Emergency Action Plan

Laramie River Station
347 Grayrocks Road
Wheatland, Wyoming
Owned by Missouri Basin Power Project
Operated by Basin Electric Power Cooperative
Wheatland, Wyoming

AECOM Project Number: 60429243
April 17, 2017

Emergency Action Plan For

Laramie River Station

347 Grayrocks Road, Wheatland, WY

County: Platte County

Owner: Missouri Basin Power Project

Operator: Basin Electric Power Cooperative – Laramie River Station

Contact: Dave Cummings

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Quality information

Prepared by	Checked by	Approved by
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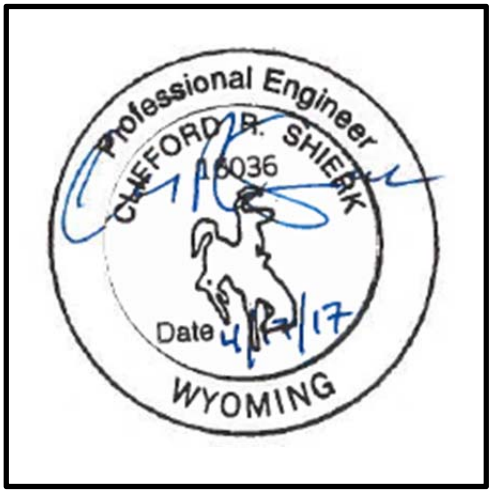
Certification Statement

CCR Units: Basin Electric Power Cooperative; Laramie River Station; Bottom Ash Ponds 1, 2, & 3; East and West Emergency Holding Ponds

I, Clifford R. Shierk, being a Registered Professional Engineer in good standing in the State of Wyoming, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this Emergency Action Plan has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Units, that the Emergency Action Plan dated April 2017 meets the requirements of 40 CFR § 257.73.

Clifford R. Shierk
Printed Name

April 17, 2017
Date



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1. Introduction

1.1 Purpose and Intent

This Emergency Action Plan (EAP) was developed to provide a single source of information in the event of an emergency as required for CCR impoundments determined to be either a high hazard potential or significant hazard potential CCR impoundment per section §257.73 of the U.S. Environmental Protection Agency (EPA) Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities.

The purpose of an Emergency Action Plan (EAP) is to provide the owner/operator of the CCR impoundments with a clear plan of action when any emergency arises. An emergency is identified as any condition which:

- Develops unexpectedly;
- Endangers the structural integrity of the impoundment; and
- Could result in the impoundment's failure, requiring immediate action.

By writing and implementing an EAP the owner/operator of the impoundment can reduce the risk of human life loss or injury and minimize property damage during an unusual or emergency event.

This is an EAP for the five (5) CCR surface impoundments operated by Basin Electric Power Cooperative (BEPC) at the Laramie River Station (LRS) in Wheatland, Wyoming. The EAP provides a description of the impoundments and the area at risk as well as contact information for all parties involved in responding to or affected by an emergency at the impoundments. The EAP outlines what actions are required in the event of an emergency.

1.2 EAP Summary

This document includes:

- Definition of the events or circumstances involving the five CCR impoundments that represent a safety emergency and the procedures that will be followed to detect a safety emergency in a timely manner.
- Site location map delineating the downstream area which would be affected in the event of a CCR impoundment failure.
- Contact telephone numbers for individuals that must be contacted in the event of an emergency, their respective responsibilities, and notification procedures.
- Procedures following an emergency at the impoundments.
- Provisions for an annual face-to-face meeting or exercise between representatives of the CCR unit and the local emergency responders.

The plan will be implemented once events or circumstances involving the CCR impoundment represent a safety emergency is detected, including conditions identified during periodic structural stability assessments, annual inspections, and inspections by a qualified person. The responsibilities for responding to an incident and implementing the plan are included in the Summary of EAP Responsibilities and Summary of Owner Responsibilities in **Appendix B**. One copy of this plan will be kept at the Laramie River Station office.

The plan will be amended if the owner or operator of the CCR impoundments whenever there is a change in conditions that would substantially affect the EAP in effect. This plan will, at a minimum, be evaluated every five years to ensure the information required is accurate. If the owner or operator of the CCR impoundment determines during a periodic hazard potential assessment that the CCR impoundments are no longer classified as significant hazard potential CCR impoundments, then the owner or operator is no longer subject to the requirement to prepare and maintain a written EAP.

1.3 Description of Impoundments

The Laramie River Station (LRS) is located at 347 Grayrocks Road in Wheatland, Wyoming. LRS has five (5) CCR surface impoundments which are described in **Table 1**.

Table 1. CCR Surface Impoundment Description

	Bottom Ash Pond 1	Bottom Ash Pond 2	Bottom Ash Pond 3	East Emergency Holding Pond	West Emergency Holding Pond
Type of Impoundment	Earthen	Earthen	Earthen	Earthen	Earthen
Height of Impoundment	25.0 feet	25.0 feet	50.0 feet	20.5 feet	20.5 feet
Max Impoundment Storage Capacity	995 acre-feet (Ponds 1 & 2 Combined)		1,564.2 acre-feet	995 acre-feet (East and West Ponds Combined)	
Use of Impoundment	CCR Operations	CCR Operations	CCR Operations	CCR Operations	CCR Operations
Hazard Rating	Significant	Significant	Significant	Significant	Significant

Bottom Ash Ponds 1, 2, and 3 are located immediately north of Grayrocks Road in the southwest portion of the property. The East and West Emergency Holding Ponds are located north of the Laramie River Station plant and immediately northeast of the on-site railroad in the northeast portion of the property. The locations of the impoundments are shown on the Facility Layout Diagram included in **Appendix A**.

AECOM prepared a hazard potential classification assessment in March 2016 for each of the five (5) CCR surface impoundments. Significant upstream and downstream features which could be affected by a failure are included on the Hydraulic Shadow Maps included in **Appendix A**.

2. Safety Emergency

2.1 Definition of Safety Emergency

A safety incident is an impending or actual sudden uncontrolled release or excessive controlled release of water from an impounding structure. The release may be caused by damage to or failure of the structure, flood conditions unrelated to failure, or any condition that may affect safe operation. The release of water may or may not endanger human life, downstream property, or the operation of the structure.

LRS is a zero discharge facility and does not discharge water from the bottom ash ponds or emergency ponds. All water discharged to the ponds, via sluicing, or precipitation is held within the ponds and/or recirculated to the plant. The recirculation of water between plant and these ponds is balanced whereas water is withdrawn from the ponds at nearly the same rate as it is discharged (sluiced) to the ponds. During normal plant operation, there is no net change in pond levels.

Plant operators perform operating inspections of the plant facilities once per (8-hour) shift and visually monitor water levels in the pond and observe the embankments for any deficiencies. Emergency action should be taken if the pool elevation is 1.5 feet below the design embankment crest elevation or if deficiencies are observed in the perimeter embankments.

AECOM performed a slope stability evaluation in October 2016 to evaluate the existing CCR impoundment dikes and native subgrade soils with regard to static and seismic slope stability as recommended by the EPA Site Assessment Report. Based on the results of the stability evaluation, the perimeter dikes for all five CCR impoundments were considered stable with respect to normal, flood, temporary construction, and seismic conditions.

2.2 EAP Response Process

There are generally four steps that should be followed when an unusual or emergency incident is detected. The steps constitute the EAP response process and are as follows:

1. Incident detection and evaluation
2. Emergency level determination
3. Notification and communication
4. Emergency Actions
5. Termination and follow-up

These steps are discussed further in the following subsections.

2.2.1 Incident Detection and Evaluation

An incident would be considered an unusual or abnormal condition and could be observed using the following:

1. Detecting existing or potential failures.
2. Measuring water level. Normal water level within the impoundments should be 1.5 feet below the design embankment crest elevation.
3. Reviewing monitoring equipment such as sensors or early warning systems.
4. Checking instrumentation.
5. Analyzing and confirming data.

2.2.2 Emergency Level Determination

After an unusual event or incident is detected and confirmed, the event should be categorized into one of the established emergency levels based on the severity of the initiating condition or triggering events. The levels of emergency are:

- High Flow
- Non-Failure
- Potential Failure
- Imminent Failure

It is important to determine the severity of the emergency before responding to an unusual event at the impoundments. The *Guidance for Determining the Emergency Level* table and *Level of Emergency Determination Chart* included in **Appendix B** are to be used to determine the severity of the emergency and to guide the owner/operator's actions during an emergency response. Descriptions of the levels of emergency are provided in the following subsections.

2.2.2.1 High Flow Level of Emergency

The High Flow emergency level indicates that flooding is occurring at LRS, but there is no apparent threat to the integrity of the impoundment. The High Flow emergency level is used by the owner to convey to outside agencies that downstream areas may be affected by the impoundment's release. Although the amount of flooding may be beyond the control of the owner, information on the timing and amount of release from the impoundment may be helpful to authorities in making decisions regarding warnings and evacuations.

2.2.2.2 Non-Failure Level of Emergency

The Non-Failure emergency level is appropriate for an event that will not, by itself, lead to a failure, but requires investigation and notification of internal and/or external personnel. Examples are:

1. New seepage or leakage on the downstream side of the impoundment.
2. Presence of unauthorized personnel.
3. Malfunction of the pump system used to balance the flow of the site.

Some incidents may only require internal response, whereas others may lead to unexpected high releases that could pose a hazard to the downstream public and would require the notification of outside agencies.

2.2.2.3 Potential Failure Level of Emergency

The Potential Failure emergency level indicates that conditions are developing that could lead to a failure. Examples are:

1. Rising reservoir levels that are approaching the top of the non-overflow section of the impoundment
2. Transverse cracking of an embankment
3. A verified bomb threat.

Potential Failure should convey that time is available for analyses, decisions, and actions before the impoundments could fail. A failure may occur, but predetermined response actions may moderate or alleviate failure.

2.2.2.4 Imminent Failure Level of Emergency

The Imminent Failure emergency level indicates that time has run out, and the impoundment has failed, is failing, or is about to fail. Imminent Failure typically involves a continuing and progressive loss of material from the impoundment. It is not usually possible to determine how long a complete breach of the impoundment will take. Therefore, once a decision is made that there is no time to prevent failure, the Imminent Failure warning must be issued. For purposes of evacuation, emergency management authorities may assume the worst-case condition that failure has already occurred.

2.2.3 Notification and Communication

2.2.3.1 EAP Notification Flowchart

After the emergency level at the dam has been determined, notifications are made in accordance with the EAP Notification Flowchart. The purpose of the EAP Notification Flowchart is to provide a visual map of who is to be notified, the order of notification, and who is responsible for notifying various individuals and agencies/organizations. The Notification Flowchart can be customized based on the level of emergency as determined under the Level of Emergency Determination Chart.

The Agency/Organization Notification List should be used as a quick reference for contact information for the Notification Flowchart. It can be customized based on the level of the emergency.

The Emergency Action Plan Notification Flowchart for the LRS impoundments can be found in **Appendix B** and was last updated on the date shown on the bottom of the page. The Agency/Organization Notification List can be found in **Appendix B** and was last updated on the date shown on the bottom of the page. The Notification Flowchart will be activated with a telephone call to the Laramie River Station Contact, Dave Cummings. Contact with Platte County Emergency Management will be maintained throughout the emergency by phone. See **Appendix B** for the Emergency Communication Plan.

2.2.3.2 Notification to Emergency Management Authorities

When performing notification and communication activities, it is important that people speak in clear, nontechnical terms to ensure those being notified understand what is happening, what the current emergency level is, and which actions to take. To assist in this step, pre-scripted messages to help the caller adequately describe the emergency situation to emergency management authorities are included on the Notification Flowcharts included in **Appendix B**.

2.2.3.3 Status Updates

After initial notification, the owner should make periodic status reports to the affected emergency authorities and other stakeholders in accordance with the Notification Flowcharts. If it appears that the situation is continuing to deteriorate despite actions being taken to moderate or alleviate the failure, local authorities may decide to change their course of action. Depending on location of downstream residents and the estimated time required to warn them, the evacuating agencies may consider early evacuation or continued warnings until the emergency has passed.

2.2.4 Emergency Actions

After the initial notifications have been made, the owner will act to save the impoundments and minimize impacts to life, property, and the environment. During this step, there is a continuous process of taking actions, assessing the status of the situation, and keeping others informed through communication channels established during the initial notifications. The EAP may go through multiple emergency levels as the situation improves or deteriorates. The following subsections include specific actions to minimize impacts. The downstream areas which would be affected in an emergency are indicated on the Shadow Map included in **Appendix A** and discussed further in Section 3 of this EAP.

2.2.4.1 High Flow Level of Emergency

In the event that pool elevations exceed 1.5 feet below the design embankment crest elevation, the following procedures should be followed:

1. Monitor remaining freeboard between interconnected ponds. Ponds with lesser remaining freeboard shall be pumped toward ponds having greater remaining freeboard utilizing the on-site pumps located in the pump houses.

2.2.4.2 Non-failure Level of Emergency

In the event that a situation is not normal but has not yet threatened the operation or structural integrity of the impoundment(s), the following procedures should be followed:

1. The impoundment should be inspected by personnel at LRS. At minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope of the embankment. Also check the impoundment area for signs of changing conditions. If increased seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to the EAP coordinator and refer to the emergency level table in **Appendix B** for guidance in determining the appropriate event level for the new condition.
2. Record all contacts that were made and record all information, observations, and actions taken. Note the time of changing conditions. Document the situation with photographs and video, if possible.

2.2.4.3 Potential Failure Level of Emergency

In the event that a situation may eventually lead to embankment failure and flash flooding downstream but there is not an immediate threat of dam failure, the following procedures should be followed:

1. Initiate contacts as outlined in the Notification Flowchart in **Appendix B** and inform parties that the EAP has been activated and, if conditions get worse, the emergency level may increase and the emergency situation may require evacuation. Preparations should be made for possible road closures and evacuations.
2. Provide updates to the Platte County Emergency Management Coordinator to assist them in making timely decisions concerning the need for warnings, road closures, and evacuations.
3. If time permits, inspect the impoundment. At minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope of the embankment. Also check the impoundment area for signs of changing conditions. If piping, increased seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to the Platte County Emergency Management Coordinator and refer to the emergency level table in **Appendix B** for guidance in determining the appropriate event level for the new condition.
4. Record all contacts that were made and record all information, observations, and actions taken. Note the time of changing conditions. Document the situation with photographs and video, if possible.
5. If time permits, remedial actions should be taken for the conditions described in the following sections.

2.2.4.3.1 Embankment Deficiencies

In the event that deficiencies are observed in the perimeter embankments, the following procedures should be followed:

1. Lower the water within the impoundment to a level below the observed deficiency. Water in adjacent impoundments may also need to be lowered to maintain an equal head of pressure against the berm between impoundments.
2. Install temporary controls as necessary to control the deficiency.
3. Perform a field investigation to determine the cause of the deficiency.
4. Determine and implement corrective measures.

2.2.4.3.2 Seepage Through Embankment

A subsurface investigation performed by AECOM encountered granular and unsaturated materials in the dike and native foundation soils. In addition, the impoundments are lined. During the EPA Site Specific

Assessment, seepage along the impoundment dikes were not observed, which suggests the pond liners are functioning as designed and are generally limiting seepage through the impoundment dikes.

Minor amounts of seepage will occur through most liner materials; however a significant tear, puncture or deterioration of the liners could cause significant seepage. Significant seepage is typically identified by saturated soil conditions and/or soft, wet, compressible pockets of soil on the exterior slopes of the dikes.

Consistent, long-term seepage is often accompanied by the growth of phreatophytic (i.e. water loving) vegetation in the area where seepage is occurring.

In the event that seepage is observed in the perimeter embankments, the following procedures should be followed:

1. Lower the water within the impoundment to a level below the seepage. Water in adjacent impoundments may also need to be lowered to maintain an equal head of pressure against the berm between impoundments.
2. Perform a field investigation to determine the cause of the seepage.
3. Determine and implement corrective measures.

2.2.4.4 Imminent Failure Level of Emergency

In the event that embankment failure is imminent or in progress, the following actions should be taken:

1. Contact the Platte County Emergency Management Coordinator and others listed on the Notification Flowchart in **Appendix B** immediately.
2. The Platte County Emergency Management Coordinator shall lead the efforts to carry out warnings, close roads, and evacuate people at risk downstream.
3. The Platte County Emergency Management Coordinator shall alert the general public and immediately evacuate at-risk people and close roads as necessary.
4. Maintain continuous communication and provide the Platte County Emergency Management Coordinator with updates of the situation to assist him/her in making timely decisions concerning warnings and evacuations.
5. Record all contacts that were made and record all information, observations, and actions taken. Note the time of changing conditions. Document the situation with photographs and video, if possible.
6. Advise people monitoring the embankment to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.

2.2.5 Termination and Follow-Up

Generally, the owner, or owner's dam safety expert is responsible for notifying the authorities that the emergency condition has been stabilized. Government officials are responsible for declaring an end to the public emergency response.

The following subsections discuss termination and follow up procedures once the incident has been resolved. An Emergency Termination Log is included in **Appendix C** to document conditions and decisions.

2.2.5.1 Reentry and Recovery

Under potential failure and imminent failure scenarios, the emergency at the LRS Impoundments will not be considered over until inspected by owner's engineer and the Platte County Emergency Management have been consulted. Evacuated residents will be allowed to return based on the plan developed by the Platte County Emergency Management.

Once the emergency is declared over, owner's engineer will inspect the impoundments for any damage. The review may result in formal orders issued to the owner and may require the submittal of plans and specifications for repair.

2.2.5.2 After Action Review

After an impoundment emergency is ended, a review of the event should take place as soon as practicable. If the review does not take place within 10 to 14 days of the emergency, valuable data may be lost. The following should be discussed and evaluated:

1. Events or conditions leading up to, during, and following the incident
2. Significant actions taken by each participant and improvements for future emergencies
3. All strengths and deficiencies found in the incident management process, materials, equipment, staffing levels, and leadership. The review will determine what was done correctly during the EAP activation, what was done incorrectly and what could be improved.
4. Corrective actions identified and a planned course of action to implement recommendations.

The results should be documented in an After Action Report and used as a basis for revising the EAP. Any needed changes to the LRS Impoundment EAP will be made by Basin Electric Power Cooperative. An updated EAP including an updated Approval/Concurrence will be provided to all holders of the EAP. A copy of the updated EAP will be kept in the shift supervisor's office and weekend duty superintendent's office.

3. Hydraulic Shadow Map

The purpose of the Hydraulic Shadow Map, or inundation map, is to provide a picture of the area that could be affected by a hypothetical failure of the impoundment in order to determine who must be notified and/or evacuated during an emergency and the timeliness to facilitate notification and evacuation.

The Hydraulic Shadow Maps for the LRS impoundments were produced by AECOM based on the information from the Dam Failure Analysis. The maps can be found in **Appendix A** and was last updated on the date shown on the bottom of the page. For further information on the method used to produce the maps, please contact Basin Electric Power Cooperative.

Several Hydraulic Shadow Maps were prepared in order to identify impacted areas based on the location of a breach in the impoundment. Due to the proximity of the 5 CCR impoundments to one another, the East and West Emergency Hold Ponds were combined in one Dam Failure Analysis and in general, Ponds 1, 2, and 3 were combined in another analysis. Each map indicates inundation zones, cross section information, streets, buildings, railroads, bridges, and any other significant features.

The Adjacent Property Owners Map included in **Appendix A** identifies residences, businesses, bridges, and other structures such as roads, power lines, sewer, gas and water lines and other infrastructure that could be affected by the failure of the impoundment. Highlighted evacuation routes are also included on the map. Emergency response procedures will be similar for all 5 CCR impoundments; however the Hydraulic Shadow Maps show that different areas of the site will be impacted depending on where a breach in the impoundment occurs.

4. General Responsibilities

The owner is responsible for developing and maintaining the EAP. Owners and emergency management authorities are responsible for implementing the EAP. The Emergency Incident Log form in **Appendix C** should be used to document incident-related events by all entities involved with EAP implementation. The following subsections specify the responsibilities of all entities to ensure that effective and timely action is taken if an emergency occurs.

4.1 Owner Responsibilities

The owner is responsible for detecting and evaluating the safety incident, classifying the incident, notifying emergency management authorities, and taking appropriate response actions. Refer to Section 2.2.3 of this EAP for operator duties for given emergency response situations.

4.2 Notification and Communication Responsibilities

4.2.1 Notification Flowchart

Notifications are made in accordance with the EAP Notification Flowchart. Refer to Section 2.2.2.1 of this EAP for additional information and the Notification Flowchart in **Appendix B**.

4.2.2 Emergency Notification Lists

Emergency Notification Lists are lists of the names, addresses and telephone numbers of individuals, businesses, critical facilities and other entities who would be affected by a failure of the impoundments and who must be notified and/or evacuated in an emergency. The lists have been grouped based on the severity of the emergency. The Emergency Notification Lists for the LRS Impoundments can be found in **Appendix B** and were last updated on the date shown on the bottom of the page.

4.2.3 Media Contact

Interaction with the media should be implemented through the local or State emergency management authority. These agencies should have a Public Information Officer (PIO) and/or a Joint Information Center for disseminating information and handling inquiries.

Local emergency management authorities may activate an Emergency Operations Center (EOC) to serve as a central co-ordination center for emergency response, warning, and evacuation activities. The owner or their representative should go to the EOC to help agency personnel understand the project specific information and inundation maps.

Proper co-ordination and communication between the on-site technical personnel, PIOs and emergency personnel at the EOC are of critical importance to the successful implementation of the EAP. These activities should be thoroughly tested during comprehensive EAP exercises and modified as necessary.

4.3 Evacuation Responsibilities

Warning and evacuation planning and implementation are responsibilities of local emergency management authorities with the legal authority to perform these actions. Under the EAP, the owner is responsible for notifying the appropriate emergency management authority when an incident is anticipated, is imminent, or has occurred. The local emergency management authority is responsible for notifying and evacuating affected people, as necessary.

Owners should not assume or usurp the responsibility of government entities for evacuation of people. However, there may be situations in which routine notification and evacuation will not be sufficient, as in the case of a residence located immediately downstream that would be inundated within minutes of a

failure. In some cases, owners may arrange to notify the residence directly. Such procedures should be coordinated with the appropriate authorities before an emergency situation develops.

4.4 Monitoring, Security, Termination, and Follow-up Responsibilities

A person should be designated as an onsite monitor from the beginning of a safety incident until the emergency has been terminated. This person should provide status updates to the owner so the owner can keep all those involved with the implementation of the EAP informed of developing conditions.

Termination of a safety emergency is usually twofold. The entity that activates the EAP is usually responsible for determining when the safety situation has stabilized. This is typically the owner in consultation with engineers and safety experts but may include other State and Federal regulatory entities. The applicable emergency management authorities, on the other hand, are responsible for termination of the emergency response activities, including termination of an evacuation. Both the owner and the emergency response authorities should coordinate closely while making decisions to terminate both the safety event and response efforts.

Recovery activities will continue on different levels for all involved in the safety incident after the emergency has been terminated.

The owner should coordinate a follow-up evaluation after any emergency. All participants should be involved in this evaluation and should keep logs and records during the incident. An Emergency Incident Log and Emergency Termination Log are included in **Appendix C**. The results of the follow-up evaluation should be documented in a written report (After Action Report) and used to improve future response actions.

4.5 EAP Coordinator Responsibilities

The EAP Coordinator will be responsible for overall EAP-related activities, including but not limited to preparing revisions to the EAP, establishing training seminars, and coordinating EAP exercises. The LRS EAP coordinator is Dave Cummings and is the EAP contact for questions about the plan.

5. Preparedness

Preparedness typically consists of activities and actions taken before the development of an incident. Preparedness activities attempt to facilitate response to an incident as well as prevent, moderate, or alleviate the effects of the incident. The following subsections relate to preparedness actions.

5.1 Surveillance and Monitoring

Prompt detection and evaluation of information from instrumentation and physical monitoring is critical to the effectiveness of the EAP and timely emergency response. The LRS impoundments are inspected by plant operators once per (8-hour) shift and visually monitor water levels in the pond. No other instrumentation monitoring equipment is in place.

5.2 Evaluation of Detection and Response Timing

Total EAP implementation time from the initiation of an actual incident to determination of an emergency situation and notification of appropriate entities involved with implementation should be evaluated and understood.

5.3 Access to the Site

The primary access to reach the site by vehicle from the Town of Wheatland is from Highway WY-320 to Grayrocks Road. In the event that Grayrocks Road becomes flooded, East Fairview Road should be used as a secondary access route from Highway WY-320. Access to the site from the Town of Wheatland is anticipated to take about 15 to 20 minutes from both the primary and secondary route.

During an imminent failure emergency event, on-site roads, field trails, and the railroad near the impoundments should not be utilized in the event that these access points become flooded or damaged during the event. Coal is brought in by rail from the northwest, so the railroad should be contacted and notified that access to the site may become compromised.

Primary and secondary access routes for reaching the site are shown on the site location map included in **Appendix B**.

5.4 Response During Periods of Darkness

The Laramie River Station has a light near the pump house but does not have any on-site lighting around the impoundments. If an event is identified during periods of darkness, light plants stored at the yard maintenance should be used to illuminate the area where failures could occur.

During a power failure, on-site backup diesel generators stored at the yard maintenance should be used to operate equipment where manual operation is not feasible. Diesel fuel is stored on-site in the fuel tanks.

5.5 Response During Weekends and Holidays

The Laramie River Station is operated 24 hours a day, 7 days a week. Therefore, no special response is needed during weekends and holidays. Normal procedures should be followed.

5.6 Response During Adverse Weather

The Laramie River Station is operated 24 hours a day, 7 days a week. Therefore, no special response is needed during adverse weather. Normal procedures should be followed. Refer to Section 5.3 for primary and secondary access to the site.

5.7 Alternative Sources of Power

Diesel generators are available on-site as an alternative source of power. Fuel is stored in the fuel tanks located on-site.

5.8 Emergency Supplies and Information

Planning and organizational measures that can help the owner and emergency management authorities manage an emergency situation more safely and effectively include stockpiling materials and equipment for emergency use and coordinating information between organizations.

5.8.1 Materials and Equipment

In the event of a high water excursion event, on-site stop logs will be installed or sluice gates will be closed to limit flow of water entering the impoundment by LRS operators. On-site pumps permanently installed in the pump house will be utilized by LRS operators to lower the water level to ponds having greater remaining freeboard.

In the event of embankment deficiencies, water within the impoundments should be lowered by LRS operators below the observed deficiency using the systems currently in place (stop logs, sluice, gates, and/or pumps) unless those systems are not able to address the issue efficiently. Temporary controls such as sand or rip rap may be installed by LRS staff to control the deficiency, and earth moving equipment may be necessary for address corrective measures following a field investigation. LRS has a backhoe excavator stored on-site which can be operated by LRS staff.

Material inventory for temporary control measures is stored near the warehouse but often varies in quantity. However, sand and rip rap material is generally readily available from outside resources.

5.8.2 Available Resources

During an emergency, the owners/operators may need to bring in outside resources such as heavy equipment, sandbags, pumps, siphons or divers. A listing of the resources including provider names, addresses and telephone numbers available to the owner/operator of the LRS Impoundments can be found in **Appendix B** and was last updated on the date shown on the bottom of the page.

5.9 Coordination of Information

Refer to the Notification Flowchart in **Appendix B** when informing responsible parties of an emergency.

Information on weather should be obtained from the National Weather Service (NWS) at http://www.weather.gov/ or by phone at 317-856-0367. Co-ordination with the NWS is recommended to monitor storms, river stages, and flood waves resulting from a failure. The NWS may also be able to supplement warnings being issued using their own communication system.

5.10 Annual Review, Training, and Testing

The EAP should be reviewed on an annual basis to ensure that all contact information listed is accurate and that personnel are familiar with the EAP and understand their role in responding to an emergency. Training and exercise plans should be designed and developed by those entities with responsibilities identified in the EAP. EAP action items and procedures should be exercised periodically for all individuals involved in its implementation so that individuals are familiar with their roles and responsibilities. The annual review of and training for the LRS Impoundment's EAP will occur in winter concurrent with the Grayrocks Reservoir annual training. Based on changes identified in the annual review, copies of updated pages will be provided to all holders of the EAP. A copy of the most current EAP will be kept in the shift supervisor's office and weekend duty superintendent's office.

At least every five (5) years, the owner/operator of the LRS Impoundments will meet with the Platte County Emergency Management to discuss what changes have been made to the Platte County All Hazards Emergency Response/ Operations Plan and to determine what opportunities exist for exercises. Also, the owner/operator of the LRS Impoundments will review the dam failure (hydraulic shadow) map to identify any significant land use changes in the hazard area.

The owner/operator should work with local emergency management to determine what opportunities exist to conduct or participate in impoundment related EAP exercises.

5.11 Alternative Systems of Communication

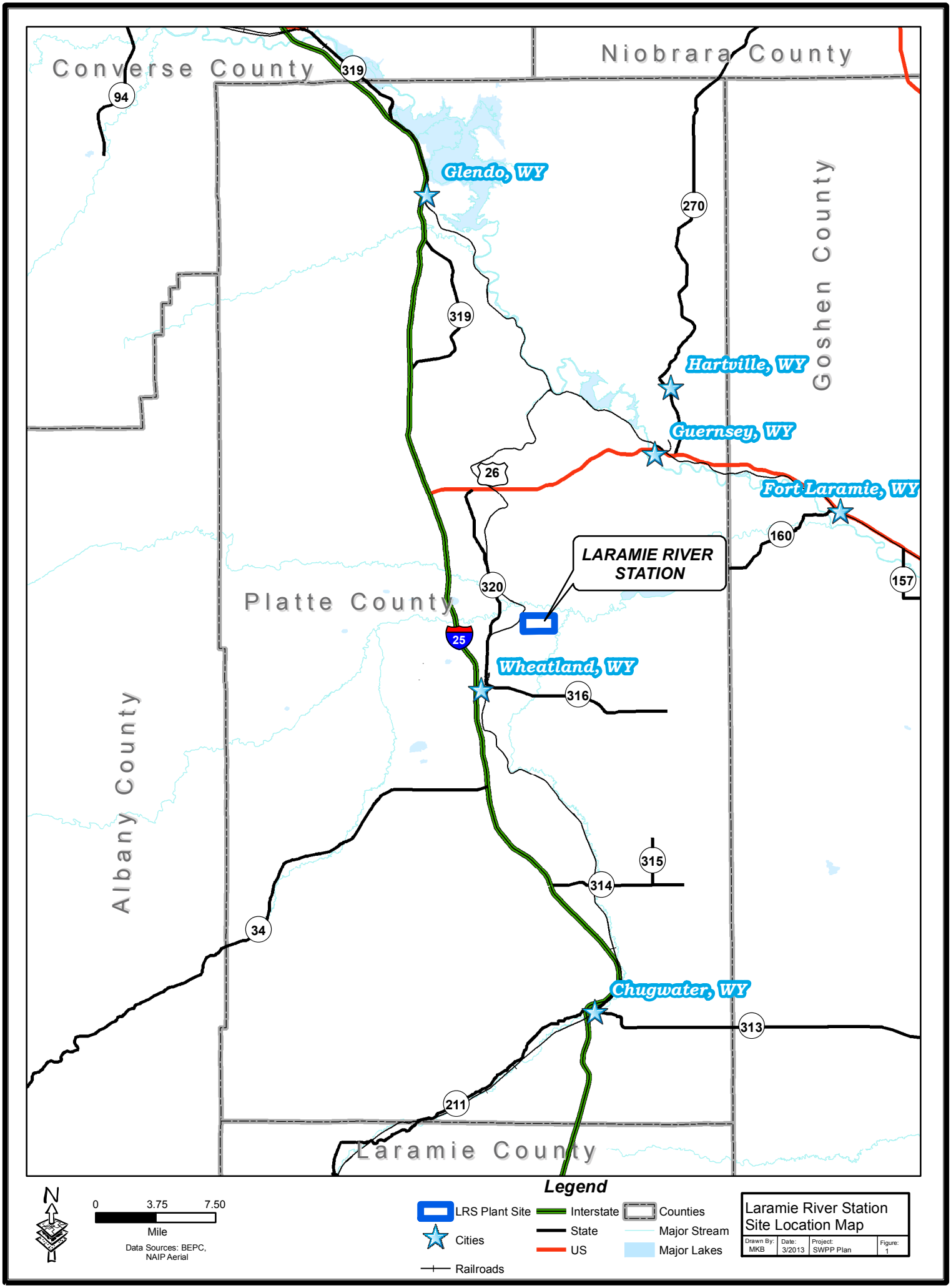
The list below provides information on the forms of communication that are available at the LRS Impoundments and operating procedures during an emergency event:

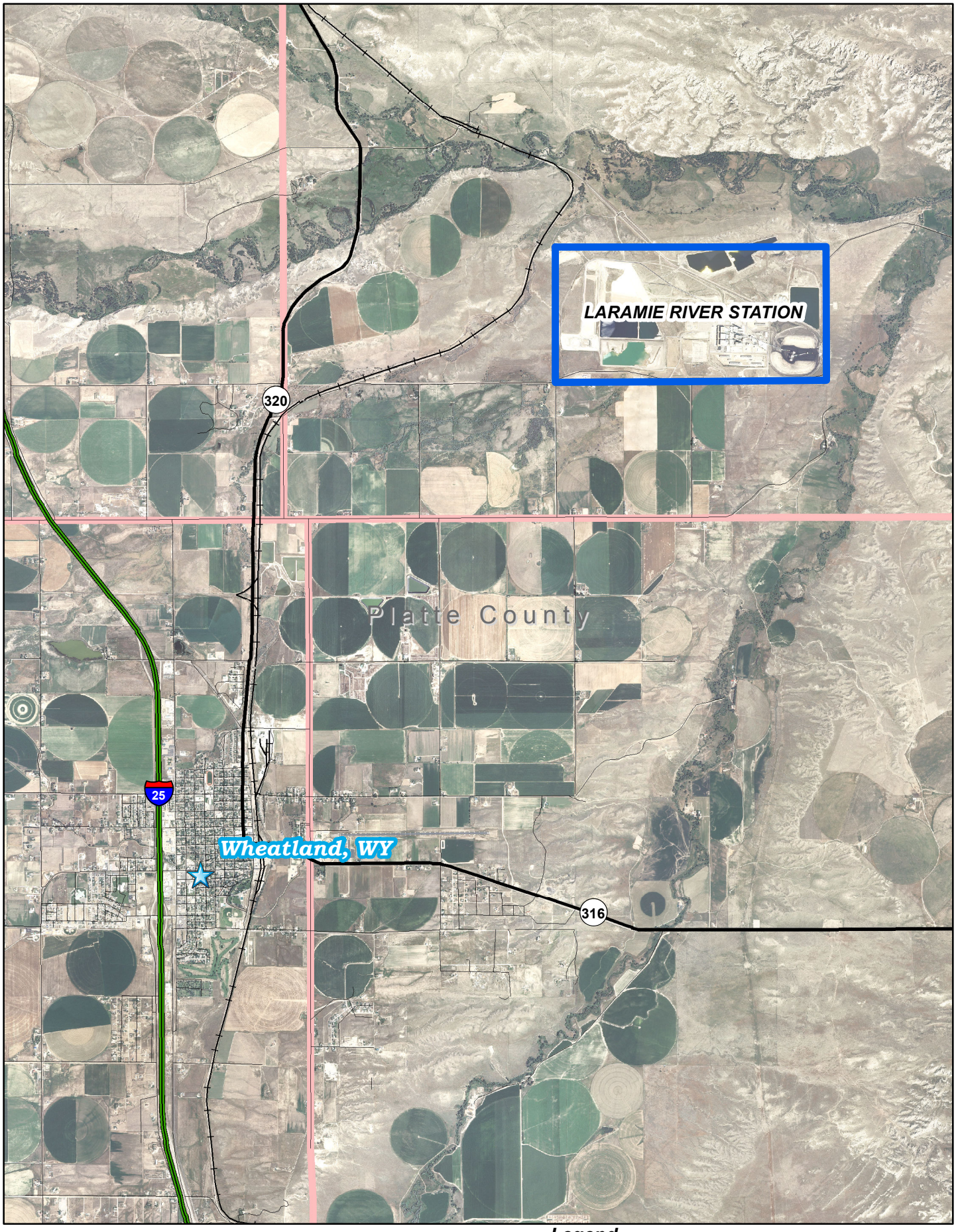
- Phones: primary source of communication during an emergency event.
- Email: used for follow up communication.
- Plant-wide Emergency Response system: to be used when evacuation of employees is required.

5.12 Public Awareness and Communication

Residential areas are located downstream of the LRS Impoundments. Public awareness measures should be provided to explain the proximity of the impoundment to residences, how people will be informed of an emergency situation, and the actions people should take during an emergency. Basin Electric Headquarters is currently responsible for providing informational updates on LRS. LRS staff contact downstream residences on an annual basis to confirm contact information is current with information provided in the EAP. In the event of an emergency, the Platte County Emergency Management will contact downstream residences and then contact LRS to inform LRS of which property owners were notified and which property owners did not respond.

Appendix A – Figures


Converse County
Niobrara County
Goshen County
Albany County
Platte County
Laramie County
Glendo, WY
Hartville, WY
Guernsey, WY
Fort Laramie, WY
Wheatland, WY
Chugwater, WY
LARAMIE RIVER STATION
94
319
270
26
160
157
320
25
316
315
314
34
313
211
N
0
3.75
7.50
Mile
Data Sources: BEPC, NAIP Aerial
Legend
LRS Plant Site
Cities
Railroads
Interstate
State
US
Counties
Major Stream
Major Lakes
Laramie River Station
Site Location Map
Drawn By: MKB
Date: 3/2013
Project: SWPP Plan
Figure: 1



N

0 2,500 5,000

Feet

Data Sources: BEPC, NAIP Aerial

Legend

- LRS Plant Site
- Cities
- Railroads
- Interstate
- State
- US
- County Roads
- Townships
- Counties

Laramie River Station
Site Vicinity Map

Drawn By:	Date:	Project:	Figure:
MKB	3/2013	SWPP Plan	2

NOTES:

BASE MAP SOURCE: BING MAPS

BASE MAP NOT TO SCALE

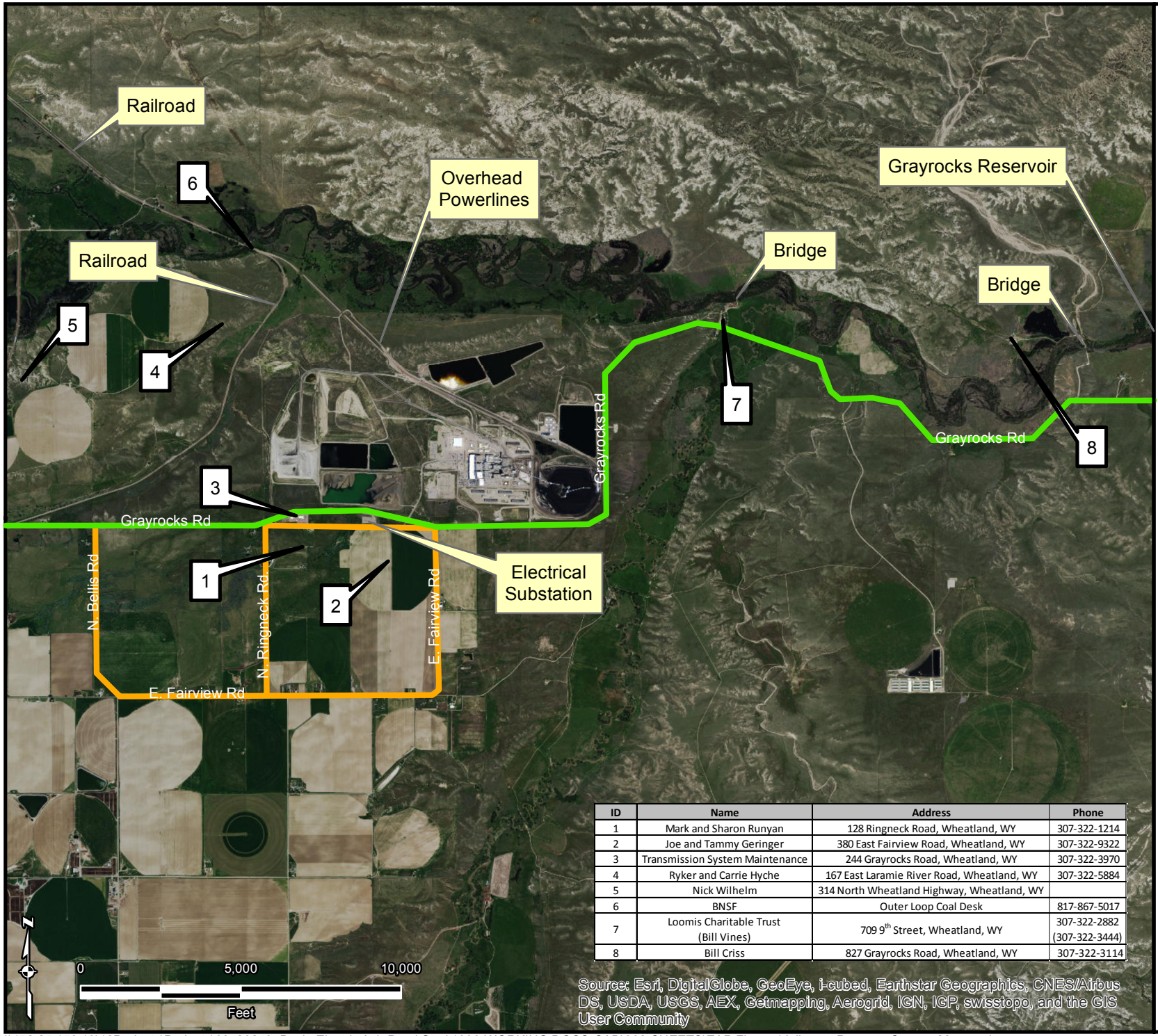
N

AECOM

1350 Deming Way, Suite 100
Middleton, WI 53562
T 608.836.9800
www.aecom.com

FACILITY LAYOUT DIAGRAM
LARAMIE RIVER STATION
347 GRAYROCKS ROAD
WHEATLAND, WY

Drawn:	JDW	12/20/2013
Checked:	DMY	12/23/2013
Approved:	TDB	12/30/2013
PROJECT NUMBER	60429243	
FIGURE	1	



ID	Name	Address	Phone
1	Mark and Sharon Runyan	128 Ringneck Road, Wheatland, WY	307-322-1214
2	Joe and Tammy Geringer	380 East Fairview Road, Wheatland, WY	307-322-9322
3	Transmission System Maintenance	244 Grayrocks Road, Wheatland, WY	307-322-3970
4	Ryker and Carrie Hyche	167 East Laramie River Road, Wheatland, WY	307-322-5884
5	Nick Wilhelm	314 North Wheatland Highway, Wheatland, WY	
6	BNSF	Outer Loop Coal Desk	817-867-5017
7	Loomis Charitable Trust (Bill Vines)	709 9th Street, Wheatland, WY	307-322-2882 (307-322-3444)
8	Bill Criss	827 Grayrocks Road, Wheatland, WY	307-322-3114

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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ADJACENT PROPERTY OWNERS MAP
LARAMIE RIVER STATION
EMERGENCY ACTION PLAN
BASIN ELECTRIC POWER COOPERATIVE

Legend

- Primary Access Route
- Secondary Access Route

Drawn:	SRA	4/17/2017
Approved:	CRS	4/17/2017
Scale:	AS SHOWN	
PROJECT NUMBER	60429243	
FIGURE NUMBER	1	

\\172.25.156.10\12Projects\Projects\60429243_Basin Electric Ash Pond Study\900-WORKING DOCS-CAD\902-SHEETS\EAP Figures\Adjacent Property Owners Map.mxd

LRS SITE

BOTTOM ASH POND 3 NORTH

2.2 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.0
TIME TO PEAK (HOURS)	1.8
MAX ELEVATION (FEET)	4,443.5
INCREMENTAL RISE (FEET)	5.0
PEAK FLOW (CFS)	22,737

8.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.2
TIME TO PEAK (HOURS)	4.5
MAX ELEVATION (FEET)	4,406.3
INCREMENTAL RISE (FEET)	1.9
PEAK FLOW (CFS)	12,603

7.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.0
TIME TO PEAK (HOURS)	3.3
MAX ELEVATION (FEET)	4,415.2
INCREMENTAL RISE (FEET)	2.7
PEAK FLOW (CFS)	13,618

0.5 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.5
TIME TO PEAK (HOURS)	0.8
MAX ELEVATION (FEET)	4,531.6
INCREMENTAL RISE (FEET)	19.1
PEAK FLOW (CFS)	18,956

1.3 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.8
TIME TO PEAK (HOURS)	0.9
MAX ELEVATION (FEET)	4,503.5
INCREMENTAL RISE (FEET)	25.4
PEAK FLOW (CFS)	24,057

4.8 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.5
TIME TO PEAK (HOURS)	2.6
MAX ELEVATION (FEET)	4,428.6
INCREMENTAL RISE (FEET)	3.3
PEAK FLOW (CFS)	14,814

0.2 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.3
TIME TO PEAK (HOURS)	0.9
MAX ELEVATION (FEET)	4,533.7
INCREMENTAL RISE (FEET)	7.2
PEAK FLOW (CFS)	17,643

0.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.0
TIME TO PEAK (HOURS)	0.0
MAX ELEVATION (FEET)	4,563.0
INCREMENTAL RISE (FEET)	0.0
PEAK FLOW (CFS)	17,751

Base Flow Extent
Limit of Study
Cross Section
Limit of Breach Event
Storage Area
Breach Inundation Area

NOTES:
1. DUE TO THE METHOD, PROCEDURES, AND ASSUMPTIONS USED TO DEVELOP THE FLOODED AREAS, THE LIMITS OF FLOODING SHOWN AND FLOOD WAVE TRAVEL TIMES ARE APPROXIMATE AND SHOULD BE
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3. BEGINNING AND PEAK FLOOD ARRIVAL TIMES ESTIMATED FROM TIME OF DAM FAILURE.
4. TIME TO PEAK IS DEFINED AS THE TIME FROM BEGINNING OF BREACH TO THE TIME OF PEAK WSEL.
5. BASE MAP COUNTOUR DATA FROM THE NATIONAL ELEVATION DATASET.
6. ALL ELEVATION ARE REFERENCED TO NVGD29 AND SHOWN AS FEET ABOVE MSL.
7. ROAD NAME LABELS OBTAINED FROM GIS.
8. INCREASE IN WSEL IS THE DIFFERENCE BETWEEN MAXIMUM WSEL UNDER DAM FAILURE AND MAXIMUM WSEL UNDER NO FAILURE SCENARIO.
9. ABBREVIATION USED:
W.S. OR WSEL = WATER SURFACE ELEVATION

AECOM

Drawn By:	DH
Checked By:	PD
Date:	3/30/2017
Project #:	60429243

Projection:
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet

APPENDIX
A.5

1 : 24,000
0 750 1,500 3,000
Feet

T:\60429243\500_Work\50_GIS\MXD\figures\20170317 Pond 3 North Breach.mxd

Imagery Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Imagery Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LRS SITE

BOTTOM ASH POND 3 SOUTH

Limit of Breach Event

Storage Area

Breach Inundation Area

NOTES:

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9. ABBREVIATION USED:
W.S. OR WSEL = WATER SURFACE ELEVATION

AECOM

Drawn By:	**DH**
Checked By:	**PD**
Date:	**3/30/2017**
Project #:	**60429243**

APPENDIX

A.5

Projection:
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet

1 : 6,000

0 200 400 800

Feet

N

P:\60429243\500_Work\502_GIS\MXD\figures\20170317 Pond 3 South Breach.mxd

LRS SITE

BOTTOM ASH POND 3 WEST

3.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.7
TIME TO PEAK (HOURS)	1.5
MAX ELEVATION (FEET)	4,453.5
INCREMENTAL RISE (FEET)	1.9
PEAK FLOW (CFS)	14,462

4.8 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.4
TIME TO PEAK (HOURS)	2.3
MAX ELEVATION (FEET)	4,445.0
INCREMENTAL RISE (FEET)	1.6
PEAK FLOW (CFS)	12,799

6.7 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.0
TIME TO PEAK (HOURS)	3.9
MAX ELEVATION (FEET)	4,437.2
INCREMENTAL RISE (FEET)	1.7
PEAK FLOW (CFS)	9,406

10.7 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	3.1
TIME TO PEAK (HOURS)	5.4
MAX ELEVATION (FEET)	4,414.0
INCREMENTAL RISE (FEET)	1.3
PEAK FLOW (CFS)	9,004

1.1 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.3
TIME TO PEAK (HOURS)	1.1
MAX ELEVATION (FEET)	4,492.3
INCREMENTAL RISE (FEET)	4.8
PEAK FLOW (CFS)	9,740

0.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.0
TIME TO PEAK (HOURS)	0.0
MAX ELEVATION (FEET)	4,588.5
INCREMENTAL RISE (FEET)	0.0
PEAK FLOW (CFS)	15,569

8.5 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.6
TIME TO PEAK (HOURS)	4.6
MAX ELEVATION (FEET)	4,427.0
INCREMENTAL RISE (FEET)	1.6
PEAK FLOW (CFS)	9,167

0.2 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.1
TIME TO PEAK (HOURS)	1.0
MAX ELEVATION (FEET)	4,571.3
INCREMENTAL RISE (FEET)	10.6
PEAK FLOW (CFS)	15,479

57,745.15
59,360.26
60,729.52
61,889.29
63,138.39
62,527.32
64,078.49
65,614.10
66,778.68
67,505.13
67,591.88
67,775.61
67,993.43
69,281.31
69,385.13
53,388.61
52,619.57
51,481.25
48,922.85
46,915.10
43,764.56
40,027.46
37,887.02
34,740.96
33,591.36
31,566.23
29,108.38
24,257.50
18,260.89
12,646.14
10,593.46
7,490.35
6,107.24
22,531.78

Laramie River
Greyrocks Road
Emergency Pond
Ponds 1 & 2
Pond 3
Ringneck Road
Chugwater Creek
East Fairview Road
Greyrocks Reservoir

Base Flow Extent
Limit of Study
Cross Section
Limit of Breach Event
Storage Area
Breach Inundation Area

NOTES:
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8. INCREASE IN WSEL IS THE DIFFERENCE BETWEEN MAXIMUM WSEL UNDER DAM FAILURE AND MAXIMUM WSEL UNDER NO FAILURE SCENARIO.
9. ABBREVIATION USED:
W.S. OR WSEL = WATER SURFACE ELEVATION

AECOM

Drawn By:	DH
Checked By:	PD
Date:	3/30/2017
Project #:	60429243

APPENDIX
A.5

Projection:
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet

1 : 28,000
0 1,000 2,000 4,000
Feet

N

Imagery Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

P:\60429243\1500_Work\50_GIS\MXD\[project]\20170317_Pond 3 West Breach.mxd

LRS SITE

EMERGENCY NORTH

- Base Flow Extent
- Limit of Study
- Cross Section
- Limit of Breach Event
- Storage Area
- Breach Inundation Area

0.8 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.4
TIME TO PEAK (HOURS)	1.0
MAX ELEVATION (FEET)	4,444.5
INCREMENTAL RISE (FEET)	1.3
PEAK FLOW (CFS)	10,525

2.8 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.9
TIME TO PEAK (HOURS)	2.4
MAX ELEVATION (FEET)	4,436.5
INCREMENTAL RISE (FEET)	1.1
PEAK FLOW (CFS)	7,397

6.7 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.0
TIME TO PEAK (HOURS)	4.2
MAX ELEVATION (FEET)	4,413.4
INCREMENTAL RISE (FEET)	0.8
PEAK FLOW (CFS)	7,129

0.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.0
TIME TO PEAK (HOURS)	0.0
MAX ELEVATION (FEET)	4,537.7
INCREMENTAL RISE (FEET)	0.0
PEAK FLOW (CFS)	6,463

4.5 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.5
TIME TO PEAK (HOURS)	3.3
MAX ELEVATION (FEET)	4,426.3
INCREMENTAL RISE (FEET)	1.0
PEAK FLOW (CFS)	7,246

7.7 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.3
TIME TO PEAK (HOURS)	5.5
MAX ELEVATION (FEET)	4,404.9
INCREMENTAL RISE (FEET)	0.6
PEAK FLOW (CFS)	6,968

43,764.56
40,027.46
37,887.02
34,740.96
33,591.36
31,566.23
29,108.38
24,257.50
22,531.78
18,260.89
12,646.14
10,593.46
7,490.35
48,350.37
48,283.91
46,888.09
Laramie River
Greyrocks Road
Emergency Pond
Ponds 1 & 2
Pond 3
Greyrocks Roac
Ringneck Road
East Fairview Road
Chugwater Creek
Greyrocks Reservoir

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AECOM

Drawn By:	DH
Checked By:	PD
Date:	3/30/2017
Project #:	60429243

APPENDIX
A.5

Projection:
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet

1 : 24,000
0 750 1,500 3,000
Feet

N

LRS SITE

EMERGENCY SOUTH

- Base Flow Extent
- Limit of Study
- Cross Section
- Limit of Breach Event
- Storage Area
- Breach Inundation Area

1.4 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.7
TIME TO PEAK (HOURS)	1.3
MAX ELEVATION (FEET)	4,440.8
INCREMENTAL RISE (FEET)	2.3
PEAK FLOW (CFS)	14,995

2.2 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.9
TIME TO PEAK (HOURS)	1.5
MAX ELEVATION (FEET)	4,437.0
INCREMENTAL RISE (FEET)	1.6
PEAK FLOW (CFS)	9,200

7.4 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	2.2
TIME TO PEAK (HOURS)	4.5
MAX ELEVATION (FEET)	4,404.8
INCREMENTAL RISE (FEET)	0.8
PEAK FLOW (CFS)	7,343

6.1 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.9
TIME TO PEAK (HOURS)	3.2
MAX ELEVATION (FEET)	4,413.6
INCREMENTAL RISE (FEET)	1.1
PEAK FLOW (CFS)	7,932

0.0 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.0
TIME TO PEAK (HOURS)	0.0
MAX ELEVATION (FEET)	4,537.7
INCREMENTAL RISE (FEET)	0.0
PEAK FLOW (CFS)	6,396

0.4 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	0.5
TIME TO PEAK (HOURS)	0.7
MAX ELEVATION (FEET)	4,501.3
INCREMENTAL RISE (FEET)	23.3
PEAK FLOW (CFS)	14,980

3.9 MILES DOWNSTREAM OF BREACH	
TIME OF ARRIVAL (HOURS)	1.4
TIME TO PEAK (HOURS)	2.4
MAX ELEVATION (FEET)	4,426.7
INCREMENTAL RISE (FEET)	1.4
PEAK FLOW (CFS)	8,306

NOTES:
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AECOM

Drawn By:	DH
Checked By:	PD
Date:	3/30/2017
Project #:	60429243

Projection:
NAD 1983 StatePlane Wyoming East FIPS 4901 Feet

APPENDIX
A.5

1 : 24,000
0 750 1,500 3,000
Feet

T:\60429243\500_Work\510_GIS\MXD\Figures\20170317_EmergencySouth_Breach.mxd

Imagery Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

NO.	DATE	BY	REVISION
1	6-11-76	DLM	Revised as per Addendum No. 2.
	6-16-76	JCH	Issued
2	7-24-76	RLS	Revised 33:50 as per Change Order No. 1
	7-28-76	JCH	Issued
3	3-14-77	DJB	Revised side slope from 1:1 to varies, indicated slope of ditch, 0.03%. Added coordinate and spot elevation, added leader to existing coordinate.
	3-14-77	RAW	Issued
4	3-15-78	RAA	CONFORMING TO CONSTRUCTION RECORDS

ASH POND GRADING PLAN

CONTRACT NO. 3438

SITE PREPARATION & CONSTRUCTION FACILITIES

LARAMIE RIVER STATION

UNITS 1&2

Wheatland, Wyoming

MISSOURI BASIN POWER PROJECT

Burns & McDonnell

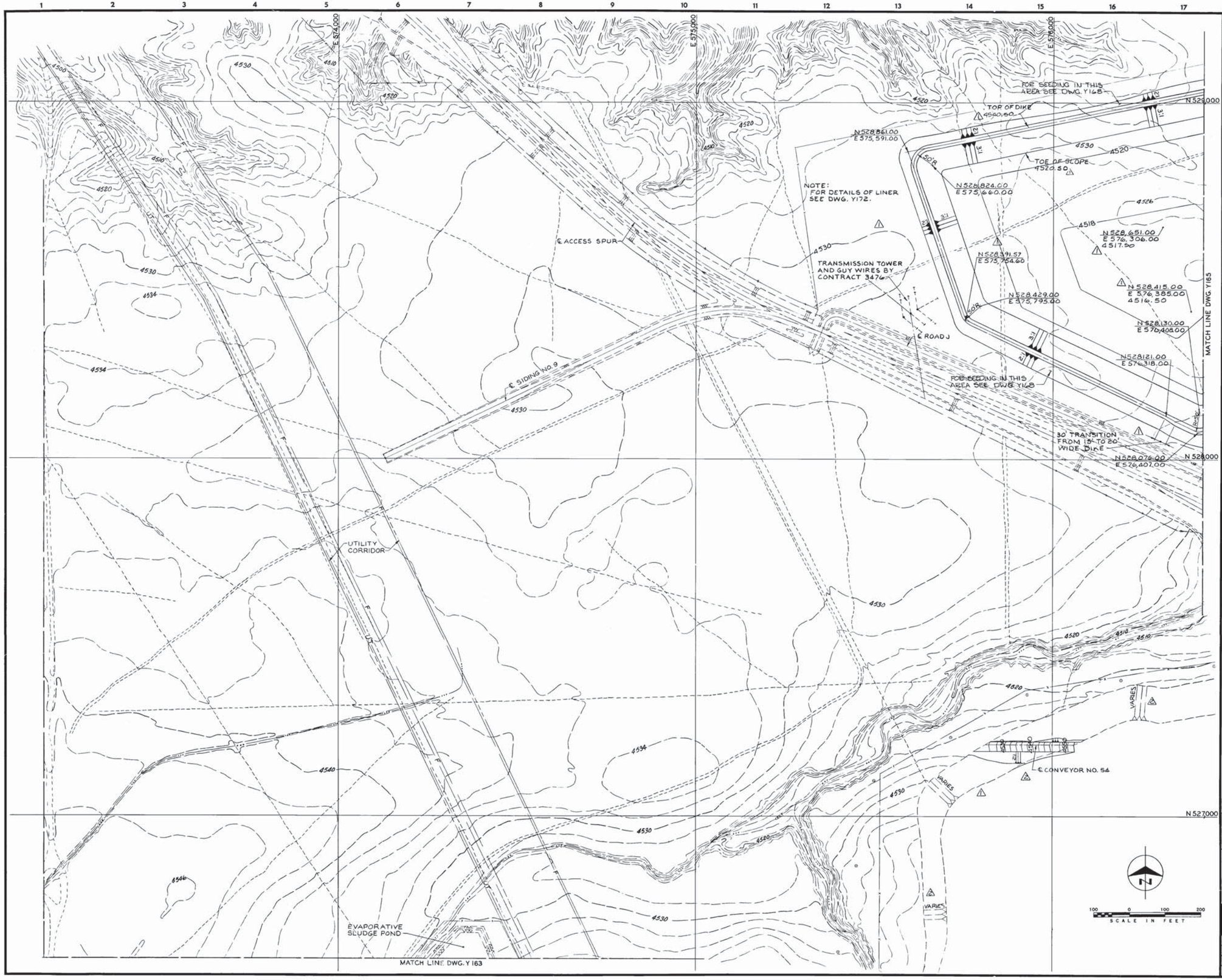
Engineers – Architects – Consultants

KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED	DRAWING NO.	REV.
JAA	PRK		Y46 – 4	
DATE March 17, 1976			PROJECT 74-012-1	
APP. REA March 15, 1976			SHEET OF SHEETS	
APP. PROJ. MGR				

Y46

R4



NO.	DATE	BY	REVISION
	3/20/78	DEH	ISSUED FOR CONSTRUCTION
1	3/31/78	DJB	CHANGED 30' TRANSITION FROM INSIDE TO OUTSIDE OF DIKE.
	4/12/78	DJB	REVISED ELEVATIONS AND UPDATED EXISTING GRADING.
	4/14/78	DJB	REVISED DIKE AND ADDED TRANS-MISSION TOWER
	5/10/78	DAY	LOWERED TOP OF DIKE, INSIDE TOE OF SLOPE AND ALL SPOT ELEVATIONS 0.75'.
	5/17/78	DJB	ADDED SPOT ELEVATION N528,415.00 E 576,385.00. AS PER CHANGE ORDER NO. 5001.
	5/19/78	DEH	ISSUED
2	7/18/78	DJB	ADDED GRADING FOR CONVEYOR NO. 54 AND CORRECTED EXIST. GRADE
	7/21/78	DEH	ISSUED
3	12/12/80	ROBA	**CONFORMING TO CONSTRUCTION RECORDS**
4	1/12/98	RMT/DGE	ADDED NOTE 1

NOTES:

1. ELEVATIONS PROVIDED WITHIN WEST EMERGENCY HOLDING POND ARE TO HYPALON LINER

GRADING PLAN
EMERGENCY HOLDING POND - 1

CONTRACT NO. 3449
YARD STRUCTURES

LARAMIE RIVER STATION
UNITS 1&2
Wheatland, Wyoming

MISSOURI BASIN POWER PROJECT

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED	DRAWING NO.	REV.
RLS	DJB	RLS	Y164 – 4	
DATE DEC. 9, 1977				
APP. DEA			PROJECT 74-012-1	
APP. PROJ. MGR.			SHEET OF SHEETS	

Y164

NO.	DATE	BY	REVISION
	3/20/78	DEH	ISSUED FOR CONSTRUCTION
1	3/31/78	DJB	CHANGED 30' TRANSITION FROM INSIDE TO OUTSIDE OF DIKE.
	4/12/78	DJB	REVISED ELEVATIONS
	5/10/78	DAY	LOWERED TOP OF DIKE, INSIDE TOE OF SLOPE, AND ALL SPOT ELEVATIONS 0.75'. CORRECTED END RD. V TO STA 12+24.66 ADDED PUMPHOUSE, & TROUGHS AND COORDINATES, AND NOTES 1, 2 & 3, AS PER CHANGE ORDER NO. 5001.
	5/19/78	DEH	ISSUED
3	6/13/79	DJB	REVISED BOTTOM OF DIKE EL. IN EAST POND AS PER CHANGE ORDER NO. 3449-13
	6/14/79	DJB	CORRECTED COORDINATE AT THE BEGINING OF THE V-DITCH
		DEH	ISSUED
2	2/12/80	FOBA	**CONFORMING TO CONSTRUCTION RECORDS**
4	1/12/98	DK & RMT/DLC	ADDED NOTE 4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

A B C D E F G H I J K L M

E 577,000 E 578,000 E 579,000

N 530000 N 529000 N 528000

4450 4460 4470 4480 4490 4500 4510 4520 4526 4528 4530

N529,707.00 E 579,156.00

EXISTING SECURITY FENCE

N529,530.00 E 579,189.00

N529,639.00 E 579,125.00

N529,511.00 E 579,259.00

R=50' R=30'

N529,337.00 E 577,900.00

TOP OF DIKE 4540.50

FOR SEEDING IN THIS AREA SEE DWG. Y168

N529,177.00 E 577,122.00

EXISTING SECURITY FENCE

R=25' R=25'

N529,153.00 E 577,177.00

N529,140.00 E 577,103.00

TOE OF SLOPE 4520.00

N529,188.00 E 578,228.00 4517.50

TOE OF SLOPE 4520.00

RUNOFF RETENTION POND

TOP OF DIKE 4540.50

N528,988.00 E 577,775.00 4516.28

℄ TROUGH N528,836.88 E 577,332.98

20'

N528,779.00 E 577,084.00 4520.00

℄ TROUGH N528,623.96 E 577,308.68

N528,655.00 E 576,704.00 4518.50

N528,918.00 E 578,218.00

N528,900.00 E 578,290.00

30' TRANSITION FROM 15' WIDE DIKE TO 20' WIDE DIKE

N528,701.00 E 578,344.00

N528,618.00 E 578,391.00

N528,635.00 E 578,322.00

50'R

℄ TROUGH N528,545.19 E 578,279.19

N528,674.00 E 577,938.00 4515.13

N528,507.00 E 577,648.00 4515.00

N528,432.00 E 577,506.00

N528,477.00 E 577,523.00

N528,496.00 E 577,470.00

PUMPHOUSE N528,444.58 E 577,553.09

N528,278.00 E 577,695.00

FOR SEEDING IN THIS AREA SEE DWG. Y168

MATCH LINE DWG. Y164

P.I. N528,012.36 E 576,476.97

TOP OF DIKE 4540.50

TOE OF SLOPE 4520.90

℄ TROUGH N528,117.70 E 576,484.00

SLOPE VARIES

℄ ROAD V

V-DITCH SLOPE = 0.22%

SLOPE VARIES

STA. 12+24.66 N528,407.56 E 577,562.78 END ROAD V

SEE DWG. Y174 FOR PROFILE OF ROAD V.

N528,208.88 E 577,676.59

CURVE DATA

P.T. STA. 0+90.76 N 528,019.76 E 576,497.24

Δ = 46° 42' 26"
D = 114° 35' 29"
R = 50.00'
L = 40.76'
T = 21.59'

P.C. STA. 0+30 N 527,992.53 E 576,468.23

N 527,946.61 E 576,448.66 STA. 30+00 RD. J = STA. 0+00 RD. V

℄ ROAD R

SCALE IN FEET 100 0 100 200

NOTES:

1. FOR PIPING DETAILS SEE DWG. U38
2. FOR DETAILS OF PUMPHOUSE SEE DWG. A276 AND DWG. 5495
3. FOR DETAILS OF LINER INSTALL. SEE DWG. Y172
4. ELEVATIONS PROVIDED WITHIN WEST EMERGENCY HOLDING POND ARE TO HYPALON LINER

GRADING PLAN
EMERGENCY HOLDING POND-2
CONTRACT NO. 3449
YARD STRUCTURES

LARAMIE RIVER STATION
UNITS 1&2
Wheatland, Wyoming
MISSOURI BASIN POWER PROJECT

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED
R.L.S	DJB	R.L.S

DATE DEC. 9, 1977

DRAWING NO. Y165 – 4 REV.

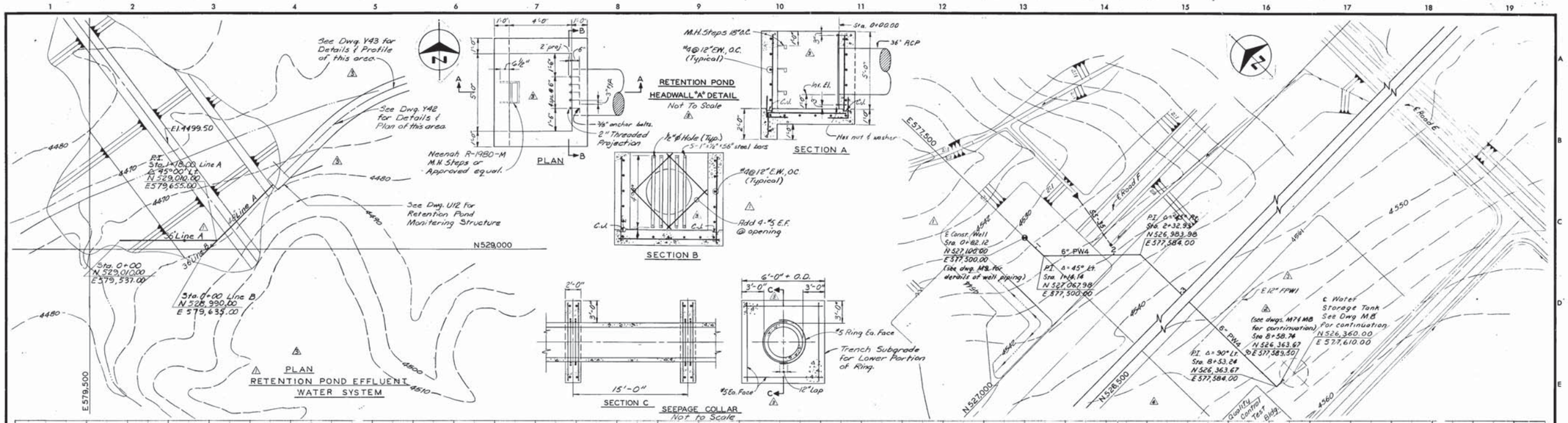
APP. REA

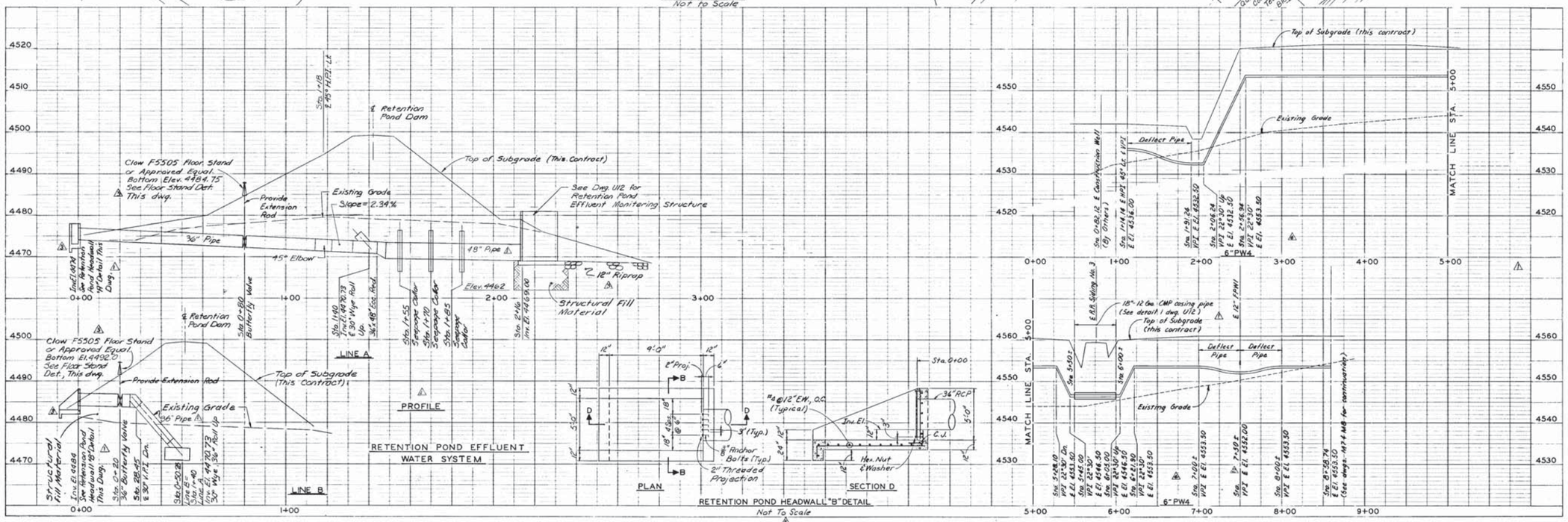
PROJECT 74-012-1

APP. PROJ. MGR.

SHEET OF SHEETS

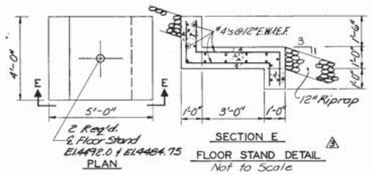
Y165





NO.	DATE	BY	REVISION
1	6-10-76	MDK	Revised as per addendum No. 2 & No. 7 & General Clarifications, Deleted Open Quarries As Per Alternate #5.
	6-22-76	JCH	Issued
2	7-1-76	JGJ	Revised 6" PW3 Plan & Profile according to alignment change.
	7-26-76	JCH	Issued
3	10-18-76	LRA	Revised Retention Pond Headwalls on 36" Line A & Line B. Changed Retention Pond Headwall Detail to Retention Pond Headwall "A" Detail. Add Retention Pond Headwall "B" Detail. Changed 15'-0" Dimension to Varies in Seepage Collar Detail. Change Section A to Section C on Seepage Collar Det. (38-7)
	6-22-76	RAW	Added Retention Pond Monitoring Structure Effluent Channel (Notes. (38-7)
	10-18-76	RAW	Added Floor Stand Detail & General Clarifications. Deflected 6" PW4 Joints to Miss 12" FPW1. (38-7)
	11-5-76	RAW	Issued
4	11-18-76	SLG	Revised Plan 6" PW4 to Avoid 55-35 Changed Profile 6" PW4 to Show Revised Location of 18"x12" ga. CMP. Added Polyethylene encasement (Note 3).
	1-10-77	RAW	Issued
5	5-5-77	SLG	Removed Polyethylene Encasement (Note 3).
	5-6-77	RAW	Issued
	1-2-79	CLA	CONFORMING TO CONSTRUCTION RECORDS

Note:
1. Provide Manufacturer's standard concrete pipe to plain-end steel or Cast Iron Pipe for adaptation to 36 M.J. Butterfly Valves.
2. Provide two concrete slabs and all required anchor bolts to mount 36" Valve Floor stand operators.



HOR 50 0 50 100 SCALE IN FEET
VERT 10 0 10 20 SCALE IN FEET

YARD PIPING - PLAN & PROFILE 9
CONTRACT NO. 3438
SITE PREPARATION & CONSTRUCTION FACILITIES
LARAMIE RIVER STATION
UNITS 1&2
Wheatland, Wyoming
MISSOURI BASIN POWER PROJECT
Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DESIGNED	DETAILED	CHECKED	DRAWING NO.	REV.
ALH	RVE	LWS	U11 - 5	
DATE March 19, 1976			PROJECT 74-012-1	
APP. REA. March 15, 1976			SHEET OF SHEETS	
APP. PROJ. MGR.				

U11
R5

Table B-1: Dam Break Summary Pond 3 North Breach						
Cross Section River Station	**Miles Downstream**	**Time of Arrival (hours)**	**Time to Peak (hours)**	**Max Elevation (ft)**	**Incremental Rise (ft)**	**Peak Flow (cfs)**
Pond 3	0.0	0.0	0.0	4588.5	0.0	15,101
49596.2	0.0	0.0	0.0	4567.0	4.0	17,751
RS 49540.62 Ponds 1 & 2						
49436.12	0.0	0.2	0.8	4547.4	4.1	17,751
49335.81	0.0	0.2	0.8	4544.6	1.6	17,748
48754.19	0.1	0.3	0.8	4537.7	4.0	17,716
48278.96	0.2	0.3	0.9	4533.7	7.2	17,643
Road[1]						
47904.96	0.3	0.3	0.9	4532.1	10.3	17,637
47675.51	0.4	0.3	0.9	4531.8	13.1	17,703
Road[1]						
47498.67	0.4	0.4	0.9	4531.8	15.1	17,820
47116.30	0.5	0.4	0.8	4531.6	19.0	18,229
46808.13	0.5	0.5	0.8	4531.6	19.1	18,956
RS 46598.1 Railroad Embankment						
46418.09	0.6	0.5	1.0	4518.7	9.8	18,956
46002.56	0.7	0.5	1.0	4514.5	11.0	18,922
45536.53	0.8	0.5	1.0	4508.7	12.3	18,903
44953.50	0.9	0.5	1.0	4504.4	12.5	19,028
44552.26	0.9	0.5	1.0	4503.7	14.4	19,539
44218.40	1.0	0.6	1.0	4503.6	18.4	20,212
43927.92	1.1	0.6	0.9	4503.6	22.1	20,797
43728.71	1.1	0.6	0.9	4503.5	24.0	21,146
43542.35	1.1	0.6	0.9	4503.6	25.5	21,506
43359.86	1.2	0.6	0.9	4503.6	25.5	21,963
43115.56	1.2	0.7	0.9	4503.5	25.5	22,924
42886.86	1.3	0.8	0.9	4503.5	25.4	24,057
RS 42735.48 Service Road Embankment						
42520.15	1.3	0.8	1.1	4478.0	12.6	24,057
41396.41	1.5	0.9	1.1	4467.5	11.5	23,750
40954.43	1.6	0.9	1.1	4462.4	10.2	23,652
40328.51	1.7	0.9	1.1	4451.5	4.1	23,547
Laramie River Confluence						
39107.7	2.0	1.0	1.7	4444.1	2.5	28,244
37887.02	2.2	1.0	1.8	4443.5	5.0	22,737
34740.96	2.8	1.1	1.8	4441.6	4.6	16,867
33591.36	3.0	1.1	1.9	4439.0	3.6	16,791
31566.23	3.4	1.1	2.3	4435.9	2.8	15,938
29108.38	3.9	1.3	2.3	4434.5	2.9	15,260
24257.5	4.8	1.5	2.6	4428.6	3.3	14,814
22531.78	5.1	1.6	2.8	4424.5	3.3	14,728
18260.89	5.9	1.7	3.2	4418.6	3.3	14,076
12646.14	7.0	2.0	3.3	4415.2	2.7	13,618
Mouth of Greyrocks Reservoir						
10593.46	7.4	2.2	3.4	4411.1	1.9	13,594
7490.352	8.0	2.2	4.5	4406.3	1.9	12,603
6107.239	8.2	2.3	4.6	4406.1	2.1	11,732
4068.01	8.6	2.4	4.6	4405.9	2.1	11,130
1830.536	9.0	2.6	4.7	4405.7	2.1	10,976

Notes:

1. The hydraulic effects of small service roads, bridges, and railroad crossings are ignored in this analysis.
2. Beginning and peak flood arrival times estimated from time of dam failure.
3. Time to peak is defined as the time from beginning of breach to the time of peak water surface elevation.

elevation under no failure scenario.

Table D-1: Dam Break Summary Pond 3 West Breach						
Cross Section River Station	**Miles Downstream**	**Time of Arrival[2] (hours)**	**Time to Peak[2,3] (hours)**	**Max Elevation (ft)**	**Incremental Rise[4] (ft)**	**Peak Flow (cfs)**
69281.3	0.0	0.0	0.0	4588.5	0.0	14,879
RS 69156.31 Pond 3 Breach						
68602.15	0.1	0.1	0.7	4573.5	11.3	15,569
67983.43	0.2	0.1	1.0	4571.3	10.6	15,479
67775.61	0.3	0.1	1.0	4571.2	15.6	14,429
67591.88	0.3	0.1	1.0	4571.2	13.9	14,429
67505.13	0.3	0.1	1.0	4571.1	15.6	10,921
Railroad Embankment[1]						
66778.68	0.5	0.2	1.0	4570.2	16.9	10,062
65614.10	0.7	0.2	1.0	4532.4	7.0	9,936
64078.49	1.0	0.2	1.1	4500.0	7.2	9,811
63138.39	1.1	0.3	1.1	4492.3	4.8	9,740
Railroad Embankment[1]						
62527.32	1.3	0.3	1.1	4488.8	4.7	9,730
61889.29	1.4	0.4	1.1	4486.3	5.2	9,710
60729.52	1.6	0.4	1.2	4480.7	5.1	9,691
Railroad Embankment[1]						
59360.26	1.9	0.5	1.2	4474.7	5.5	9,673
57745.15	2.2	0.5	1.2	4466.5	4.6	9,662
Railroad Bridge[1]						
Confluence with Laramie River						
53388.61	3.0	0.7	1.5	4453.5	1.9	14,462
52619.57	3.1	0.8	1.5	4451.8	1.7	14,323
51481.25	3.3	0.8	1.6	4450.6	1.5	14,129
48932.85	3.8	1.0	1.8	4448.6	1.4	13,522
46915.1	4.2	1.1	1.9	4447.5	1.2	13,297
43764.56	4.8	1.4	2.3	4445.0	1.6	12,799
40027.46	5.5	1.6	3.4	4441.4	2.2	12,217
37887.02	5.9	1.7	3.7	4440.9	2.6	10,266
34740.96	6.5	1.9	3.7	4439.6	2.4	9,413
33591.36	6.7	2.0	3.9	4437.2	1.7	9,406
31566.23	7.1	2.0	4.2	4434.5	1.3	9,301
29108.38	7.6	2.2	4.4	4433.2	1.4	9,209
24257.5	8.5	2.6	4.6	4427.0	1.6	9,167
22531.78	8.8	2.6	4.8	4422.9	1.5	9,160
18260.89	9.6	2.8	5.3	4417.0	1.6	9,062
12646.14	10.7	3.1	5.4	4414.0	1.3	9,004
10593.46	11.1	3.2	5.5	4410.2	0.9	8,999
Mouth of Greyrocks Reservoir						
7490.352	11.7	3.4	6.7	4405.4	1.0	8,719
6107.239	11.9	3.5	6.7	4405.3	1.1	8,475
4068.01	12.3	3.6	6.7	4405.0	1.1	8,296
1830.536	12.8	3.9	6.9	4404.8	1.1	8,247

Notes:

1. The hydraulic effects of small service roads, bridges, and railroad embankments are ignored in this analysis.
2. Beginning and peak flood arrival times estimated from time of dam failure.
3. Time to peak is defined as the time from beginning of breach to the time of peak water surface elevation.
4. Increase in water surface elevation is the difference between maximum water surface elevation under dam failure and maximum water surface elevation under no failure scenario.

AECOM

Project: Laramie River Station
Client: Basin Electric
Location: Wheatland, WY
Project #: 60429243

Prepared By: S. Pasquesi
Date: 03/16/2017
Checked By: P. Drew
Date: 03/17/2017

Table E-1: Dam Break Summary Emergency North Breach						
Cross Section River Station	**Miles Downstream**	**Time of Arrival[2] (hours)**	**Time to Peak[2,3] (hours)**	**Max Elevation (ft)**	**Incremental Rise[4] (ft)**	**Peak Flow (cfs)**
48283.9	0.0	0.0	0.0	4537.7	0.0	6,463
RS 48190.46 North Breach						
46888.09	0.2	0.1	0.8	4447.9	2.4	6,463
46441.8	0.3	0.1	0.8	4447.5	2.0	6,403
Confluence with the Laramie River						
43764.56	0.8	0.4	1.0	4444.5	1.3	10,525
40027.46	1.5	0.6	1.8	4440.6	1.5	9,616
37887.02	2.0	0.3	2.3	4439.8	1.7	8,254
34740.96	2.5	0.9	2.4	4438.6	1.6	7,404
33591.36	2.8	0.9	2.4	4436.5	1.1	7,397
31566.23	3.1	1.0	2.8	4433.9	0.8	7,328
29108.38	3.6	1.2	3.1	4432.5	0.9	7,270
24257.5	4.5	1.5	3.3	4426.3	1.0	7,246
22531.78	4.9	1.6	3.4	4422.2	0.9	7,241
18260.89	5.7	1.7	3.8	4416.3	1.0	7,178
12646.14	6.7	2.0	4.2	4413.4	0.8	7,129
10593.46	7.1	2.1	4.2	4409.8	0.5	7,125
Mouth of the Greyrocks Reservoir						
7490.352	7.7	2.3	5.5	4404.9	0.6	6,968
6107.239	8.0	2.4	5.8	4404.7	0.7	6,826
4068.01	8.4	2.6	6.0	4404.5	0.7	6,727
1830.536	8.8	2.9	5.7	4404.2	0.6	6,700

Notes:

1. The hydraulic effects of small service roads, bridges, and railroad crossings are ignored in this analysis.
2. Beginning and peak flood arrival times estimated from time of dam failure.
3. Time to peak is defined as the time from beginning of breach to the time of peak water surface elevation.
4. Increase in water surface elevation is the difference between maximum water surface elevation under dam failure and maximum water surface elevation under no failure scenario.

AECOM

Project: Laramie River Station
Client: Basin Electric
Location: Wheatland, WY
Project #: 60429243

Prepared By: S. Pasquesi
Date: 03/16/2017
Checked By: P. Drew
Date: 03/17/2017

Table F-1: Dam Break Summary Emergency South Breach						
Cross Section River Station	**Miles Downstream**	**Time of Arrival[2] (hours)**	**Time to Peak[2,3] (hours)**	**Max Elevation (ft)**	**Incremental Rise[4] (ft)**	**Peak Flow (cfs)**
45091.9	0.0	0.0	0.0	4537.7	0.0	6,396
RS 45026.80 Emergency South Breach						
44757.75	0.1	0.1	0.7	4501.7	8.4	6,396
44552.26	0.1	0.1	0.7	4501.5	12.0	7,274
44218.40	0.2	0.1	0.7	4501.4	16.2	8,352
43927.92	0.2	0.1	0.7	4501.4	19.9	9,429
43728.71	0.2	0.1	0.7	4501.4	21.9	10,146
43542.35	0.3	0.1	0.7	4501.4	23.4	10,929
43359.86	0.3	0.2	0.7	4501.4	23.3	11,962
43115.56	0.4	0.2	0.7	4501.3	23.3	13,382
42886.86	0.4	0.5	0.7	4501.3	23.3	14,980
RS 42735.48 Service Road Embankment						
42520.15	0.5	0.5	0.9	4475.5	10.2	14,980
41396.41	0.7	0.6	0.9	4464.7	8.7	14,754
40954.43	0.8	0.6	0.9	4459.5	7.3	14,669
Road[1]						
40328.51	0.9	0.7	0.9	4450.1	3.8	14,550
Confluence with Laramie River						
37887.02	1.4	0.7	1.3	4440.8	2.3	14,995
34740.96	1.9	0.9	1.4	4439.1	2.2	9,242
33591.36	2.2	0.9	1.5	4437.0	1.6	9,200
31566.23	2.5	1.0	1.9	4434.3	1.1	8,779
29108.38	3.0	1.1	2.2	4432.9	1.2	8,454
24257.5	3.9	1.4	2.4	4426.7	1.4	8,306
22531.78	4.3	1.4	2.5	4422.6	1.3	8,293
18260.89	5.1	1.6	3.1	4416.6	1.3	8,094
12646.14	6.1	1.9	3.2	4413.6	1.1	7,932
10593.46	6.5	2.0	3.2	4410.0	0.7	7,921
Mouth of Greyrocks Reservoir						
7490.352	7.1	2.1	4.4	4405.1	0.7	7,631
6107.239	7.4	2.2	4.5	4404.8	0.8	7,343
4068.01	7.8	2.4	4.6	4404.6	0.8	7,134
1830.536	8.2	2.7	4.7	4404.4	0.8	7,073

Notes:

1. The hydraulic effects of small service roads, bridges, and railroad crossings are ignored in this analysis.
2. Beginning and peak flood arrival times estimated from time of dam failure.
3. Time to peak is defined as the time from beginning of breach to the time of peak water surface elevation.
4. Increase in water surface elevation is the difference between maximum water surface elevation under dam failure and maximum water surface elevation under no failure scenario.

Appendix B – Charts and Tables

Summary of EAP Responsibilities

Entity	Responsibilities
Owner/Operator	1. Verify and assess emergency conditions 2. Notify other participating emergency management agencies 3. Take corrective action at facility 4. Declare termination of emergency at facility 5. Update EAP on at least an annual basis 6. Respond to emergencies at the facility 7. Receive condition status reports from the operator
Town of Wheatland Police, Fire, and Rescue	1. Receive condition status reports from owner 2. Notify Public within Wheatland limits 3. Conduct evacuation from inundation areas within town limits, if required 4. Render assistance to Platte County, as necessary 5. Render assistance to owner, as necessary
Platte County Police, Fire and Rescue, and Emergency Services	1. Receive condition status reports from owner 2. Notify public within Platte County 3. Conduct evacuation from inundation areas in Platte County, if required

Summary of Owner Responsibilities

Entity	Responsibilities
24/7 Operations Command Center	1. Detect incident 2. Determine emergency level 3. Make calls on notification flow chart 4. Coordinate with Operator and Engineering on gate operations and emergency procedures 5. Coordinate with downstream dam on operations 6. Provide regular status reports to senior management
On-site Operator	1. Detect/confirm incident 2. Determine emergency level 3. Make calls on Notification Flowchart 4. Coordinate with Command Center and Engineering on emergency procedures 5. Implement emergency procedures 6. Provide regular status reports to senior management
Engineering Manager	1. Support onsite Operator and Operations Command Center on emergency level 2. Make calls on notification flow chart 3. Determine emergency operation and construction procedures 4. Coordinate with Operator and Command Center emergency procedures 5. Dispatch engineers and construction crews as necessary 6. Dispatch engineer as technical liaison to County Emergency Operations Center 7. Provide regular status reports to senior management
Senior Management	1. Make calls on Notification Flowchart 2. Initiate periodic status report conference calls with site, command center, engineering, and public relations 3. Provide regular status reports to County Emergency Operations Center 4. Coordinate with upper management 5. Coordinate with public relations staff at County and technical liaison at County Emergency Operations Center
Public Relations	1. Mobilize to County Offices 2. Participate in periodic status report conference calls with site, command center, engineering, and management 3. Provide input to staff on emergency communications 4. Represent utility to media

Guidance for Determining the Emergency Level

Event	Situation	Emergency Level*
Embankment Overtopping	Reservoir level is 1 foot below the top of the impoundment	Potential Failure
	Water from the reservoir is flowing over the top of the impoundment	Imminent Failure
Seepage	New seepage areas in or near the impoundment	Non-failure
	New seepage areas with cloudy discharge or increasing flow rate	Potential Failure
Sinkholes	Observation of new sinkhole in reservoir area or on embankment	Potential Failure
	Rapidly enlarging sinkhole	Imminent Failure
Embankment / Structural Component Cracking	New cracks in the embankment/structural component greater than ¼-inch wide without seepage	Non-failure
	Cracks in the embankment/structural component with seepage	Potential Failure
Embankment / Structural Component Movement	Visual movement/slippage of the embankment slope/structural component	Non-failure
	Sudden or rapidly proceeding slides of the embankment slopes/structural component	Imminent Failure
Security Threat	Verified bomb threat that, if carried out, could result in damage to the impoundment	Potential Failure
	Detonated bomb that has resulted in damage to the impoundment or appurtenances	Imminent Failure
Sabotage/ Vandalism	Unauthorized operation of the impoundment	Non-failure
	Damage that could adversely impact the functioning of the impoundment or appurtenances	Non-failure
	Modification to the impoundment or appurtenances that could adversely impact the functioning of the impoundment	Potential Failure
	Damage to impoundment or appurtenances that has resulted in seepage flow	Potential Failure
	Damage to impoundment or appurtenances that has resulted in uncontrolled water release	Imminent Failure

Level of Emergency Determination Chart

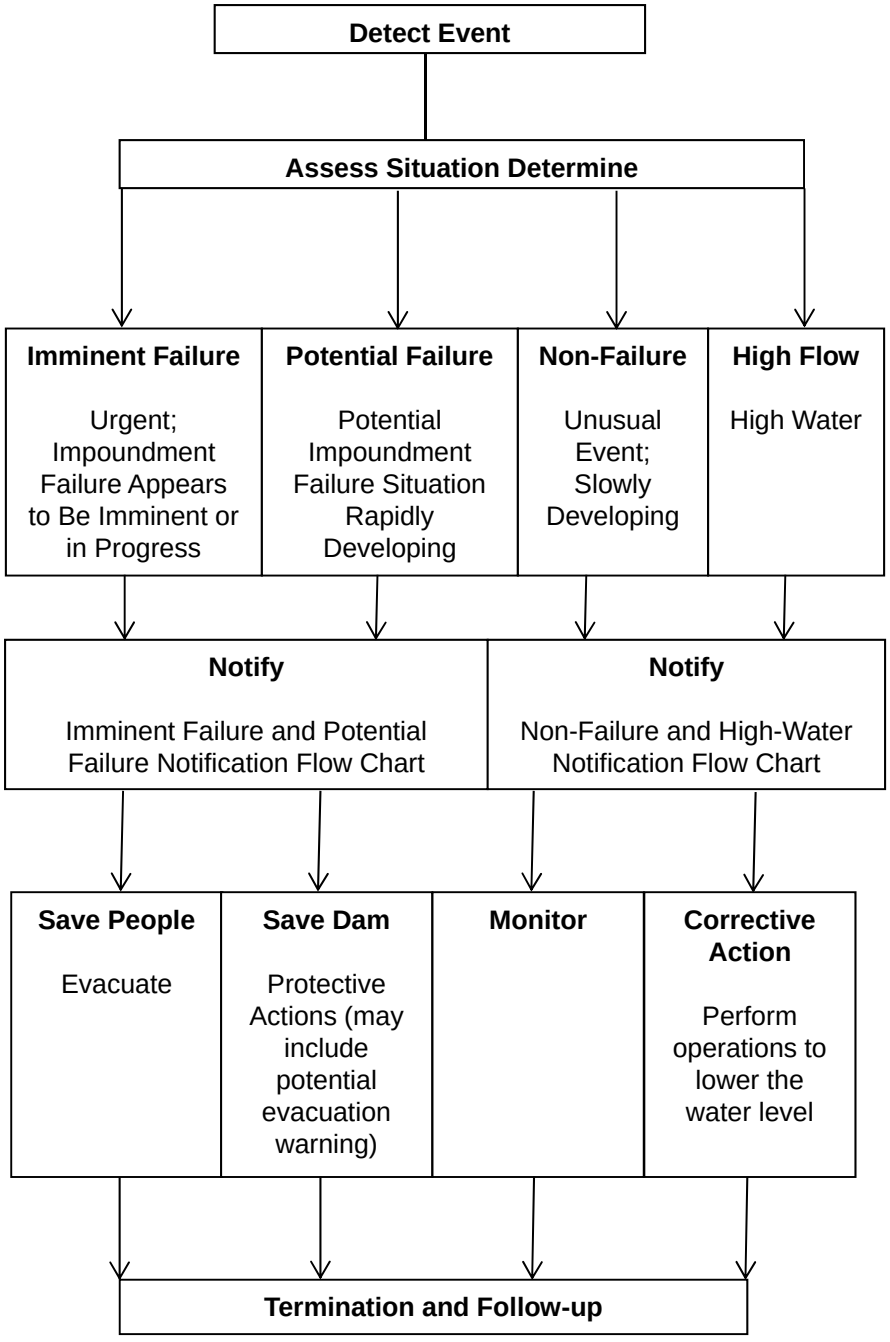
Step 1:
Event Detection

Step 2:
Emergency Level Determination

Step 3:
Notification and Communication

Step 4:
Expected Actions

Step 5:
Termination and Follow-up



Last Updated: April 2017

Imminent Failure and Potential Failure Notification Flow Chart

Observer of Incident Event

EAP Coordinator (Owner/Operator)**

Primary Contact
Name: Dave Cummings
Primary Phone #: 307-322-9601 Ext. 3146
Alternate Phone #: 307-375-1270

Alternate Contact
Name: Troy Tweeten
Primary Phone #: 307-322-7070
Alternate Phone #: 307-689-1056

Notes

1 = Call Sequence

* Call EAP Coordinator if 911 is notified by non-utility observer

Suggested EAP Coordinator Message – Imminent Failure

- This is <state name>. I am making this call in accordance with the Laramie River Station Emergency Action Plan (EAP).
- Problems have occurred at the Laramie River Station.
- The EAP has been activated, currently at the highest emergency level, imminent failure.
- Flooding along the Laramie River is possible.
- **Immediately evacuate** residences along the Laramie River.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is <state phone number>.

Suggested EAP Coordinator Message – Potential Failure

- This is <state name>. I am making this call in accordance with the Laramie River Station Emergency Action Plan (EAP).
- Problems have occurred at the Laramie River Station.
- The EAP has been activated, currently at the Potential Failure Emergency level.
- Flooding along the Laramie River is possible.
- **Prepare to evacuate** residences along the Laramie River.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is <state phone number>.

CEO & General Manager**
Name: Paul Sukut
Primary Phone #: 701-557-5715

Platte County Emergency Management*
Primary Phone #: 307-322-1356
Alternate Phone #: 911

BEPC Security (at Least 10 rings)
Primary Phone #: 701-557-5335

Wheatland Volunteer Fire
Primary Phone #: 307-322-3445

Platte County Memorial Hospital
Primary Phone #: 307-322-3636

BNSF Outer Loop Coal Desk
Primary Phone #: 817-867-5017

Regulatory Authorities

Wyoming State Warning Point
(Ask for Wyoming Office of Homeland Security Duty Officer (off hours) or 307-777-4910)
Primary: 307-630-2767
Alternate: 307-777-4910

Wyoming Governor
Office: 307-777-7434
Alternate (Chief of Staff): 307-262-2142

Casper Control Center (Bureau of Reclamation)
Primary: 307-261-5670
Emergency Number: 307-234-7550

Corps of Engineers, Omaha District
Primary: 402-995-2448

National Weather Service, Cheyenne, WY
24 hr. Emergency: 307-772-2468

24-Hour Highway Patrol Dispatch
(Ask for WEMA Duty Officer)
Primary: 307-777-4321

Downstream Residences/Businesses

Name: Mark and Sharon Runyan
Address: 128 Ringneck Road
Phone: 307-322-1214

Name: Joe and Tammy Geringer
Address: 380 East Fairview Road
Phone: 307-322-9322

Name: Ryker and Carrie Hyche
Address: 167 East Laramie River Road
Phone: 307-322-5884

Name: Nick Willhelm
Address: 314 North Wheatland Highway
Phone:

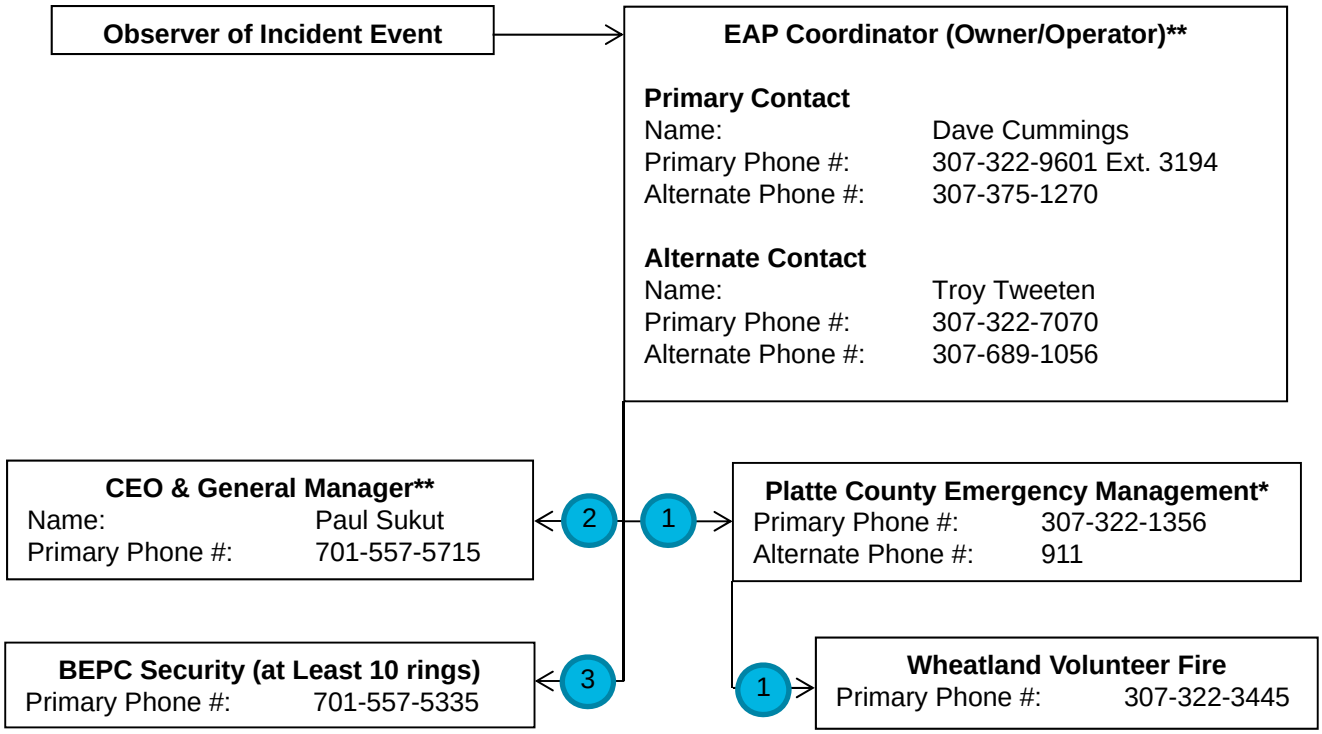
Name: Loomis Charitable Trust (Bill Vines)
Address: 709 9th Street
Phone: 307-322-2882

Name: Bill Criss
Address: 827 Grayrocks Road
Phone: 307-322-3114

This contact information is not to be released to the public and is not to be used for any purpose other than an emergency.

Last Updated: April 2017

Non-Failure and High Water Notification Flow Chart



Notes

1 = Call Sequence

* Call EAP Coordinator if 911 is notified by non-utility observer

Suggested EAP Coordinator Message

- This is <state name>. I am making this call in accordance with the Laramie River Station Emergency Action Plan (EAP).
- An incident has been detected at the Laramie River Station.
- The EAP has been activated, currently at a <state either: non-failure or high water> incident level.
- The situation is being monitored to determine if any evacuation warnings are necessary.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is <state phone number>.

This contact information is not to be released to the public and is not to be used for any purpose other than an emergency.

Last Updated: April 2017

Available Resources

Resource	Company Name	Address	Telephone #
Heavy Equipment Service and Rental	Basin Electric – utilize owned equipment stored on-site.		
	Hillside Rental	1851 Oak Street Wheatland, WY 82201	307-322-5900
Sand and Gravel Supply	Alexander Construction Co Inc. (Owner: Lori Hale)	149 Y O Ranch Rd Wheatland, WY	307-322-2278
	Croell Redi Mix	PO Box 787 Wheatland, WY	307-322-3591
	Platte County Concrete & Stone (Owner: Rodger Hollingsworth)	245 South Wheatland Highway Wheatland, WY	307-322-3591
Ready Mix Concrete Supply	Croell Redi Mix	PO Box 787 Wheatland, WY	307-322-3591
	Platte County Concrete & Stone (Owner: Rodger Hollingsworth)	245 South Wheatland Highway Wheatland, WY	307-322-3591
Pumps/Siphons	Hillside Rental	1851 Oak Street Wheatland, WY 82201	307-322-5900
	Adrian Pump	192 W Frontage Rd Wheatland, WY	847-769-7705
	Motion Industries, Inc.	5271 Hitt Boulevard Gillette, WY 82718	307-682-8821
	Sulzer EMS	3382 Bird Drive Gillette, WY 82718	307-682-8733
Diving Contractor	Midco Diving & Marine Services, Inc.	Loveland, Colorado	970-532-2128
	ASI Constructors Inc (ASI)	1850 E. Platteville Blvd. Pueblo West, CO 81007	719-647-2821
Sand Bags	Grainger International (Casper Branch #109)	1110 Wilkins Circle Casper, WY 82601-1331	1-800-472-4643
	Grainger International (Fort Collins Branch #218)	4531 Innovation Dr. Fort Collins, CO 80525-3406	1-800-472-4643
Generators and Emergency Lighting	Hillside Rental	1851 Oak Street Wheatland, WY 82201	307-322-5900
	Sulzer EMS	3382 Bird Drive Gillette, WY 82718	307-682-8733
Additional Resources:			

Last Updated: April 2017

Appendix C – Blank Forms and Log Sheets

Concurrence

By my signature, I acknowledge that I, or my representative, have reviewed this plan and concur with the tasks and responsibilities assigned herein for me and my organization.

1. _____
Signature *Owner* *Date*

Printed Name and Title: _____

2. _____
Signature *Operator* *Date*

Printed Name and Title: _____

3. _____
Signature *Local Law Enforcement* *Date*

Printed Name and Title: _____

4. _____
Signature *Local Emergency Management* *Date*

Printed Name and Title: _____

5. _____
Signature *Fire Chief* *Date*

Printed Name and Title: _____

6. _____
Signature *Director of Public Works* *Date*

Printed Name and Title: _____

Communication Documentation Chart

Date	Time	Person Contacted	Method of Contact	Reason for Contact
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
	AM PM			
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	AM PM			
	AM PM			

Last Updated: April 2017

Emergency Action Plan Updates

Rev #	Date	Sections Reviewed or Revisions Made	Revisions Made By
1	2/8/2018	Updated alternate contact (new plant manager)	Cliff Shierk (AECOM)
2	2/9/2018	Updated contact information for Bill Criss, adjacent property owner	Kevin Solie (Basin Electric)
3			
4			
5			
6			
7			
8			
9			
10			

List of Holders, Receipt Confirmation, and Emergency Action Plan Updates

#	Name	Address	Telephone #	Date of Receipt
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Last Updated: April 2017

Emergency Incident Log

Name: _____ Job Title:_____

Incident Start Date:_____ Incident Start Time: _____

Incident Description: _____

Initial Incident Level: _____

Incident Detection: _____

When did you detect or learn about the incident:_____

How did you detect or learn about the incident:_____

Log All Notifications and Activity in the Table Below

Date	Time	Action/Incident Progression	Action Taken By

Emergency Termination Log

Impoundment Name: _____ County: _____

Impoundment Location: _____ Stream/River: _____

Date/Time: _____

Weather Conditions: _____

General Description of Emergency Situation: _____

_____

Area of Impoundment Affected: _____

Extent of Damage to Impoundment & Possible Cause: _____

_____

Effect on Impoundment Operation: _____

_____

Initial Reservoir Elevation/Time: _____

Maximum Reservoir Elevation/Time: _____

Final Reservoir Elevation/Time: _____

Description of Area Flooded Downstream / Damage/ Loss of Life: _____

_____

Justification for Termination of Dam Safety Emergency: _____

_____

Other Data and Comments: _____

_____

_____

_____

Report Prepared By: _____

(Printed Name and Signature) (Date)

Appendix D – Glossary

Breach: An opening through the embankment resulting in partial or total failure of the impoundment.

Consequences: Potential loss of life or property damage downstream of an impoundment caused by floodwaters released at the impoundment or by waters released by partial or complete failure of impoundment. This includes effects of landslides upstream of the impoundment on the property located around the reservoir.

Emergency Action Plan (EAP): Formal document that identifies potential emergency conditions at an impoundment and specifies preplanned actions to be followed to minimize property damage and loss of life. The EAP describes actions the owner will take to moderate or alleviate a problem at the impoundment, as well as actions the owner, in coordination with emergency management authorities, will take to respond to incidents or emergencies related to the impoundment.

EAP exercise: Activity designed to promote prevention, preparedness, and response to incidents and emergencies, and may also be extended to include recovery operations. The exercise also demonstrates the EAP's effectiveness in an actual situation and demonstrates the readiness levels of key personnel. Periodic exercises result in an improved EAP because lessons learned are incorporated into the updated EAP document. Exercises consist of testing and performing the duties, tasks, or operations identified and defined within the EAP through a simulated event.

Emergency: Any incident, whether natural or manmade, that requires responsive action to protect life or property.

Emergency alert system: A federally established network of commercial radio stations that voluntarily provide official emergency instructions or directions to the public during an emergency.

Emergency management authority: State, local, Tribal, or Territorial agency responsible for emergency operations, planning, mitigation, preparedness, response, and recovery for all hazards. Names of emergency management authorities vary (e.g., Division of Emergency Management, Comprehensive Emergency Management, Disaster Emergency Services, Emergency and Disaster Services).

Emergency Operations Center: The location or facility where responsible officials gather during an emergency to direct and coordinate emergency operations, to communicate with other jurisdictions and with field emergency forces, and to formulate protective action decisions and recommendations during an emergency.

Flood hydrograph: Graph showing the discharge, height, or other characteristic of a flood with respect to time for a given point on a stream.

Flood routing: Process of determining progressively, over time, the amplitude of a flood wave as it moves past an impoundment or downstream to successive points along a river or stream.

Hazard potential: Situation that creates the potential for adverse consequences, such as loss of life, property damage, or other adverse impact. Impacts may be for a defined area downstream of an impoundment from floodwaters released through spillways and outlet works of the impoundment or waters released by partial or complete failure of the impoundment. They may also be for an area upstream of the impoundment from the effects of backwater flooding or the effects of landslides around the reservoir perimeter.

Headwater: Water immediately upstream from an impoundment. The water surface elevation varies due to fluctuations in inflow and the amount of water passed through the impoundment.

Incident: An incident in terms of impoundment operation includes an impending or actual sudden release of water caused by an accident to, or failure of, an impoundment or other water retaining structure, or the result of an impending flood condition when the impoundment is not in danger of failure, or any condition

that may affect the safe operation of the impoundment. The release of water may or may not endanger human life, downstream property and structures, or facility operations.

Impoundment Failure: Catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water. There are lesser degrees of failure, but any malfunction or abnormality outside the design assumptions and parameters that adversely affect an impoundment's primary function of impounding water is properly considered a failure. Lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure. They are, however, normally amendable to corrective action.

Inflow Design Flood (IDF): Flow used in the design of an impoundment and its appurtenant works, particularly for sizing the spillway and outlet works, and for determining the maximum height of the impoundment, freeboard, and temporary storage requirements. The IDF is typically the flow above which the incremental increase in water surface elevation due to failure of an impoundment is no longer considered to present an unacceptable threat to downstream life or property. The upper limit of an IDF is the Probable Maximum Flood.

Inundation map: Map delineating areas that would be flooded as a result of an impoundment failure.

Inundation zone: Area downstream of the impoundment that could be inundated by the released water. This zone is typically demarcated by a boundary reflecting the vertical elevation of the peak flow of water for both a flood failure and non-failure situation.

Notification: To inform appropriate individuals about an emergency condition so they can take appropriate action.

Owner: Entity that owns the impoundment and associated facilities. The owner also includes the operator and operating organization.

Probable Maximum Flood (PMF): Flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that is reasonably possible in the drainage basin under study.