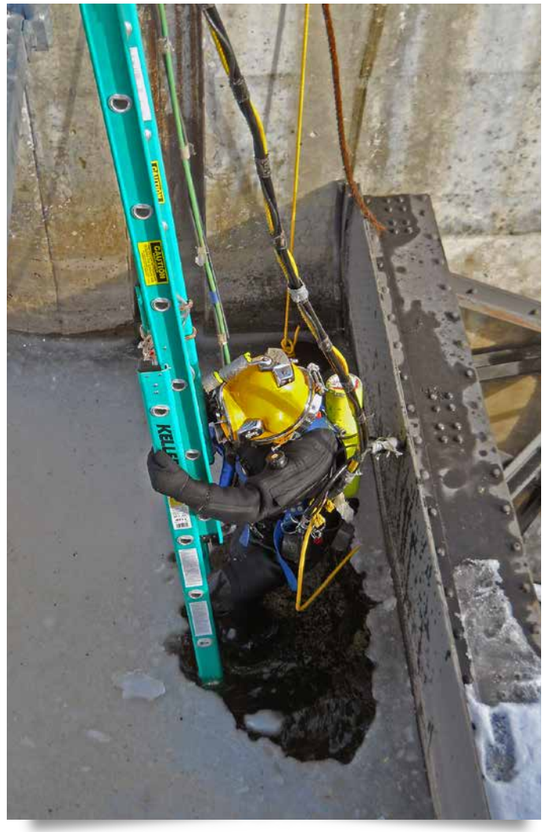


UNDERWATER CONSTRUCTION

Brennan has over 30 divers on staff that have construction expertise on dam structures of all types and sizes. This distinguishes us as one of a very few companies in the United States that can self-perform construction using both above and below water techniques. The ability to think outside traditional approaches enables us to present alternatives that often deliver cost savings to our clients. Our divers are outfitted with state-of-the-art equipment and can provide the following services:

- Cast in Place Concrete
- Cleaning
- Concrete Pile Jackets
- Demolition
- Micro-dredging
- Precast Concrete
- Preplaced Aggregate Concrete (PAC)
- Pressure Grouting
- Scour and Erosion Repair
- Welding & Cutting





Brennan is a proud member of the Association of Diving Contractors International (ADCI), a governing body that sets very strict standards to create the safest working environment possible. All of our divers hold an ADCI card relative to his or her position, and will understand and perform responsibilities with a very high level of safety and professionalism. Backed by one of the largest fleets of marine equipment in the nation, Brennan divers can undertake both large-scale and small-scale construction projects in a variety of challenging conditions. This includes deep dives in which a decompression chamber is required, winter-condition diving underneath the ice, and other challenges.

Cofferdams

Since the early 1930s Brennan has been installing cofferdams to carry out water-based construction and repair services. There are many risks involved in installing and maintaining an effective cofferdam such as ice, current, vessel traffic, rock fissures, soil conditions, flash flooding, and more. We can fabricate, install, dewater, and maintain several types that will minimize risk and best fit each unique project.

- Box-Type
- Braced
- Double-Walled Sheet Pile
- Cellular
- Earthen
- Geotextile Tubes
- Single-Walled Sheet Pile
- Portadams™
- AquaDams®

Dewatering and Water Management

One of the most difficult challenges of maintaining a cofferdam is having an effective dewatering and water management plan. Brennan works closely with geotechnical engineers to develop and implement effective dewatering plans so that our clients are not blindsided by cost escalation during the project. We are able to identify potential risks upfront, and assist in the development of a mitigation strategy.

SCOUR AND EROSION REMEDIATION

Brennan can detect, assist in design, and repair scour and erosion issues that may be occurring underneath the dam or along embankments. We offer several methods of repair to accommodate any budget.

Fabric Formed Revetment Mats

This method of remediation uses cast-in-place, grout-filled fabric revetment mats to cover and protect areas that experience aggressive levels of scour and erosion. Placement does not require heavy equipment, making it ideal for remote jobsites and areas with limited access. This matting can be placed both above and below the waterline.

Precast Articulating Block Mats

Brennan can also place pre-fabricated concrete block mats to aid in long-term scour protection. These blocks can be cast onsite or in an offsite location in several different configurations. Once placed, we can “choke” the crevices with aggregate to secure the mat and create an aesthetic embankment. If desired, vegetation can be planted in and among the blocks for environmental improvements.

Sheet Pile Structures

Brennan has been driving piling for almost a century over land and water. It is one of the most effective long-term solutions to scour and erosion problems.

Concrete Bags

Cast-in-place, cementitious grout filled concrete bags are used in areas of extreme scour and erosion. They are often placed on top of an articulating grout-filled revetment mat to create a long-lasting repair without the need for heavy equipment.

Rip Rap

Placing rock is the most economical method of scour and erosion control. Brennan has several types and sizes of excavators and duty-cycle cranes to place rock in a number of configurations.

Think Outside The Cofferdam!

Cofferdams are expensive, and not always the most cost effective solution on small-scale underwater concrete repair projects! Sluicing concrete into place may affect quality control standards and have questionable results. However, there is an ideal solution to achieving the results you need!

Preplaced Aggregate Concrete (PAC)

PAC is a method of concrete placement in which clean, coarse aggregate is placed into the formwork followed by injection of a non-shrink cement-based grout. It is ideal for underwater construction because it maintains a homogeneous grout/aggregate mixture resulting in a higher-strength repair.

Advantages of PAC

- Higher density due to higher aggregate content
- Lower shrinkage because of uniformity and use of non-shrink grout
- Resistant to freeze-thaw cycles
- Point-to-point contact of aggregate increases compressive strength
- Underwater place-ability
- Reduction in the need for heavy equipment
- Better bondability to the existing structure

Typically PAC starts with installation of formwork and embedded metals, much like traditional methods of concrete placement. Graded, washed aggregate is then sluiced into the formwork or placed mechanically. Once the formwork is full of aggregate, grout is injected, starting at a port towards the bottom and then continued vertically at specific intervals.

Vinyl Sheet Pile

Vinyl sheeting can be used as leave-in-place formwork, resulting in a robust, aesthetic repair. Our crews can install both Z-type and flat-faced vinyl sheeting without the need for heavy equipment. Installed much the same way as traditional formwork, this repair will add to the lifespan of the structure by creating a barrier between the concrete and the water, protecting it from degradation and freeze-thaw cycles.

Several tools to get the information you need!

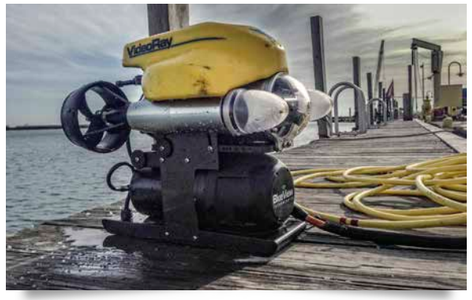
- Dive Inspections
- Imaging Sonar
- ROV Inspections
- Detailed Reporting
- Bathymetric Surveys

Divers Who Know Dams

Brennan divers are experienced, certified commercial divers with the knowledge necessary to perform a thorough underwater inspection. We are very familiar with dam structures and can effectively communicate any issues that may be found on an inspection. Outfitted with state-of-the-art equipment, our divers can handle even the most challenging environments.

Imaging Sonar

Imaging sonar technology uses 360 degree scanning sonar to create an acoustic image of the underwater portion of the dam structure. This can help detect potential problems or scour issues in conditions where visibility is severly limited. Typically these images can be combined with above-water digital photography or CAD drawings to create a pictorial reference of the entire structure.



Remotely Operated Vehicles

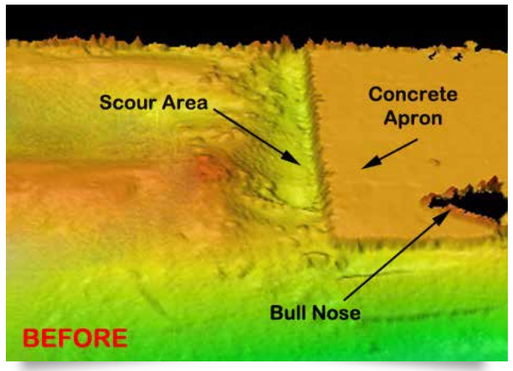
Brennan has a fleet of four ROVs that can be used to gather information when underwater conditions are unknown. They can be configured with an HD video camera, sonar mapping system, and other tools to to navigate and collect valuable information in conditions unsafe for diver entry .

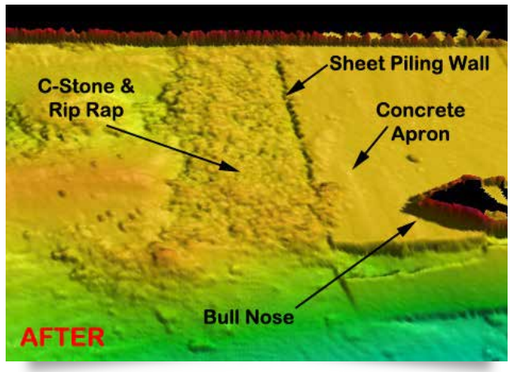
Detailed Reporting

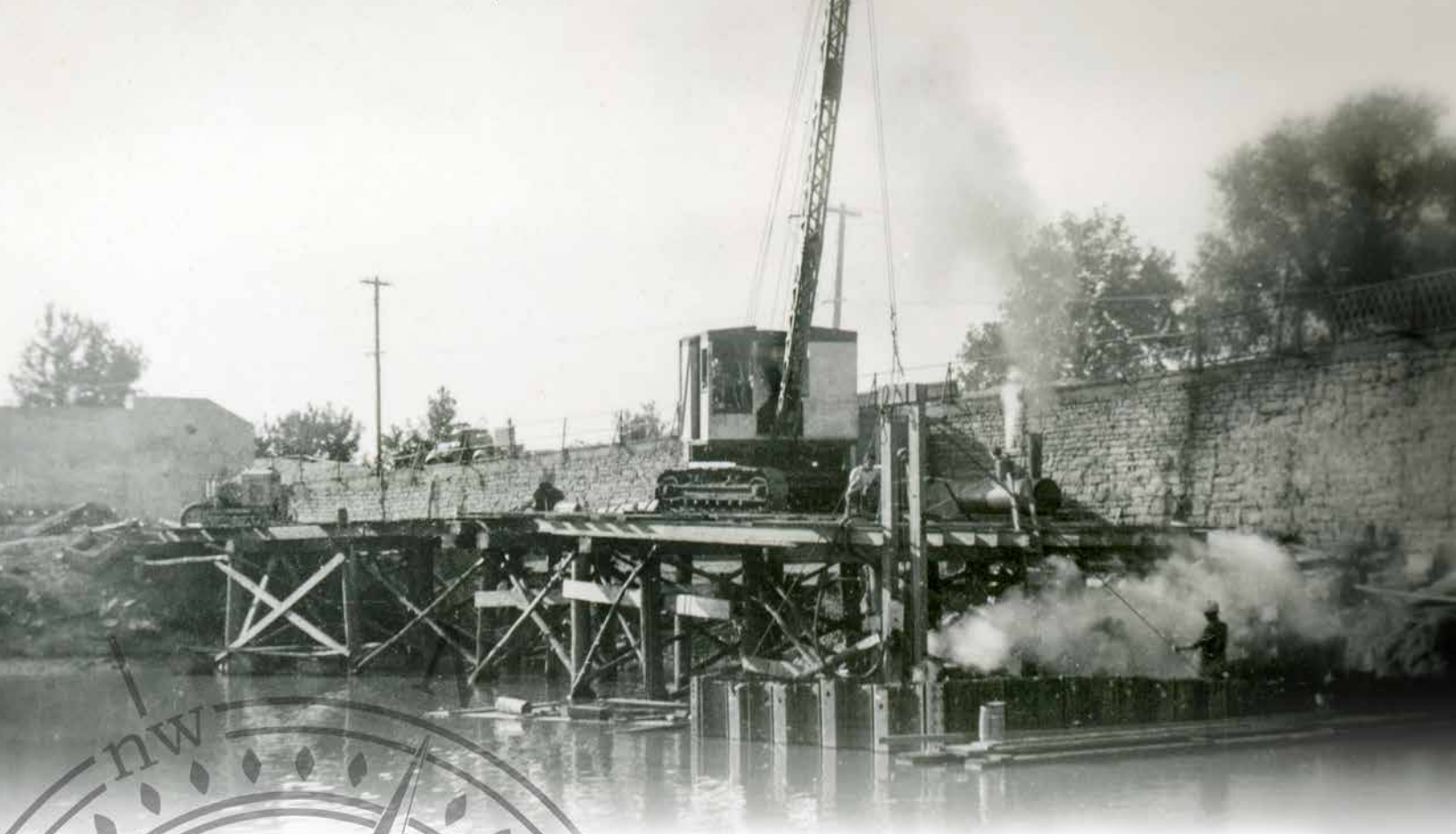
We understand that an inspection is only as good as the information communicated. Brennan divers can investigate, record, and effectively report critical information. These reports contain detailed descriptions, CAD drawings, images, and underwater video documentation to help identify any structural concerns.

Bathymetric Surveys

It is invaluable to know the conditions surrounding your dams, and our multi-beam bathymetric surveys create an accurate 3-dimensional model of the riverbed and underwater structures. This system can also be used to investigate and quantify areas of scour or sediment buildup.







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