



# UTAH WATER QUALITY 401 CERTIFICATION

## Utah Division of Water Quality

**INSTRUCTIONS:**

1. Read the application guidance sheet before filling out this form.
2. Uncompleted section blocks of this form will be considered an incomplete application.

Mail To: Division of Water Quality, Utah Department of Environmental Quality  
 PO Box 144870 Salt Lake City, UT 84114-4870

A-C. Applicant Information.			
Name of Applicant: <b>Mark L. McCune, PE</b>		Name of Company: <b>Union Pacific Railroad (UPRR)</b>	
Position: <b>Director, Structure Design</b>	Email: <a href="mailto:mlmccune@up.com">mlmccune@up.com</a>	Phone: <b>(402) 544-5194</b>	
Mailing Address: <b>1400 Douglas Street, Stop 0910</b>			
City: <b>Omaha</b>	State: <b>Nebraska</b>	Zip Code: <b>68179-0910</b>	
Signature of Applicant: <i>Mark L. McCune</i>			
Date:			
A corporate application must be signed by an officer of the corporation. Any signature required for application Certification shall be provided as described in 40 CFR section 122.22(a);			
D. Contact Information: Person who can be contacted for additional information.			
Name of Contact: <b>Mark L. McCune, PE</b>		Name of Company: <b>Union Pacific Railroad</b>	
Position: <b>Director, Structure Design</b>	Email: <a href="mailto:mlmccune@up.com">mlmccune@up.com</a>	Phone: <b>(402) 544-5194</b>	
Mailing Address: <b>1400 Douglas Street, Stop 0910</b>			
City: <b>Omaha</b>	State: <b>Nebraska</b>	Zip Code: <b>68179-0910</b>	
Signature of Applicant: <i>Mark L. McCune</i>			
E. (1) Project/Tract Location.			
County: <b>Box Elder County</b>		Nearest City or Town: <b>Unincorporated Box Elder County</b>	
U.S.G.S. Quadrangle map name (Topographic map):  <b>Carrington Island, NE, UT 41112B5</b>		Project street address (if applicable):  <b>Railroad Mile Post 750.53</b>	
Quarter: <b>NW</b>	Section: <b>29</b>	Township: <b>6 North</b>	Range: <b>6 West</b>
Project name or title:  <b>East Culvert Temporary Emergency Closure, Great Salt Lake Causeway</b>		Name of water bodies within project boundaries:  <b>Great Salt Lake, Gunnison and Gilbert Bays</b>	
Other location description or driving directions:  <b>The East Culvert is located about 7 miles west of Promontory Point boat harbor in the Union Pacific Great Salt Lake Causeway, Utah.</b>			
E. (2) List of name and addresses of landowners adjacent to the project.			
Name: <b>State of Utah, State Lands</b>		Name: <b>Union Pacific Railroad, Easement Holder</b>	
Address: <b>Division of Forestry, Fire &amp; State Lands 1594 West North Temple</b>		Address: <b>1400 Douglas Street</b>	
City: <b>Salt Lake City</b>	State: <b>UT</b>	City: <b>Omaha</b>	State: <b>NE</b>

Zip: <b>84114-5703</b>	Zip: <b>68179</b>
Name: Address: City:                      State:                      Zip:	Name: Address: City:                      State:                      Zip:
Name: Address: City:                      State:                      Zip:	Name: Address: City:                      State:                      Zip:
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Name: Address: City:                      State:                      Zip:	Name: Address: City:                      State:                      Zip:

**F. Drawing/Plan Requirements (applicant must provide the following).                      Reference Attachment A**

- A. North arrow, scale, property boundaries.
- B. Plan/aerial/overhead view of the project site showing the existing condition and proposed construction, discharge locations, adjacent landowners, associated water bodies, including wetland delineations.
- C. Cross section views of areas of fill or alteration of stream and other water(s).
- D. Elevation plan of all existing and proposed structures.

**G. (1) USACE 404 Federal Permit**

- A. Does this project require the issuance of USACE Section 404 permit?  Yes  No If no, you do not need to answer Part B.
- B. Have you applied for a USACE Section 404 Permit?  Yes  No If yes, please supply the USACE ID Number, the project manager, and a copy of any correspondence with the USACE. If no, contact the USACE regarding the possible need for a permit application. See UPRR October 21, 2013 request for Emergency Authorization of East Culvert Closure: SPK-2011-00755, Project Manager: Kathleen Anderson. The USACE has issued a Temporary Emergency Closure Authorization dated December 6, 2013 (SPK-2011-00755) under Nationwide Permit 14, subject to certification by the State of Utah. The USACE approval would result in the “temporary loss of approximately 0.17 acre of waters of the United States and a temporary reduction of the circulation of flows between the North and South Arms of the Great Salt Lake.”
- C. Have you applied for, received, or been denied a permit from the Utah Department of Natural Resources for this project?  Yes  No Please give the permit name, permit number, and date of application, issuance or denial.
- D. Have you applied for, received, or been denied any other federal, state, or local permits, variances, licenses, or certifications for this project?  Yes  No Please give the permit name, agency from which it was obtained, permit number, and date of issuance or denial.

**G. (2) Associated existing or pending federal, state, local permits, certification including land use permits, with corresponding file number.**

AGENCY	PERMIT NAME	PERMIT NUMBER	STATUS
U.S. Army Corps of Engineers	NWP 14 Temporary Emergency Closure of East Culvert—Verified December 6, 2013	SPK-2011-00755	Subject to Utah DWQ 401 Certification
U.S. Army Corps of Engineers	NWP 14-West Culvert closure and construction of compensatory mitigation bridge—August 29, 2012	SPK-2011-00755	Suspended Pending Informal Consultation pursuant to 33 CFR 330.5(d)(2)

**H. (1) For the proposed discharge(s), indicate the name of the water(s) and the precise discharge (fill or excavation) location(s).**

1. Surface Water Name	Great Salt Lake	1. Discharge Lat./Long. 41°13'16.4" N / 112°33'39.6" W Or 41.221, -112.561
2. Surface Water Name		2. Discharge Lat./Long.
2. Surface Water Name		3. Discharge Lat./Long.
2. Surface Water Name		4. Discharge Lat./Long.

**H. (2) Beneficial use classification of potentially affected surface water(s).**

1.	Gunnison Bay, Great Salt Lake, Class 5B Protected for infrequent primary and secondary contact recreation, waterfowl, shorebirds and other water-orientated wildlife including their necessary food chain. Source: R317-2-6 (October 2013)
2.	Gilbert Bay, Great Salt Lake, Class 5A Protected for frequent primary and secondary contact recreation, waterfowl, shorebirds and other water-orientated wildlife including their necessary food chain Source: R317-2-6 (October 2013)
3.	
4.	

**H. (3) For each surface water being impacted list any known causes of water impairment per Sections 303(d) and 314 of the Federal Clean Water Act, 33 U.S.C. Sections 1251 through 1387 and the names of any associated local watershed management plans including TMDL studies.**

1. Not Applicable- Gunnison Bay is not on the current State 303(d) list

Source:

[http://www.waterquality.utah.gov/WQAssess/documents/IR2010/Part3/Final2010IR303\(d\)List.2.10.2012.pdf](http://www.waterquality.utah.gov/WQAssess/documents/IR2010/Part3/Final2010IR303(d)List.2.10.2012.pdf)

2. Not Applicable—Gilbert Bay is not on the current State 303(d) list.

Source:

[http://www.waterquality.utah.gov/WQAssess/documents/IR2010/Part3/Final2010IR303\(d\)List.2.10.2012.pdf](http://www.waterquality.utah.gov/WQAssess/documents/IR2010/Part3/Final2010IR303(d)List.2.10.2012.pdf)

3.

4.

**I. A description of the overall project purpose including the construction and operation of the facilities which may result in discharge. Characterize the physical, chemical, biological, thermal and other pertinent properties of the discharge. (Use additional sheet(s) if required.)**

**See Attachment B**, Permitting Documents, including UPRR Request for Emergency Closure (October 21, 2012), Jacobs Associates Report (October 21, 2013) and USACE Temporary Emergency Closure Authorization (December 6, 2012). There is no discharge from the operation of new facilities associated with this project. This project involves the temporary, one time placement of fill, approximately 3,650 cubic yards of clean rock, into the East Culvert to prevent the collapse of the East culvert and the closing of the railroad causeway to train traffic. The concrete culvert is failing, due to settlement and age (original construction in 1959) and is jeopardizing the structural integrity of the railroad causeway.

The East Culvert is about 15 feet wide and 23 feet tall and spans the width of the causeway. The invert of the East Culvert is at about elevation 4173 (NGVD 29), the top of the causweay is about 4216 (NGVD) and the Great Salt Lake is about 22 feet deep at the culvert location.

On December 6, 2013, the Army Corps of Engineers issued a provisional emergency temporary authorization pursuant to Nationwide Permit 14, subject to 401 certification by the Utah Division of Water Quality. The USACE permit stated:

“Based on the information you provided, the proposed activity, resulting in the temporary loss of approximately 0.17 -acre of waters of the United States and a temporary reduction of the circulation of flows between the North and South Arms of the Great Salt Lake, is authorized by Nationwide Permit Number 14, *Linear Transportation Projects.*”

**J. A description on how the discharge(s) are compliant with water quality standards, including anti-degradation requirements, beneficial use designations, narrative and numeric standards. (Use additional sheet(s) if required.)**

See Antidegradation Review Form, Attachment C

**K. A description of the methods and means being used or proposed to monitor the quality and characteristics of the discharge(s) and the operation of the equipment or facilities employed in control of the proposed discharge(s).**

**Provide a map showing the location(s) of the monitoring point(s).**

See USACE Authorization for Temporary Emergency Closure, Dated December 6, 2013. The USACE permit requires the preparation of an interim mitigation and monitoring plan for USACE and DWQ approval, with quarterly reporting. The USACE permit requires utilization of construction BMPs during temporary filling of the East culvert and submission of an after-action report documenting work performed, BMPs implemented and work completed; the report is due within 30-days of completion.

**L. Supporting documentation submitted to federal agencies (e.g., maps, plans, specification, project dimensions, copies of associated federal applications, biological and engineering studies, reference information in FERC filings, Environmental Assessment or Environmental Impact Statements, Alternative Analyses), as applicable.**

**Attachment D: ]: contains the following additional documents and supporting information submitted to the USACE**

1. UPRR Letter to US USACE, Dated September 25, 2013
2. UPRR Email to US USACE, Dated November 1, 2013
3. UPRR Email and Attachment to US Army Corps of Engineers, Dated November 8, 2013
4. Pillsbury Winthrop Shaw Pittman LLP (Pillsbury) Letter to USACE on behalf of UPRR with enclosures, Dated November 21, 2013
5. Pillsbury Email to USACE on behalf of UPRR, Dated November 21, 2013
6. Pillsbury Letter to USACE on behalf of UPRR with enclosure, Dated November 27, 2013
7. Pillsbury Email to USACE on behalf of UPRR, Dated December 2, 2013

**M. An exhibit that identifies and describes other requirements of State Law applicable to the activity that have any relationship to water quality, including requirements under:  
Section 19-5-114, spills or discharges of oil or other substance;  
Section R317-2-12, Category 1 and Category 2 waters;  
Section R317-2-3 Anti-Degradation Policy (ADR);  
Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities Permit No. UTR300000; and  
UPDES General Permit for Construction Dewatering Permit No. UTG070000.**

Section 19-5-114, Does not apply

Section R317-2-12, Does not apply, discharge is not to Category 1 or Category 2 waters

Section R317-2-3, Proposed impacts analysis and mitigation plan will provide protection of water quality and be consistent with Anti-Degradation Policy. See Attachment C- Antidegradation Review Form

UTR300000 UPDES for Construction Activities, does not apply as project will not include land disturbing activities over 1 acre.

UTG070000 UPDES for Construction Dewatering, does not apply as project will not include dewatering

**N. Estimated dates on which the activity will begin and end and use the date or dates on which the discharge(s) will take place.**

The filling of the East Culvert is scheduled to take place in December, 2013. It is anticipated that the activity will be completed within 5 days of starting.

**O. Additional information regarding unique features of the project.**

UPRR requested emergency authorization of the Causeway East and West Culverts in 2011 from the US Army Corps of Engineers. UPRR received authorization in August 2012 for West Culvert closure and construction of a new bridge to mitigate the loss of both the East and West Culvert. The authorization included a requirement to develop a mitigation and monitoring plan in support of its proposal to construct a bridge to compensate for loss of water flow and salt transfer that could result from closure of the East and West Culverts. On October 21, 2013, UPRR notified the Army Corps of Engineers that a recent inspection had identified significant deterioration of the East culvert and requested emergency authorization to close the East culvert. On December 6, 2013, the USACE authorized the temporary filling of the East culvert due to its potential for failure and a temporary reduction in circulation of flows between the North and South arms of the Great Salt lake. The USACE stated "that this verification 'does not address the permanent solution for maintaining train operations across the UPRR Causeway. Activities in waters of the United States proposed for a permanent solution, including whether to leave the East Culvert fill material in-place, will be evaluated under our standard individual permit procedures. " The verification explained that the disposition of the existing August 2012 NWP 14 Verification for Closure of the West Culvert and Construction of the Compensatory Mitigation bridge would be addressed in a standard individual permit process that would be publicly noticed in the near future..

**P. Any additional information as required by the director.**

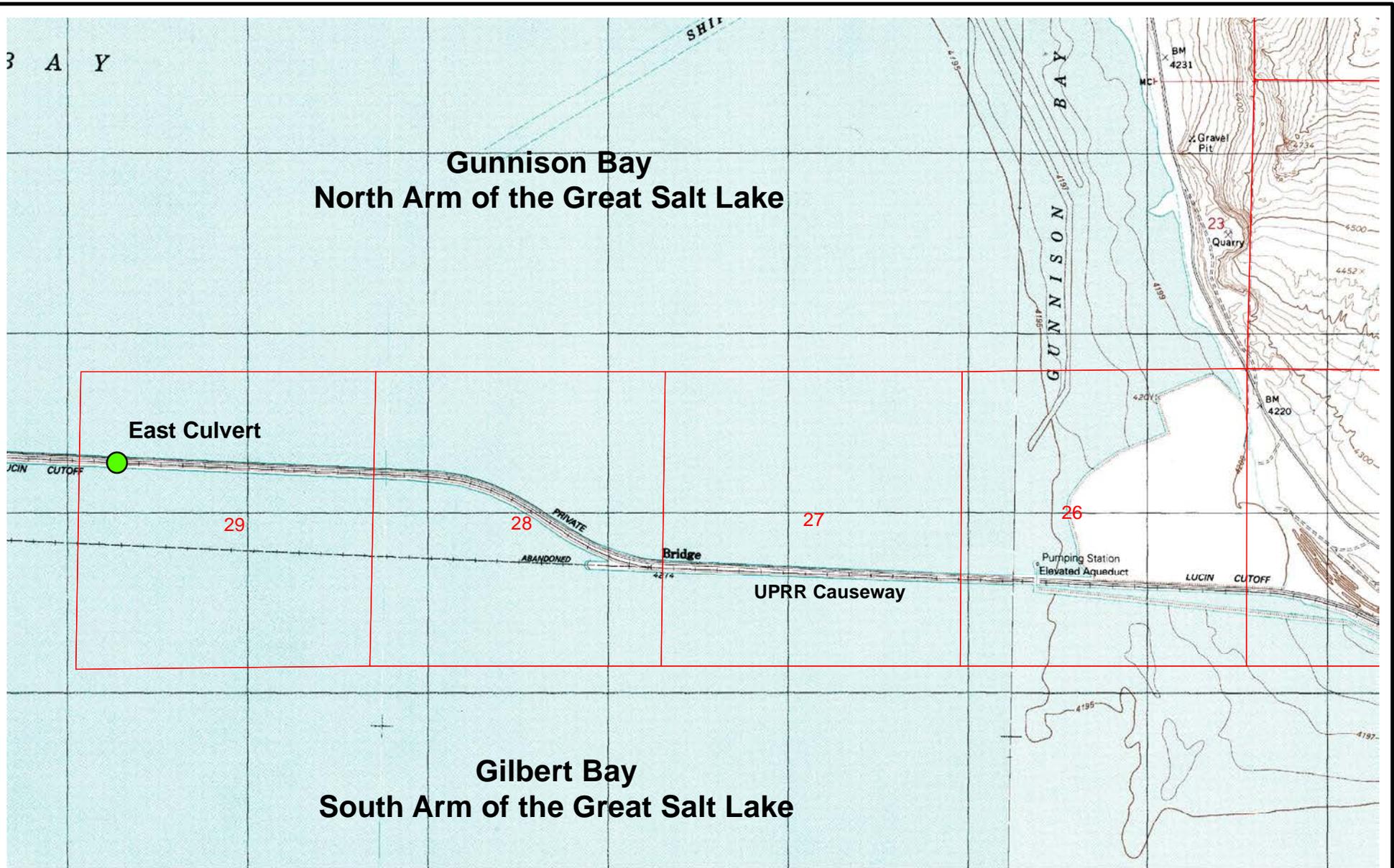
Utah Division of Water Quality

401 Certification Application

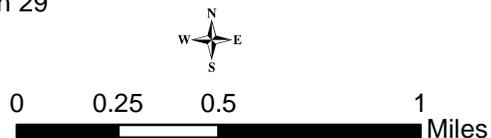
East Culvert Emergency Temporary Closure

# Attachment A

## Project Drawing/Plan



Reference: USGS Quadrangle, Carrington Island NE.  
T6N R6W Section 29



# East Culvert Emergency Temporary Closure

401 Certification Application  
Project Plan

December 10, 2013

Utah Division of Water Quality

401 Certification Application

East Culvert Emergency Temporary Closure

## Corps of Engineers Permit Documentation Attachment B

UP Application for East Culvert Closure, dtd October 21, 2013

Jacobs Associates Project Memorandum, dtd October 21, 2013

US Corps of Engineers, NWP Permit 14, Temporary East Culvert  
Closure, dtd December 6, 2013

UNION PACIFIC RAILROAD  
1400 Douglas Street, STOP 0910  
Omaha, Nebraska 68179-0910

Structures Design Group

P 402 544 5194  
F 402 501 0478  
mlmccune@up.com

October 21, 2013

File: Bridge 739.79 Lakeside Sub  
Culvert 750.53 Lakeside Sub

Via Electronic Mail and First Class Mail

Mr. Jason Gipson  
Branch Chief, Regulatory Division  
U.S. Army Corps of Engineers, Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Re: Union Pacific Railroad (UPRR) - Great Salt Lake Causeway - Notification of Imminent Failure of East Culvert and Declaration of Emergency Conditions - Request to Reactivate UPRR Preconstruction Notification

Dear Jason:

I am writing to follow up on the telephone report our outside counsel, Wayne Whitlock, made to you on October 14, 2013 regarding the results of our recent inspection of the East culvert in the Great Salt Lake Causeway. Unfortunately, that inspection revealed that the East culvert has now deteriorated to the point that it is beyond repair. We believe collapse of the culvert is imminent. Therefore, we are notifying the Army Corps of Engineers (Corps) that UPRR must move forward with closure of the East culvert as soon as possible to avoid a potential derailment due to culvert failure under train traffic. We request Corps authorization of this emergency closure.

**Background.** On August 29, 2012, the Corps authorized emergency closure of the West culvert pursuant Nationwide Permit 14 (August 2012 NWP); the Corps also authorized construction of the proposed bridge to compensate for the loss of aquatic functions resulting from culvert closure. The August 2012 NWP authorization included a number of Special Conditions, including a requirement to develop a compensatory mitigation and monitoring plan for Corps approval before bridge construction could proceed.

UPRR had sought authority to close both East and West culverts in the original March 2011 Preconstruction Notification (PCN). UPRR renewed its request for that authorization on August 16, 2012 when an inspection of the two culverts revealed that the West culvert had cracked and broken. It posed an imminent risk of collapse. Therefore, UPRR declared an emergency condition and requested Corps authorization to close the West culvert immediately.



impacts of replacing the two causeway culverts with a new bridge and develop a revised mitigation and monitoring plan based on the results. UPRR remains fully committed to the consultation and agency coordination process established by the Corps and UPRR to resolve those issues.

We appreciated the opportunity to meet with the Corps and the coordinating agencies on October 2 to discuss UPRR's proposed impacts reevaluation and agency coordination plan described in our September 25 letter to the Corps and for the positive feedback UPRR has received. We look forward to working with you to complete the reevaluation plan and then make any appropriate adjustments to the bridge design and the mitigation monitoring plan that result from this reevaluation. We believe that the Corps' consultation process and our joint efforts present the best opportunity to achieve our common objectives of getting the mitigation in place as soon as possible in order to minimize the effects of culvert closure.

In that regard, we propose to schedule the next informal consultation meeting outlined in our September 25 letter as soon as possible in November to discuss the results of the first phase of the evaluation and the next steps, including a schedule for completing the impacts evaluation and the consultation process. In that meeting, we also propose to brief the Corps and the coordinating agencies on the East culvert closure and answer any questions of the coordinating agencies.

Please feel free to call me with any questions about our request for emergency authorization. We will contact you to make arrangements for the briefing meeting proposed above. Thank you in advance for your continued cooperation in our efforts to address these important safety and environmental concerns.

Sincerely,



Mark L. McCune, PE  
Director Structures Design

Enclosure

cc: Ms. Kathleen Anderson  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.  
Mr. Daniel T. Harbeke  
Wayne M. Whitlock, Esq.

**PROJECT MEMORANDUM**

**To:** Mark McCune, P.E., Steve Cheney, P.E., UPRR  
**From:** Carol Ravano, P.E.  
**Job No.:** 4294.0  
**Date:** 21 October 2013  
**Subject:** Great Salt Lake Causeway East Culvert- Results of Diving Inspection, 11 October 2013

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**1 Introduction**

As part of Jacobs Associates' on-going monitoring of the East Culvert on the Great Salt Lake Causeway, Blackwater Marine inspected the East Culvert on Friday 11 October 2013. The previous dive into the culvert was on Monday, 4 March 2013. The memorandum summarizing the observations of that dive was sent to UPRR on 20 March 2013.

Upon arriving at the site, a safety meeting was held by Cory Choate of UPRR. Present at the site were George Lulham, Bryan Cox (diver), and two helpers from Blackwater Marine, and Carol Ravano from Jacobs Associates. Mr. Lulham gave a briefing on the dive sequence, roles, and safety.

**2 Results of East Culvert Dive Inspection**

Bryan Cox entered the East Culvert from the north side at 10 a.m. and completed his dive at 1130 a.m. While in the culvert, the diver had a camera mounted on his dive helmet which transmitted to a screen inside the dive trailer; there was also voice communication between the diver and the dive trailer. The diver examined the sidewalls, bottom, and crown of the culvert visually and tactilely.

## **2.1 11 October 2013 Crack Observations**

In the March 2013 memo to the UPRR reporting the results of the March inspection, we stated "...the diver did note that the cracks that are approximately 30 feet from the north entrance have increased in size since the last dive in July 2012. These cracks now continue over the crown and the floor of the culvert, connecting into a crack on the east wall. There also appeared to be one- to two-inch rounded gravel material coming out of the crack on the west wall; this is an indication that the original backfill material, which is rounded, is coming out of the crack."

### **2.1.1 East Sidewall**

During the 11 October 2013 dive, the following observations were made regarding the crack in the east sidewall: There is an existing crack located in the east sidewall, approximately 30 feet in from the north culvert entrance that was first noted in July 2005. Over the years, the crack has increased in width and it is now 18-inches wide and greater than 12 inches deep; the concrete sidewall has continued to spall and there is exposed, corroding rebar present in the crack. As of March 2013, the crack on the east sidewall had split at the top (approx. 10 foot level) into 2 separate cracks. During this 11 October 2013 dive, the diver noted that there are now 4 separate cracks at the top of this crack and that the size and number of loose concrete blocks has increased. The diver described this crack as looking like a tree, with the large open crack as the trunk and then the branches at the top. The loose concrete blocks are located where the cracks diverge from the main trunk.

One of the loose blocks on the east sidewall, located where the cracks diverge, was described by the diver as approximately 6 feet high and 18 inches wide. Just below this block, there were several smaller blocks of loose concrete, less than one foot in diameter. The large block weighs approximately one ton, but because of the buoyant force of the super saline water, the diver was able to move the block around.

As the diver was attempting to scale the cracks in the east sidewall to reach the crown, smaller pieces of the concrete (less than 6 inches in size), broke off in his hand. The diver also noted that there are parallel cracks that continue from the above described crack, through the 45 degree chamfer that is located at the intersection of the sidewall and the crown, and across the culvert crown, connecting with the major crack on the west sidewall, which is described below. Because the water clarity was good during this dive, we were able to see the bubbles which formed at each of the crack lines, indicating that there is a slight offset between the cracks.

At the base of this crack in the east sidewall, there is a pile of rock material that is less than six inches in diameter, presumed to have come into the culvert through the open crack. The diver examined the rock and found that there was a mixture of angular and rounded rock. The angular rock is presumed to be ballast which has either migrated down the outside of the culvert and come through the crack or has fallen into the GSL and been carried into the culvert by the currents. The rounded rock is presumed to be backfill, which was placed around the culvert during the original construction in the 1950s. The diver took a sample of this rock out of the culvert; a photo of it is shown in Appendix A. This rounded rock indicates that the material surrounding the culvert is coming through the crack, resulting in a potential loss of material under the track section.

### 2.1.2 *West Sidewall*

Opposite the crack in the east sidewall, there is a crack in the west sidewall which appears to have widened since the March 2013 dive. The crack is approximately 2 feet wide at the base and greater than 12 inches deep. This crack divides into 3 smaller cracks, spaced approximately 2 to 3 feet apart, at about 10 feet up from the culvert bottom. Where the main crack divides into the smaller cracks, there are loose blocks of concrete, less than 1 foot in diameter.

Due to the amount of debris on the culvert bottom, the diver was not able to see or feel the crack, which is present on the bottom. This crack was present during previous dives and is presumed to still be present.

Similar to what we observed in March 2013, during this dive, we noted a pile of smaller rock, less than 6 inches in diameter, at the base of the crack in the west sidewall. The observations of the diver are similar to what was described above at the base of the crack on the east sidewall. This material is presumed to have come into the culvert through the open crack

During the dive, the diver also noted that the crack does continue through the 45 degree chamfers that are located at the intersections of the sidewalls and the crown and bottom of the culvert, making it a continuous crack around the entire perimeter of the culvert.

## 3 **Conclusions and Recommendations**

Based on the diver's observations inside the culvert during this dive, previous culvert inspections dating from January 2005, and our previous experience with the culverts, we make the following conclusions and recommendations:

1. The East Culvert has separated into two sections, with significant degradation at the interface, and has lost its original structural integrity.
2. It appears that the original culvert backfill material is coming into the culvert through the cracks in the east and west sidewalls.
3. This pattern of worsening crack formation, the formation of the loose concrete blocks, and the backfill material flow into the culvert is similar to the structural degradation process observed at the West Culvert prior to its closure in 2012.
4. The 2006 grouting program at the West culvert occurred when the culvert was still in adequate structural condition, with no loose blocks of concrete present. This is not the case with the East Culvert. The current condition of the East Culvert is more similar to the West Culvert just prior to its closure. Grouting the exterior of this culvert might prevent additional backfill material from entering the culvert, but it will not cause the culvert to regain its structural integrity.
5. Blackwater Marine divers, specifically Bryan Cox, have been diving in the West and East Culverts since 2005. Mr. Cox is the most knowledgeable about the conditions of the East Culvert. Due to the condition of the culvert, especially with the presence of the loose blocks of concrete, Blackwater Marine considers it unsafe to continue to dive in the culvert for inspection purposes.

GSL East Culvert Memo  
16 October 2013  
Page 4 of 6

6. Based on the above points, we consider the culverts to be at risk of imminent failure and unable to be repaired; therefore, we do recommend completely filling in the culvert.

Please contact me if you have questions or would like to discuss.

Attachments:

Appendix A- Site Condition Photos and Sketches

## Appendix A-Site Condition Photos and Sketches

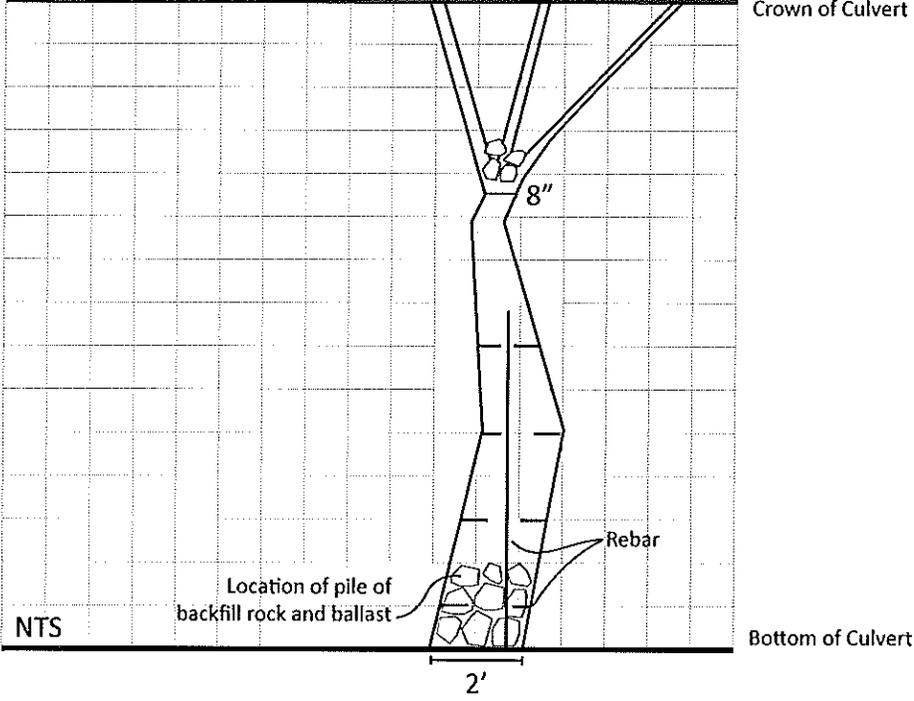


Photo 1- Sample of rounded rock taken from pile at base of crack in the west sidewall of the East Culvert. This is presumed to be original backfill material.

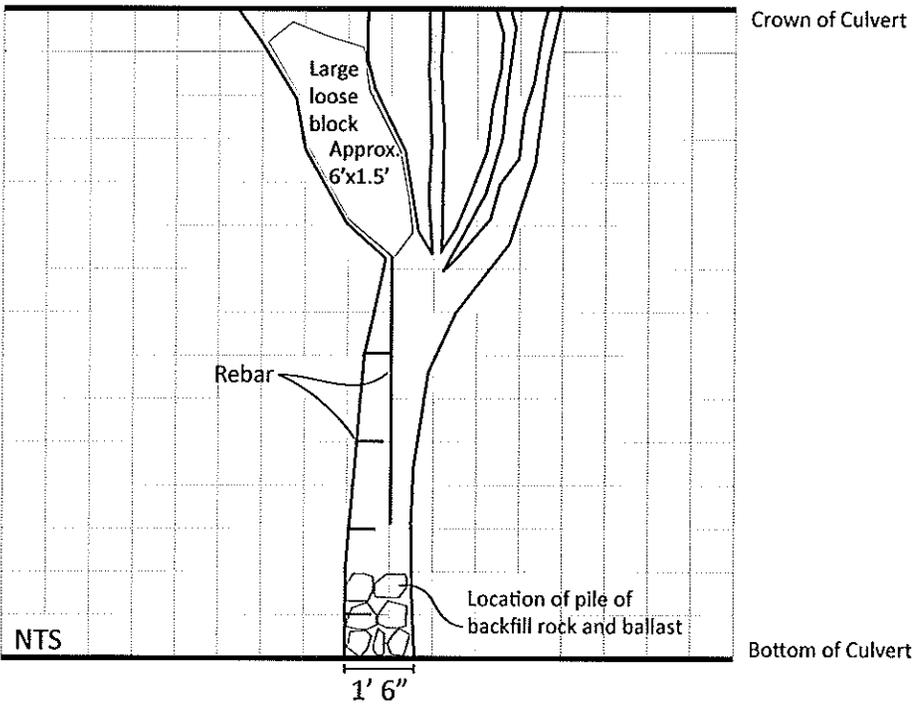


Photo 2-View of North Side of East Culvert. The water level is approximately 1.5 to 2 feet lower than in March 2013

# WEST SIDEWALL



# EAST SIDEWALL





REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO CA 95814-2922

December 6, 2013

Regulatory Division (SPK-2011-00755)

Mr. Mark L. McCune, P.E.  
Director of Structures Design  
Union Pacific Railroad  
1440 Douglas Street, Stop 0910  
Omaha, Nebraska 68179-0910

Dear Mr. McCune:

We are responding to your October 21, 2013 letter request for a Department of the Army permit for the Great Salt Lake Union Pacific Railroad (UPRR) Causeway East Culvert Closure project. This project involves discharging clean rock fill material into the Great Salt Lake, a water of the United States, to temporarily close the East Culvert which is in danger of failure. Filling the culvert is needed to prevent closure of the UPRR Causeway track across the Great Salt Lake. The East Culvert is located at Mile Post 750.53, in Section 23, Township 6 North, Range 6 West, Salt Lake Meridian, Latitude 41.22128°, Longitude -112.56051°, Box Elder County, Utah.

Based on the information you provided, the proposed activity, resulting in the temporary loss of approximately 0.17-acre of waters of the United States and a temporary reduction of the circulation of flows between the North and South Arms of the Great Salt Lake, is authorized by Nationwide Permit Number 14, *Linear Transportation Projects*. However, until Section 401 Water Quality Certification for the activity has been issued or waived, our authorization is denied without prejudice. Once you have provided us evidence of water quality certification, the activity the work may proceed subject to the conditions of the 401 certification and this Nationwide Permit 14 verification.

Your work must comply with the general terms and conditions listed on the enclosed Nationwide Permit 14 information sheets, the Utah Nationwide Permit Program Regional Conditions and the following special conditions:

**Special Conditions**

1. All equipment must work from existing causeway fill.
2. Within 90 days of the date of this verification, you shall submit to the Corps and the Utah Division of Water Quality an interim mitigation and monitoring plan to include identification of contingency measures to restore or mitigate for the loss of North Arm brine movement into the South Arm of the Great Salt Lake due to the closure of the East Culvert. Contingency measures are necessary due to the potential for adverse effects to the beneficial uses of the Great Salt Lake as a result of closure of East Culvert. The interim mitigation and monitoring plan may be superseded upon implementation of a final mitigation and monitoring plan approved by the Corps and Utah Division of Water Quality.

a. The interim mitigation and monitoring plan must address the collection and definition of 2012 baseline conditions, including defined and repeatable monitoring points for lake elevation levels and salinity gradients. Data collection is to capture temporary hydrologic impacts such as changes in salinity or water elevation gradients resulting from closure of the East Culvert. Monitoring sites will, at a minimum, be located on each side of the lake in the vicinity of the culverts as well as on the South Arm spillway to monitor changes to the deep brine layer.

b. Quarterly data collection and monitoring reports following closure of the East Culvert will be submitted to the Corps and the Utah Division of Water Quality. The first report is due three months following submission of the interim mitigation and monitoring plan. The quarterly monitoring shall continue until the Corps determines, for two consecutive years, that no adverse environmental effects have occurred as a result of closure of the East Culvert, or until the monitoring is superseded by implementation of a Corps-approved final mitigation and monitoring plan.

c. If, as determined by the Corps, quarterly monitoring data indicates adverse effects have resulted from closure of the East Culvert, the Corps may require UPRR to implement the interim measure(s).

3. You shall implement and maintain appropriate construction best management practices to safeguard water quality to prevent grout or other pollutants from entering the open waters of the Great Salt Lake during closure of the culvert.

4. You are responsible for all work authorized herein and ensuring that all contractors and workers are made aware and adhere to the terms and conditions of this verification.

5. You shall submit an after-action report to include photographs documenting the East Culvert closure work in progress, BMPs implemented, and of the completion of culvert closure. This report shall be submitted within 30 days of completion of the authorized work.

6. Within 60 days of receipt of this permit, you shall provide the Corps a firm schedule for completion of the 3-step plan for the modeling update, recalibration and simulations analysis, identification of appropriate monitoring parameters with a cause-and-effect relationship to the overall UPRR culvert closure and bridge construction project, and the projected date for submission of your final mitigation and monitoring plan for Corps approval.

After completion of the authorized work, you must sign the enclosed Compliance Certification and return it to this office within 30 days.

This verification is valid until March 18, 2017, when the existing Nationwide Permits are scheduled to be modified, reissued, or revoked. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified, reissued or revoked, you will have twelve (12) months from the date of the modification, reissuance or revocation of the NWP to complete the activity under the present terms and conditions. Failure to comply with the General and Regional Conditions of this NWP, or the project-specific Special Conditions of this authorization, may result in the suspension or revocation of your authorization.

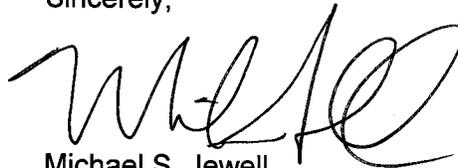
This NWP verification does not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law; do not grant any property rights or exclusive privileges, and do not authorize any injury to the property or rights of others.

This NWP 14 verification is only for the temporary filling of the East Culvert due to the potential for failure and does not address the permanent solution for maintaining train operations across the UPRR Causeway. Activities in waters of the United States proposed for a permanent solution, including whether to leave the East Culvert fill material in-place, will be evaluated under our standard individual permit procedures. A public notice describing your proposal for a permanent solution will be issued next week. With regard to the August 2012 NWP permit verification for the West Culvert, we will continue to informally consult with you to determine the final disposition of that verification during the standard individual permit process for the permanent project.

We would appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey from the lower link on our District website.

Please refer to identification number SPK-2011-00755 in any correspondence concerning this project. If you have any questions, please contact Kathleen Anderson at our Utah-Nevada Regulatory Branch, 533 West 2600 South, Suite 150, Bountiful, Utah 84010-7744, by email at [Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil), or telephone at 801-295-8380 extension 10. For more information regarding our program, please visit our District website at [www.spk.usace.army.mil/Missions/Regulatory.aspx](http://www.spk.usace.army.mil/Missions/Regulatory.aspx).

Sincerely,



Michael S. Jewell  
Chief, Regulatory Division  
Sacramento District

Enclosures

cc: (w/o encls)

Ms. Debra Schafer, General Director, Maintenance of Way-Environmental, Union Pacific Railroad, [debralschafer@up.com](mailto:debralschafer@up.com)

Mr. Stephen Cheney, Project Manager, Union Pacific Railroad, [scheney@up.com](mailto:scheney@up.com)

Mr. Robert Blysmas, Counsel, Union Pacific Railroad, [rblysmas@up.com](mailto:rblysmas@up.com)

Mr. Wayne Whitlock, Pillsbury Winthrop Shaw Pittman LLP, [wayne.whitlock@pillsburylaw.com](mailto:wayne.whitlock@pillsburylaw.com)

Mr. William Damery, Utah Division of Water Quality, [wdamery@utah.gov](mailto:wdamery@utah.gov)

Mr. Walt Baker, Utah Division of Environmental Quality, [wbaker@utah.gov](mailto:wbaker@utah.gov)

Ms. Laura Ault, Utah Division of Forestry, Fire and State Lands, [lauraault@utah.gov](mailto:lauraault@utah.gov)

Utah Division of Water Quality

401 Certification Application

East Culvert Emergency Temporary Closure

## Attachment C

Utah Division of Water Quality Anti-Degradation Review Form

USACE Permit, December 6, 2013

Pillsbury Letter to USACE, November 27, 2013 with enclosure

# ANTIDegradation REVIEW FORM

## UTAH DIVISION OF WATER QUALITY

### Instructions

The objective of antidegradation rules and policies is to protect existing high quality waters and set forth a process for determining where and how much degradation is allowable for socially and/or economically important reasons. In accordance with Utah Administrative Code (UAC R317-2-3), an antidegradation review (ADR) is a permit requirement for any project that will increase the level of pollutants in waters of the state. The rule outlines requirements for both Level I and Level II ADRs, as well as public comment procedures. This review form is intended to assist the applicant and Division of Water Quality (DWQ) staff in complying with the rule but is not a substitute for the complete rule in R317-2-3.5. Additional details can be found in the *Utah Antidegradation Implementation Guidance* and relevant sections of the guidance are cited in this review form.

ADRs should be among the first steps of an application for a UPDES permit because the review helps establish treatment expectations. The level of effort and amount of information required for the ADR depends on the nature of the project and the characteristics of the receiving water. To avoid unnecessary delays in permit issuance, the Division of Water Quality (DWQ) recommends that the process be initiated at least one year prior to the date a final approved permit is required.

DWQ will determine if the project will impair beneficial uses (Level I ADR) using information provided by the applicant and whether a Level II ADR is required. The applicant is responsible for conducting the Level II ADR. For the permit to be approved, the Level II ADR must document that all feasible measures have been undertaken to minimize pollution for socially, environmentally or economically beneficial projects resulting in an increase in pollution to waters of the state.

For permits requiring a Level II ADR, this antidegradation form must be completed and approved by DWQ before any UPDES permit can be issued. Typically, the ADR form is completed in an iterative manner in consultation with DWQ. The applicant should first complete the statement of social, environmental and economic importance (SEEI) in Part C and determine the parameters of concern (POC) in Part D. Once the POCs are agreed upon by DWQ, the alternatives analysis and selection of preferred alternative in Part E can be conducted based on minimizing degradation resulting from discharge of the POCs. Once the applicant and DWQ agree upon the preferred alternative, the review is considered complete, and the form must be signed, dated, and submitted to DWQ.

For additional clarification on the antidegradation review process and procedures, please contact Nicholas von Stackelberg (801-536-4374) or Jeff Ostermiller (801-536-4370).

# Antidegradation Review Form

## Part A: Applicant Information

**Facility Name:** East Culvert, Union Pacific Railroad Causeway, Great Salt Lake, UT

**Facility Owner:** Union Pacific Railroad

**Facility Location:** Union Pacific Causeway, Great Salt Lake, Box Elder County, UT

**Form Prepared By:** Union Pacific Railroad

**Outfall Number:** not applicable

**Receiving Water:** Great Salt Lake, Gilbert Bay (5A) and Gunnison Bay (5B)

### What Are the Designated Uses of the Receiving Water (R317-2-6)?

Domestic Water Supply: None

Recreation: Primary and Secondary Contact

Aquatic Life: None

Agricultural Water Supply: None

Great Salt Lake: 5A- Gilbert Bay; 5B- Gunnison Bay

**Category of Receiving Water (R317-2-3.2, -3.3, and -3.4):** Category 3

**UPDES Permit Number (if applicable):** Not applicable. This ADR is submitted to support a 401 Certification for a 404 permit for the temporary placement of fill material into the East Culvert of the Great Salt Lake Causeway.

**Effluent Flow Reviewed:** There is no discharge of effluent. This project involves the temporary, one time placement of fill, approximately 3,650 cubic yards of clean rock into the East Culvert, to prevent the collapse of the culvert and the closing of the railroad causeway to train traffic. The concrete culvert is failing, due to settlement and age (original construction in 1959) and is jeopardizing the structural integrity of the railroad causeway. Reference 401 certification application and attachments, including culvert inspection report and Army Corps of Engineers Nationwide 14 Permit dated December 6, 2013 (ACOE Emergency Closure Permit)(attached).

The East Culvert is about 15 feet wide and 23 feet tall and spans the width of the causeway. The invert of the East Culvert is at about elevation 4173 (NGVD 29), the top of the causeway is about 4216 (NGVD) and the Great Salt Lake is about 22 feet deep at the culvert location.

On December 6, 2013, the Army Corps of Engineers issued a provisional emergency temporary authorization pursuant to Nationwide Permit 14, subject to 401 certification by the Utah Division of Water Quality. The Corps permit stated:

“Based on the information you provided, the proposed activity, resulting in the temporary loss of approximately 0.17 -acre of waters of the United States and a temporary reduction of the circulation of flows between the North and South Arms of the Great Salt Lake, is authorized by Nationwide Permit Number 14, *Linear Transportation Projects*.

The Corps stated that its verification “does not address the permanent solution for maintaining train operations across the UPRR Causeway. Activities in waters of the United States proposed for a permanent solution, including whether to leave the East Culvert fill material in-place, will be evaluated under our standard individual permit procedures.” The verification explained that the disposition of the existing August 2012 NWP 14 Verification for Closure of the West Culvert and Construction of the Compensatory Mitigation bridge would be addressed in a standard individual permit process that would be publicly noticed in the near future..

Typically, this should be the maximum daily discharge at the design capacity of the facility. Exceptions should be noted.

**What is the application for? (check all that apply)**

- A UPDES permit for a new facility, project, or outfall.
- A UPDES permit renewal with an expansion or modification of an existing wastewater treatment works.
- A UPDES permit renewal requiring limits for a pollutant not covered by the previous permit and/or an increase to existing permit limits.
- A UPDES permit renewal with no changes in facility operations.

**Part B. Is a Level II ADR required?**

*This section of the form is intended to help applicants determine if a Level II ADR is required for specific permitted activities. In addition, the Executive Secretary may require a Level II ADR for an activity with the potential for major impact on the quality of waters of the state (R317-2-3.5a.1).*

**B1. The receiving water or downstream water is a Class 1C drinking water source.**

**Yes** A Level II ADR is required (Proceed to Part C of the Form)

**No** (Proceed to Part B2 of the Form)

**B2. The UPDES permit is new or is being renewed and the proposed effluent concentration and loading limits are higher than the concentration and loading limits in the previous permit and any previous antidegradation review(s).**

**Yes** (Proceed to Part B3 of the Form)

**No** No Level II ADR is required and there is no need to proceed further with review questions.

**B3. Will any pollutants use assimilative capacity of the receiving water, i.e. do the pollutant concentrations in the effluent exceed those in the receiving waters at critical conditions? For most pollutants, effluent concentrations that are higher than the ambient concentrations require an antidegradation review? For a few pollutants such as dissolved oxygen, an antidegradation review is required if the effluent concentrations are less than the ambient concentrations in the receiving water. (Section 3.3.3 of Implementation Guidance)**

**Yes** (Proceed to Part B4 of the Form)

**No** No Level II ADR is required and there is no need to proceed further with review questions.

**B4. Are water quality impacts of the proposed project temporary and limited (Section 3.3.4 of Implementation Guidance)?** Proposed projects that will have temporary and limited effects on water quality can be exempted from a Level II ADR.

**Yes** Identify the reasons used to justify this determination in Part B4.1 and proceed to Part G. No Level II ADR is required.

**No** A Level II ADR is required (Proceed to Part C)

**B4.1 Complete this question only if the applicant is requesting a Level II review exclusion for temporary and limited projects (see R317-2-3.5(b)(3) and R317-2-3.5(b)(4)). For projects requesting a temporary and limited exclusion please indicate the factor(s) used to justify this determination (check all that apply and provide details as appropriate) (Section 3.3.4 of Implementation Guidance):**

Water quality impacts will be temporary and related exclusively to sediment or turbidity and fish spawning will not be impaired.

**Factors to be considered in determining whether water quality impacts will be temporary and limited:**

- a) The length of time during which water quality will be lowered: The temporary filling of the East culvert will result in a temporary reduction in the causeway's ability to convey flow and transfer salt between Gilbert and Gunnison Bay. The temporary reduction in flow and salt transfer will be limited to the duration of the Corps temporary emergency closure permit (the permit expires on March 18, 2017) or until a long term compensatory mitigation plan is approved and implemented under a separate Standard Individual Permit; the estimated time for completing this permitting and construction of any compensatory mitigation is from 18 months to two years. During the period that the temporary closure is in effect, water flow and salt transfer through the causeway will continue through the existing 300-foot long bridge and the causeway fill. The only potential effect on beneficial uses and water quality of the Great Salt Lake during this time would be as a result of a temporary reduction in water flows and salt transfer between Gilbert and Gunnison Bay.
- b) The percent change in ambient concentrations of pollutants: There is no discharge of pollutants that would contribute to a percent change in ambient concentrations of pollutants in the Great Salt Lake-- only the temporary placement of fill material into the East Culvert. The closure of the culvert will temporarily reduce the water flow and salt transfer between the North and South arms of the Great Salt Lake. However, as explained in Union Pacific's November 27 response to questions by the Corps of Engineers (attached), flows through both culverts when they were fully functioning before West culvert closure was estimated to contribute less than a 0.3 percent increase in South Arm salinity annually . When combined with the permanent closure of the West culvert, a two-year temporary closure of the East culvert would, therefore, result in only a temporary 0.5 percent reduction in South Arm salinity, assuming similar hydrology. The flows and salt transfers through the culverts are small in magnitude compared to the overall flows and salt transfers through the

existing bridge and causeway, which will continue throughout the permit term. Therefore, the potential for short term impacts to GSL beneficial uses and water quality resulting from a temporary reduction in flow and salt transfer from the East culvert is very limited.

The cause and effect relationship between temporary water flow and salt transfer changes and water quality have not been established. Nevertheless, any such changes in ambient water quality would be similar to temporary changes in relative salinity caused by the culvert closure. Because the potential for temporary culvert closure to impact the overall salt balance is so low during the period that the temporary fill is in place, the potential to adversely impact water quality and water chemistry is also very limited.

Please refer to Section II.B of the November 27 submission from UP to ACOE, which provides:

“B. ACOE QUESTION: *“Further, why does UP believe the loss of culvert flows for up to 2 years would not be significant?”*”

*UPRR RESPONSE:*

*“Union Pacific’s intent is not to minimize the importance of replacing the aquatic functions that the culverts serve; that is the basis for UP’s proposal to replace the culverts with the 180-ft bridge. However, it is important not to exaggerate the overall change in bi-directional flows and salt transfer that would occur if during the time the culverts are closed and before the compensatory mitigation bridge is constructed. Of course, the modeling and impacts analyses that are underway will help identify more specifically the contribution that the culverts made to the water and salt balance between the two parts of the Great Salt Lake before the culverts were closed. However, our analyses so far indicate the following:*

*“UPRR has completed the first of its three-step modeling plan using the USGS Water and Salt Balance computer model. The first step was to rerun the existing model calibrated for the period from 1987 through 1998 (12 years). This step included modeling a hypothetical scenario with two unobstructed culverts as they existed in November 2012, using 1987-1998 hydrology. In fact, during that period, the culverts were plugged with rubble and ineffective for most of this time. At the end of the modeling period (1998), the simulation produced a South Arm salinity of 11.3%. The average South Arm salinity based on actual measurements was 8.9%, a difference of 2.4%. This suggests that the average effect of the two unobstructed culverts on South Arm salinity was limited to about 0.2% per year. In other words, during extended periods of high water levels, such as existed during the time period of 1987-1998, flows through the unobstructed culverts are estimated to contribute only about a 0.2% increase in South Arm salinity annually.*

*“Water and salt balance modeling has not yet been completed for the period from 1998 to 2012 (the second step of UPRR’s plan). However, salt transfers for the*

*period from spring 2004 to spring 2009—a period of lower but relatively stable water elevations—can be calculated and evaluated using three sets of interrelated data from that period:*

- *Sampled North and South Arm salinities;*
- *Measured bidirectional flows through the culverts;*
- *Total salt load in the South Arm.*

*“This period (spring 2004 to spring 2009) is the only one on record that is relevant for the purpose of this evaluation because it begins when UPRR removed all rubble from the culverts and constructed protective berms and ends with the latest known computation of salt load in the North and South Arms (Kidd M. Waddell, “The Potential Effects of the Proposed Great Salt Lake Minerals Project on the Water and Salt Balance of Great Salt Lake, Utah,” 2010).*

*“In spring 2009, total salt load in the South Arm was approximately 1.7 billion tons. Measured average South Arm salinity was 15.5%. Correlating the salinities and the bidirectional flows through the culverts, the net salt transfer through the two culverts (over a 5-year period ending spring 2009) was about 150 million tons north to south. Had the culverts been closed during that time, the estimated salt load in the South Arm in spring 2009 would therefore be 1.55 billion tons, or a salinity of 14.2%. This suggests that the average effect of the two culverts on South Arm salinity was limited to about 0.26% per year. In other words, during low water levels, such as existed at that time, flows through the unobstructed culverts are estimated to contribute about a 0.26% increase in South Arm salinity annually (although this might be partially offset by increased salt transfers through the causeway fill due to increased salinity differential). Lake elevations during this 2004 to 2009 period were similar to the current elevation.*

*“Therefore, using this data, which is currently the best available until the completion of modeling, the estimated impact on South Arm salinity due to closure of both culverts would be expected to be on the order of 0.2% to 0.25% per year. During the 2004-2009 time period, South Arm salinity varied 4.3% (between 11.9% and 16.2%), an order of magnitude greater than the estimated annual contribution of the culverts, confirming that other factors affect salinity much more than the culverts.”*

- c) Pollutants affected:
- d) Likelihood for long-term water quality benefits:
- e) Potential for any residual long-term influences on existing uses: There will be no long-term impacts on existing uses, as the Corps authorization to place fill in East culvert and reduce water flows and salt transfers through that Culvert is temporary. Determination of whether temporary fill placed in the East culvert will remain in place, and any permanent solution for maintaining causeway structural integrity and conveyance of water and salt through the causeway will be made in a separate Standard Individual Permit process.

f) Impairment of fish spawning, survival and development of aquatic fauna excluding fish removal efforts: Any impacts associated with the project will be temporary during the time the temporary fill is in place and the water flow and salt transfer are temporarily reduced. The survival and development of aquatic fauna (brine shrimp) are dependent on a range of lake salinity and other ecological conditions. North and South arm salinities are a result of hydrologic inflows and water flows and salt transfer through the causeway fill and openings. As discussed in b) and in Union Pacific's November 26 submission to the ACOE, any reduction in flows and salt transfer related to the temporary closing the East culvert will themselves be temporary and minimal. Further, given current salinity levels in the South arm, such a temporary and minimal change will not adversely affect overall south arm salinity ranges or brine shrimp survival and development. Therefore, such impacts will be temporary and limited.

Additional justification, as needed: The emergency placement of fill material into the East Culvert is temporary. Based on the best information available to date, its potential to impact the salt balance and GSL beneficial uses and water quality, is also very limited. As described in the Corps authorizing the temporary emergency closure of the East culvert, any permanent authorization to maintain the fill material in that culvert, as well as any accompany authorization to compensate for any permanent loss of water flow and salt transfer associated with the East and West culvert, will be analyzed and authorized under the Standard Individual Permit process.

**Level II ADR**

*Part C, D, E, and F of the form constitute the Level II ADR Review. The applicant must provide as much detail as necessary for DWQ to perform the antidegradation review. Questions are provided for the convenience of applicants; however, for more complex permits it may be more effective to provide the required information in a separate report. Applicants that prefer a separate report should record the report name here and proceed to Part G of the form.*

**Optional Report Name:**

**Part C. Is the degradation from the project socially and economically necessary to accommodate important social or economic development in the area in which the waters are located?** *The applicant must provide as much detail as necessary for DWQ to concur that the project is socially and economically necessary when answering the questions in this section. More information is available in Section 6.2 of the Implementation Guidance.*

**C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.**

**C2. Describe any environmental benefits to be realized through implementation of the proposed project.**

**C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.**

**C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.**

**C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.**

**Part D. Identify and rank (from increasing to decreasing potential threat to designated uses) the parameters of concern.** *Parameters of concern are parameters in the effluent at concentrations greater than ambient concentrations in the receiving water. The applicant is responsible for identifying parameter concentrations in the effluent and DWQ will provide parameter concentrations for the receiving water. More information is available in Section 3.3.3 of the Implementation Guidance.*

**Parameters of Concern:**

<b>Rank</b>	<b>Pollutant</b>	<b>Ambient Concentration</b>	<b>Effluent Concentration</b>
1			
2			
3			
4			
5			

**Pollutants Evaluated that are not Considered Parameters of Concern:**

<b>Pollutant</b>	<b>Ambient Concentration</b>	<b>Effluent Concentration</b>	<b>Justification</b>

**Part E. Alternative Analysis Requirements of a Level II**

**Antidegradation Review.** *Level II ADRs require the applicant to determine whether there are feasible less-degrading alternatives to the proposed project. More information is available in Section 5.5 and 5.6 of the Implementation Guidance.*

**E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).**

**Yes** (Proceed to Part F)

**No or Does Not Apply** (Proceed to E2)

**E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options (see 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system, including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants. Most of this information is typically available from a Facility Plan, if available.**

**Report Name:**

**E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.**

**E4. Were any of the following alternatives feasible and affordable?**

<b>Alternative</b>	<b>Feasible</b>	<b>Reason Not Feasible/Affordable</b>
Pollutant Trading	Yes	
Water Recycling/Reuse	Yes	
Land Application	Yes	
Connection to Other Facilities	Yes	
Upgrade to Existing Facility	Yes	
Total Containment	Yes	
Improved O&M of Existing Systems	Yes	
Seasonal or Controlled Discharge	Yes	
New Construction	Yes	
No Discharge	Yes	

**E5. From the applicant's perspective, what is the preferred treatment option?**

**E6. Is the preferred option also the least polluting feasible alternative?**

Yes

No

If no, what were less degrading feasible alternative(s)?

If no, provide a summary of the justification for not selecting the least polluting feasible alternative and if appropriate, provide a more detailed justification as an attachment.

## Part F. Optional Information

**F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review? Level II ADRs are public noticed for a thirty day comment period. More information is available in Section 3.7.1 of the Implementation Guidance.**

No

Yes

**F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?**

No

Yes

**Report Name:**

**Part G. Certification of Antidegradation Review**

**G1. Applicant Certification**

*The form should be signed by the same responsible person who signed the accompanying permit application or certification.*

Based on my inquiry of the person(s) who manage the system or those persons directly responsible for gathering the information, the information in this form and associated documents is, to the best of my knowledge and belief, true, accurate, and complete.

Print Name: Mark L. McCune \_\_\_\_\_

Signature:  \_\_\_\_\_

Date: December 10, 2013 \_\_\_\_\_

**G2. DWQ Approval**

To the best of my knowledge, the ADR was conducted in accordance with the rules and regulations outlined in UAC R-317-2-3.

Water Quality Management Section

Print Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO CA 95814-2922

December 6, 2013

Regulatory Division (SPK-2011-00755)

Mr. Mark L. McCune, P.E.  
Director of Structures Design  
Union Pacific Railroad  
1440 Douglas Street, Stop 0910  
Omaha, Nebraska 68179-0910

Dear Mr. McCune:

We are responding to your October 21, 2013 letter request for a Department of the Army permit for the Great Salt Lake Union Pacific Railroad (UPRR) Causeway East Culvert Closure project. This project involves discharging clean rock fill material into the Great Salt Lake, a water of the United States, to temporarily close the East Culvert which is in danger of failure. Filling the culvert is needed to prevent closure of the UPRR Causeway track across the Great Salt Lake. The East Culvert is located at Mile Post 750.53, in Section 23, Township 6 North, Range 6 West, Salt Lake Meridian, Latitude 41.22128°, Longitude -112.56051°, Box Elder County, Utah.

Based on the information you provided, the proposed activity, resulting in the temporary loss of approximately 0.17-acre of waters of the United States and a temporary reduction of the circulation of flows between the North and South Arms of the Great Salt Lake, is authorized by Nationwide Permit Number 14, *Linear Transportation Projects*. However, until Section 401 Water Quality Certification for the activity has been issued or waived, our authorization is denied without prejudice. Once you have provided us evidence of water quality certification, the activity the work may proceed subject to the conditions of the 401 certification and this Nationwide Permit 14 verification.

Your work must comply with the general terms and conditions listed on the enclosed Nationwide Permit 14 information sheets, the Utah Nationwide Permit Program Regional Conditions and the following special conditions:

Special Conditions

1. All equipment must work from existing causeway fill.
2. Within 90 days of the date of this verification, you shall submit to the Corps and the Utah Division of Water Quality an interim mitigation and monitoring plan to include identification of contingency measures to restore or mitigate for the loss of North Arm brine movement into the South Arm of the Great Salt Lake due to the closure of the East Culvert. Contingency measures are necessary due to the potential for adverse effects to the beneficial uses of the Great Salt Lake as a result of closure of East Culvert. The interim mitigation and monitoring plan may be superseded upon implementation of a final mitigation and monitoring plan approved by the Corps and Utah Division of Water Quality.

a. The interim mitigation and monitoring plan must address the collection and definition of 2012 baseline conditions, including defined and repeatable monitoring points for lake elevation levels and salinity gradients. Data collection is to capture temporary hydrologic impacts such as changes in salinity or water elevation gradients resulting from closure of the East Culvert. Monitoring sites will, at a minimum, be located on each side of the lake in the vicinity of the culverts as well as on the South Arm spillway to monitor changes to the deep brine layer.

b. Quarterly data collection and monitoring reports following closure of the East Culvert will be submitted to the Corps and the Utah Division of Water Quality. The first report is due three months following submission of the interim mitigation and monitoring plan. The quarterly monitoring shall continue until the Corps determines, for two consecutive years, that no adverse environmental effects have occurred as a result of closure of the East Culvert, or until the monitoring is superseded by implementation of a Corps-approved final mitigation and monitoring plan.

c. If, as determined by the Corps, quarterly monitoring data indicates adverse effects have resulted from closure of the East Culvert, the Corps may require UPRR to implement the interim measure(s).

3. You shall implement and maintain appropriate construction best management practices to safeguard water quality to prevent grout or other pollutants from entering the open waters of the Great Salt Lake during closure of the culvert.

4. You are responsible for all work authorized herein and ensuring that all contractors and workers are made aware and adhere to the terms and conditions of this verification.

5. You shall submit an after-action report to include photographs documenting the East Culvert closure work in progress, BMPs implemented, and of the completion of culvert closure. This report shall be submitted within 30 days of completion of the authorized work.

6. Within 60 days of receipt of this permit, you shall provide the Corps a firm schedule for completion of the 3-step plan for the modeling update, recalibration and simulations analysis, identification of appropriate monitoring parameters with a cause-and-effect relationship to the overall UPRR culvert closure and bridge construction project, and the projected date for submission of your final mitigation and monitoring plan for Corps approval.

After completion of the authorized work, you must sign the enclosed Compliance Certification and return it to this office within 30 days.

This verification is valid until March 18, 2017, when the existing Nationwide Permits are scheduled to be modified, reissued, or revoked. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified, reissued or revoked, you will have twelve (12) months from the date of the modification, reissuance or revocation of the NWP to complete the activity under the present terms and conditions. Failure to comply with the General and Regional Conditions of this NWP, or the project-specific Special Conditions of this authorization, may result in the suspension or revocation of your authorization.

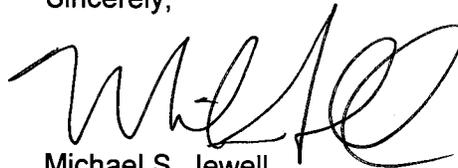
This NWP verification does not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law; do not grant any property rights or exclusive privileges, and do not authorize any injury to the property or rights of others.

This NWP 14 verification is only for the temporary filling of the East Culvert due to the potential for failure and does not address the permanent solution for maintaining train operations across the UPRR Causeway. Activities in waters of the United States proposed for a permanent solution, including whether to leave the East Culvert fill material in-place, will be evaluated under our standard individual permit procedures. A public notice describing your proposal for a permanent solution will be issued next week. With regard to the August 2012 NWP permit verification for the West Culvert, we will continue to informally consult with you to determine the final disposition of that verification during the standard individual permit process for the permanent project.

We would appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey from the lower link on our District website.

Please refer to identification number SPK-2011-00755 in any correspondence concerning this project. If you have any questions, please contact Kathleen Anderson at our Utah-Nevada Regulatory Branch, 533 West 2600 South, Suite 150, Bountiful, Utah 84010-7744, by email at [Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil), or telephone at 801-295-8380 extension 10. For more information regarding our program, please visit our District website at [www.spk.usace.army.mil/Missions/Regulatory.aspx](http://www.spk.usace.army.mil/Missions/Regulatory.aspx).

Sincerely,



Michael S. Jewell  
Chief, Regulatory Division  
Sacramento District

Enclosures

cc: (w/o encls)

Ms. Debra Schafer, General Director, Maintenance of Way-Environmental, Union Pacific Railroad, [debralschafer@up.com](mailto:debralschafer@up.com)

Mr. Stephen Cheney, Project Manager, Union Pacific Railroad, [scheney@up.com](mailto:scheney@up.com)

Mr. Robert Blysmas, Counsel, Union Pacific Railroad, [rcblysmas@up.com](mailto:rcblysmas@up.com)

Mr. Wayne Whitlock, Pillsbury Winthrop Shaw Pittman LLP, [wayne.whitlock@pillsburylaw.com](mailto:wayne.whitlock@pillsburylaw.com)

Mr. William Damery, Utah Division of Water Quality, [wdamery@utah.gov](mailto:wdamery@utah.gov)

Mr. Walt Baker, Utah Division of Environmental Quality, [wbaker@utah.gov](mailto:wbaker@utah.gov)

Ms. Laura Ault, Utah Division of Forestry, Fire and State Lands, [lauraault@utah.gov](mailto:lauraault@utah.gov)



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tel 650.233.4528  
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November 27, 2013

Via Electronic Mail

Mr. Jason A. Gipson  
Branch Chief, Regulatory Division  
Kathleen Anderson  
Regulatory Assistant, Nevada-Utah  
Regulatory Branch  
U.S. Army Corps of Engineers,  
Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Mr. Michael S. Jewell  
Chief, Regulatory Division  
Mr. Michael G. Nepstad  
Deputy Chief, Regulatory Division  
U.S. Army Corps of Engineers,  
Sacramento District  
1325 J Street  
Sacramento, CA 95814

Re: Union Pacific Railroad – Great Salt Lake Causeway – East Culvert  
Closure - Response to U.S. Army Corps of Engineers Questions  
Regarding Emergency Determination

Dear Messrs. Jewell, Nepstad and Gipson and Ms. Anderson:

This letter transmits the responses of Union Pacific Railroad (“Union Pacific”) to questions regarding the Army Corps of Engineers (the “Corps”) emergency determination that Kathleen Anderson sent by email to Union Pacific yesterday, November 26, 2013, on behalf of the Corps’ Nevada-Utah Regulatory Branch. Union Pacific believes that some of the questions are not pertinent to the Corps’ emergency determination under the Corps’ regulations and that we have already responded adequately to others. Nevertheless, Union Pacific is providing a response to all questions in an effort to facilitate timely completion of the Corps’ review.

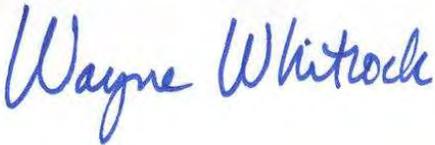
On November 21, Union Pacific submitted its Request for Reconsideration of Regulatory Branch Chief Gipson’s initial determination that the imminent failure of the East culvert is not an “Emergency Situation” under 33 CFR 325.2(e)(4). The November 21 submission documents the loss of property and immediate, unforeseen and significant economic hardship that would result if corrective action requiring a permit is not undertaken immediately. It supplements the record and provides over a

dozen pages of information regarding the hardship the public, Union Pacific, its customers and interstate commerce will suffer if the culvert is not closed. In these circumstances, the potential loss of property and economic hardship are the sole criteria upon which an "Emergency Situation" determination rests under 33 CFR 325.2(e)(4).

Union Pacific has worked diligently to provide requested information to the Nevada-Utah Regulatory Branch since first notifying the Corps of the East culvert's imminent failure on October 21, 2013. We have continued our cooperative efforts through significant, unexpected changes of the Corps' position regarding permit processing. However, Union Pacific remains very concerned about the imminent failure of the East culvert and the safety of rail operations. Union Pacific is also very concerned about the economic hardship that will result if the Great Salt Lake Causeway and the interstate rail line it supports are forced to be shut down and rail traffic rerouted through Salt Lake City. Therefore, we ask that the Corps focus with us on reviewing the information necessary to make the emergency determination and issue the East culvert closure authorization as soon as possible.

We will check again with you on Monday regarding the status of your review. Please feel free to call me over the holiday weekend with any questions. I will be monitoring my voicemail and have provided you with my cell phone number.

Sincerely,



Wayne M. Whitlock  
Counsel for Union Pacific Railroad

Enclosure

cc: Mr. Mark L. McCune  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.

UNION PACIFIC RAILROAD RESPONSE TO ARMY CORPS OF ENGINEERS UTAH-  
NEVADA REGULATORY BRANCH QUESTIONS RELATING TO EMERGENCY  
DETERMINATION

UNION PACIFIC RAILROAD – GREAT SALT LAKE CAUSEWAY  
PROPOSED EMERGENCY CLOSURE OF EAST CULVERT

November 27, 2013

This document sets out the questions raised by Kathleen Anderson's email of November 26, 2013, followed by Union Pacific Railroad's ("Union Pacific" or "UPRR") response. Ms. Anderson's email included questions on five different subjects, with a number of individual questions asked in each paragraph. Where one or more questions are interrelated, they are grouped and answered together. Questions are answered individually where appropriate.

Please note that UPRR has responded to many of these questions already and UPRR requests that the Army Corps review those responses—particularly the November 21 request for reconsideration and supporting documents—together with its review of UPRR's response below. This document references but does not repeat those responses, except where helpful for context, and supplements prior submissions where appropriate.

**I. ACOE QUESTIONS REGARDING TEMPORARY STRUCTURAL  
ALTERNATIVES TO CLOSING THE CULVERT**

- A. ACOE QUESTIONS: We are still awaiting a detailed response to our question as to the potential of spanning the east culvert with a steel plate as an interim measure to help increase the life of the east culvert and maintain some flow between the N and S arms. Please provide a written response for our record that supports your decision as to whether or not this alternative would be feasible. If it is not feasible, what has changed since the 2011 PCN proposal?

***UPRR RESPONSE:***

*Section IV of Union Pacific's November 21 request for reconsideration outlined Union Pacific's general concerns about the various proposals the Corps' Regulatory Branch has advanced. As explained therein, Union Pacific believes that it is neither feasible nor safe to attempt to place a steel plate or concrete slab over the top of the existing failing culvert or in the unstable substrate.*

*To review the critical facts, the most recent inspection found that the culvert has severely deteriorated to the point that it is beyond repair and there is a great deal of concern about its stability. Union Pacific and its professional engineers believe there is a significant and imminent risk that the East culvert will fail completely if not closed. Divers cannot safely reenter the culvert for any purpose, and surface inspections have shown that surface material around the culvert is falling into it.*

*Furthermore, in light of the ongoing failure of the culvert, it is unclear just how much, if any, the remaining culvert is functioning in terms of maintaining the contribution to flow and salt transfer that was occurring when the culverts were open and flowing. Accordingly, circumstances have changed significantly since the March 2011 PCN was submitted—at a time when the culvert was*

*relatively stable and was functioning in terms of water flow and salt transfer. Union Pacific no longer believes that alternatives considered then are feasible or that there is any likely short term aquatic benefit of pursuing them in light of the failing condition of the culvert.*

*Regarding the steel plate question, UPRR has not suggested nor entertained a temporary repair alternative using a steel plate. (The 2011 PCN mentioned a "concrete slab or deck.") A steel plate of a thickness that could be reasonably handled and utilized for this purpose could span only a few feet under railroad loading without excessive stress and deflection, and even less with any fill material above it. In contrast, the potential slip surfaces from a culvert failure, i.e., the surfaces that would be displaced by failure, would extend over 100 feet longitudinally at track level. The use of a steel plate or any other similar structural alternative would simply not extend far enough to cover potential slip surfaces without excessive instability.*

*All of the alternatives listed in the 2011 PCN were considered for stable culverts with intact structural integrity. This is no longer the case with the East culvert. It has completely separated into two pieces, which are offset from each other. The culvert is unstable, and failure would likely undermine fill material both above it and alongside it. There is nothing stable on which to support a plate, slab or deck, a necessity for placing something like this between the tracks and the culvert. It is simply not practical to construct anything stable on this unstable substrate.*

*Under the circumstances as they have developed here, Union Pacific strongly believes that there is no feasible alternative to closing the culvert as soon as possible. Further, Union Pacific is increasingly concerned that further delay of culvert closure would be counterproductive and would expose railroad operations to additional undue risk.*

- B. ACOE SUBQUESTIONS: Also, in removing the ballast from above the culvert, it may necessary to buttress the walls using a structure similar to a trench wall support system. Would this type of structure help stabilize the walls of the ballast above the culvert and alleviate stability concerns?

***UPRR RESPONSE:***

*We are uncertain as to the meaning of this question. Removing the ballast above the culvert would render the causeway inoperable for railroad transportation. There is approximately 15 feet of fill and ballast between the top of the failed box culvert and the track.*

*Perhaps the reference is to a temporary excavation as part of one of the impractical structural alternatives referenced by the Corps. Assuming this is the case, "buttressing" the culvert walls by such a method is also impractical and of dubious benefit. Shoring systems for trenching work, such as Trench Boxes, are generally used for shallow excavations like utility installations and always use struts of some kind to brace the two opposing walls. Even if the causeway were excavated to the top of the culvert, a 25-ft deep wall would be required and would only partially relieve the culvert wall of soil pressure. And the presence of the culvert precludes the use of struts. So, walls would have to be laterally supported by some type of tie-back requiring a specialty geotechnical contractor. These activities would necessitate shutdown of rail operations for at least several weeks. The result would be a failed culvert surrounded by extensive new*

infrastructure, at least partially dependent on the culvert for its support, in an unstable and highly corrosive environment.

## **II. ACOE QUESTIONS REGARDING OTHER INTERIM MEASURES AND SHORT TERM IMPACTS OF CULVERT CLOSURE**

- A. ACOE QUESTION: Also, please provide any further information to document why you believe other interim measures are not practical - i.e., pumping or some other method to maintain some connectivity between the arms.

### ***UPRR RESPONSE:***

*UPRR has responded to these questions previously in our responses of November 1 and 8 and documents referenced therein. Our prior submissions discussed other methods as well as pumping.*

*Union Pacific continues to believe that a pumping project would be infeasible and would provide very limited benefit.*

*First, as discussed in our November 21 submission, connectivity between the two parts of the Great Salt Lake will not be discontinued by closure of the culvert as implied by the question. In fact, water flow and salt transfer continues through the causeway itself and through the existing Rambo Bridge. As discussed in Response II.B below the actual contribution of the culverts to South Arm salinity is relatively small in relation to that of the causeway, particularly under current lake levels. Given the volume of salt transfer through the causeway, any contribution by pumping would be small in relation to those volumes.*

*Second, with regard to interim pumping of brine from North to South, it is not clear at this point in the modeling and impacts analysis being conducted pursuant to Union Pacific's September 25 letter to the Army Corps of Engineers how much brine was being transferred North to South and South to North through the East and West culverts. While USGS periodic spot estimates of these flows are available, they are inconsistent and show no apparent correlation to lake elevations or salinities. Even if the lower limits of USGS measured flows were used to set pumping targets, our calculations of pumping capacity even for a system as large as that of Great Salt Lake Minerals is that it could at best pump only about one third of the brine required to replace net North to South salt transfer through the culverts. Therefore, such a pumping station's best case annual contribution to the salinity of the South Arm would be only a few hundredths of a percent increase.*

*Finally, while it might be technically possible to construct a pumping station similar to the existing Great Salt Lake Mineral facility, it would be a significant project in its own right. Pumps would not be readily available and would have to be custom built. Power would have to come either from a new 3-phase electrical line or from a generator (more likely multiple generators in parallel). Estimated lead time for pumps and power equipment (procurement only) is six months minimum. Furthermore, Great Salt Lake Minerals' experience indicates that pumping during the*

winter months is impractical. Therefore, any small contribution to salt transfer would be further reduced by a long delay (perhaps up to a year) before a pump station could actually go on line.

B. ACOE QUESTION: “Further, why does UP believe the loss of culvert flows for up to 2 years would not be significant?”

**UPRR RESPONSE:**

*Union Pacific’s intent is not to minimize the importance of replacing the aquatic functions that the culverts serve; that is the basis for UP’s proposal to replace the culverts with the 180-ft bridge. However, it is important not to exaggerate the overall change in bi-directional flows and salt transfer that would occur if during the time the culverts are closed and before the compensatory mitigation bridge is constructed. Of course, the modeling and impacts analyses that are underway will help identify more specifically the contribution that the culverts made to the water and salt balance between the two parts of the Great Salt Lake before the culverts were closed. However, our analyses so far indicate the following:*

*UPRR has completed the first of its three-step modeling plan using the USGS Water and Salt Balance computer model. The first step was to rerun the existing model calibrated for the period from 1987 through 1998 (12 years). This step included modeling a hypothetical scenario with two unobstructed culverts as they existed in November 2012, using 1987-1998 hydrology. In fact, during that period, the culverts were plugged with rubble and ineffective for most of this time. At the end of the modeling period (1998), the simulation produced a South Arm salinity of 11.3%. The average South Arm salinity based on actual measurements was 8.9%, a difference of 2.4%. This suggests that the average effect of the two unobstructed culverts on South Arm salinity was limited to about 0.2% per year. In other words, during extended periods of high water levels, such as existed during the time period of 1987-1998, flows through the unobstructed culverts are estimated to contribute only about a 0.2% increase in South Arm salinity annually.*

*Water and salt balance modeling has not yet been completed for the period from 1998 to 2012 (the second step of UPRR’s plan). However, salt transfers for the period from spring 2004 to spring 2009—a period of lower but relatively stable water elevations—can be calculated and evaluated using three sets of interrelated data from that period:*

- *Sampled North and South Arm salinities;*
- *Measured bidirectional flows through the culverts;*
- *Total salt load in the South Arm.*

*This period (spring 2004 to spring 2009) is the only one on record that is relevant for the purpose of this evaluation because it begins when UPRR removed all rubble from the culverts and constructed protective berms and ends with the latest known computation of salt load in the North and South Arms (Kidd M. Waddell, “The Potential Effects of the Proposed Great Salt Lake Minerals Project on the Water and Salt Balance of Great Salt Lake, Utah,” 2010).*

*In spring 2009, total salt load in the South Arm was approximately 1.7 billion tons. Measured average South Arm salinity was 15.5%. Correlating the salinities and the bidirectional flows through the culverts, the net salt transfer through the two culverts (over a 5-year period ending*

spring 2009) was about 150 million tons north to south. Had the culverts been closed during that time, the estimated salt load in the South Arm in spring 2009 would therefore be 1.55 billion tons, or a salinity of 14.2%. This suggests that the average effect of the two culverts on South Arm salinity was limited to about 0.26% per year. In other words, during low water levels, such as existed at that time, flows through the unobstructed culverts are estimated to contribute about a 0.26% increase in South Arm salinity annually (although this might be partially offset by increased salt transfers through the causeway fill due to increased salinity differential). Lake elevations during this 2004 to 2009 period were similar to the current elevation.

Therefore, using this data, which is currently the best available until the completion of modeling, the estimated impact on South Arm salinity due to closure of both culverts would be expected to be on the order of 0.2% to 0.25% per year. During the 2004-2009 time period, South Arm salinity varied 4.3% (between 11.9% and 16.2%), an order of magnitude greater than the estimated annual contribution of the culverts, confirming that other factors affect salinity much more than the culverts.

- C. ACOE QUESTION: Why would pumping not be a viable option? Why would it not be a reasonable assumption to replicate the lower limits of the USGS measured north/south flows?

**UPRR RESPONSE:**

See Response to Question II.A above regarding the viability of pumping and using the USGS measured flows to set pumping targets.

**III. ACOE QUESTIONS REGARDING IMPACTS OF CAUSEWAY SHUTDOWN ON UPRR OPERATIONS (Grouped together for response):**

If it becomes necessary to use the Shafter route, what would be the effect in terms of hours of operation to that route? Jason understood the 16 Causeway trains would become 24-26 trains due to train length limitations on the Shafter route, making 40 in total when added to the Shafter average 16 daily trains. Do the 16 normal Shafter trains operate at varying hours or mostly in the day time? Would the majority of train traffic operate during primarily daytime hours or night time - or would UPRR need to basically use the Shafter route around the clock to handle and appropriately space 40 trains on a daily basis? Are we talking a train every half hour? How long does it take the average train to clear a grade crossing?

**UPRR RESPONSE:**

The following discussion further supplements the information provided in Union Pacific's November 21 submission.

- As discussed in Union Pacific's November 21 letter, Section II.C., shifting an average of 16 trains per day to the Shafter route would require breaking those trains up into 22-24

*trains per day to accommodate the 5700 ft. limit on train lengths for this route. For a portion of the Shafter route, from just west of the downtown Salt Lake City area out to the Magna area, this would increase the average total trains per day to 38-40, including at-grade crossings at 800 West, 900 West, and 1000 West. Significantly, some of the greatest impacts on Salt Lake City traffic would be at three other at-grade locations in downtown Salt Lake City (see footnote 16 in the November 21 submission; these at-grade crossings are located at 600 West, 300 North, and 400 North), where the current average number of trains per day is 28. The increase in train traffic at those three downtown Salt Lake City at-grade crossings (as well as all the way north to Ogden) would result in a total of 50-52 trains per day.*

- *Trains on the Shafter route operate on a 24-hour/day 7 days/week schedule and that would necessarily continue if the Causeway were shut down and its traffic shifted on to the Shafter Route. As noted in Union Pacific's November 21 letter, all components of the Shafter route would be loaded above fluid capacity, removing any option other than running trains as frequently as the system will allow. The average time between trains would be 36-38 minutes on the western portion of the downtown area, and 28-29 minutes in the downtown area itself and north to Ogden.*
- *For the six at-grade crossings in the downtown Salt Lake City area, maximum allowable train speed is 40 mph due to curvature. In reality, most trains transit the area at 20 mph or less and, in congested circumstances, could end up stopped in one or more crossings. Assuming a constant 20 mph, a crossing would be blocked for about 4 minutes per train. This could easily extend to 10 minutes or more due to congestion.*

#### **IV. ACOE QUESTIONS REGARDING DIRECT COSTS OF CAUSEWAY SHUTDOWN**

Also, there was not a response to our question if the \$258,000 per day associated with moving Causeway trains to the Shafter route could/would be mitigated by passing some or all of this cost on to your customers, similar to a fuel surcharge that might be used to offset rising fuel costs? Would this amount in fact be a cost UP would incur directly? Would you have recourse to recoup some of the additional costs? (grouped together)

#### ***UPRR RESPONSE:***

*As described in the Corps' regulations, the test of emergency conditions is associated with "economic hardship." 33 CFR 325.2(e)(4). Union Pacific's submittal described economic hardship that would arise from a Corps refusal to utilize emergency procedures, including hardships to the public, interstate commerce, Union Pacific's customers and Union Pacific itself.*

*In terms of Union Pacific's estimate of \$258,000/day discussed in the November 21 submission, that estimate was only for the direct costs of shutting down the Causeway and rerouting trains and freight over the Shafter route as defined in the November 21 request for reconsideration. As to passing on costs to customers, the freight transportation business is highly competitive and prices are controlled by market conditions; raising prices to recoup the costs of rerouting trains*

*(as described in our request for recirculation), even if it were possible under existing contracts, would risk loss or reduction of business to competitors that do not incur these costs.*

*Furthermore, to the extent that Union Pacific's customer costs would increase as a result of rerouting of trains, such increased costs would still constitute an "economic hardship" under the Corps' regulations at 33 CFR 325.2(e)(4).*

**V. ACOE ADDITIONAL QUESTIONS REGARDING SHORT TERM IMPACTS OF CAUSEWAY SHUTDOWN**

Also we want to clarify that the 0.2% average salinity change per year that Karen and Mark spoke about relates to the percentage of current salinity, i.e., if the south arm salinity were 8% this year, closure of both culverts for 2014 with precipitation similar to this year, the model would predict that south arm salinity would decrease from 8% to 7.8%?

***UPRR RESPONSE:***

*In principle, this is a correct interpretation, but the 0.2% contribution was based on modeling at higher lake elevations. Furthermore, it is doubtful that there has ever been a time when salinity has been the same in two successive years. As noted in previous discussion, other factors account for much greater swings in salinity.*

*Additionally, we note that, at current lake levels, South Arm salinity is likely in the 14 to 15% range, or very near causeway-era highs. A minor (on the order of 0.5%), temporary, reduction in salinity, as estimated to result here, is clearly more tolerable under these conditions than if current South Arm salinity were lower.*

Utah Division of Water Quality

401 Certification Application

East Culvert Emergency Temporary Closure

## Supporting Documentation Attachment D

1. **UPRR Letter to USACE, Dated September 25, 2013**
2. **UPRR Email to USACE, Dated November 1, 2013**
3. **UPRR Email and Attachment to US Army Corps of Engineers, Dated November 8, 2013**
4. **Pillsbury Winthrop Shaw Pittman LLP (Pillsbury) Letter to ACOE on behalf of UPRR with enclosures, Dated November 21, 2013**
5. **Pillsbury Email to USACE on behalf of UPRR, Dated November 21, 2013**
6. **Pillsbury Letter to USACE on behalf of UPRR with enclosure, Dated November 27, 2013**
7. **Pillsbury Email to USACE on behalf of UPRR, Dated December 2, 2013**

September 25, 2013

File: Bridge 739.79 Lakeside Sub  
Culvert 750.53 Lakeside Sub

Via Electronic Mail and First Class Mail

Mr. Jason Gipson  
Branch Chief, Regulatory Division  
U.S. Army Corps of Engineers, Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Re: Union Pacific Railroad (UPRR) - Great Salt Lake Causeway - Culvert Closure and Bridge  
Construction Project – SPK-2011-00755

Dear Jason:

I am writing to document our discussions on August 29, 2013 with you and Kathleen Anderson in the Corps' Bountiful offices. In that meeting, we discussed UPRR's efforts since we entered into the consultation process pursuant to 33 CFR §330.5(d)(2) in April of this year regarding the existing Nationwide Permit (NWP) 14 that the Corps verified on August 29, 2012. Further, we discussed UPRR's plan for addressing in this consultation process the concerns that the Corps and the other state and federal coordinating agencies have raised. As agreed in that meeting, we are submitting this letter to summarize UPRR's plan to reevaluate the potential impacts of closing the causeway culverts and construct a bridge and then revise the bridge proposal and compensatory mitigation and monitoring plans based on the results of that reevaluation. The letter also summarizes our proposal for coordination of our efforts with the other agencies during the UPRR-Army Corps consultation process. Thanks to you and Kathleen for meeting with us and for the Corps' commitment to work cooperatively with us to resolve these issues. I understand you will circulate this letter to the coordinating agencies in advance of our October 2 meeting at your offices.

**I. Regulatory History and Status**

At the outset, we emphasize that the purpose of UPRR's proposal was and still is to address the fact that the two culverts in the Great Salt Lake Causeway—placed in the causeway at the time the rock-filled portion of the causeway was installed in the late 1950s—are failing due to continuous prolonged settlement of the underlying soils. The West culvert was closed in November 2012 under the August 29 NWP authorization out of safety concerns. The culvert had separated and broken and there was concern that

the culvert was in danger of imminent collapse, which could cause a train derailment. The East culvert also is deteriorating and will require closure in the near future.

As a result of discussions with the Corps and the coordinating agencies, UPRR submitted a proposal in March 2011 to replace the culverts with a 180-ft bridge at a location on the causeway that is as close to the culvert locations as possible and in an area that is geotechnically stable enough to support the bridge structure. An additional breach in the causeway (in addition to the Rambo Bridge that was constructed in the 1980s) is not needed to support railroad operations or protect the integrity of the causeway. Thus, the only purpose of UPRR's bridge proposal was to replace the aquatic functions that would be lost as a result of closing the two culverts.

Further, although the culverts were originally installed primarily to facilitate boat passage through the causeway, their subsidence over the years, combined with fluctuations in lake elevations, resulted in their submersion below the lake surface. As the culverts sank deeper, they became a mechanism for conveying heavier brine through the causeway, particularly after UPRR reopened the plugged culverts and installed protective berms to prevent them from filling again in 2004.

On August 29, 2012, the Corp issued a Verification of Coverage under Nationwide Permit 14 for emergency closure of the West culvert and construction of the 180-ft bridge to compensate for the loss of bi-directional flows—all subject to Corps approval of an acceptable compensatory mitigation and monitoring plan to be submitted by UPRR.

UPRR submitted its initial draft Compensatory Mitigation and Monitoring Plan in January 2013, but the Corps found that plan insufficient. Further, citing concerns raised on the plan by the Utah Division of Water Quality, the Division of Forestry, Fire and State Lands, the U.S. Geological Survey and other coordinating agencies, the Corps raised concerns about the adequacy of UPRR's prior analysis to support a conclusion that the overall project would have no more than minimal adverse effects.

The initial reaction of the Corps and many of the comments of the coordinating agencies on the draft compensatory mitigation and monitoring plan reflected that there had been some misunderstanding about the status of the August 29 permit. Some commenters indicated they understood that the August 29 authorization was being revoked and an individual permit process would be required. However, the Corps subsequently acknowledged in a June 26, 2013 letter from Colonel Leady that permit revocation would not be proper under the circumstances and that the August 29 NWP remains in effect. Instead, the Corps and UPRR agreed to enter into an informal consultation process on the permit as provided by the Corps' regulations--33 CFR § 330.5. During the consultation period, the August 29 NWP 14 verification is suspended.

The objective of our consultation is to address concerns the Corps and other agencies have about the potential impacts of closing the culverts and constructing the new bridge. In June 26, 2013 letter to UPRR Colonel Leady stated the continuing concern of the Corps and of the federal and state coordinating agencies:

“that closure of the west [culvert] and the construction of the new bridge could result in more than minimal impacts to the Great Salt Lake ecosystem. UPRR has not adequately demonstrated that the construction of the bridge (design and location) will offset the impacts of closing the culverts and not further exacerbate

the salinity concentration difference and reduce the bi-directional flows between the north and south arms of the lake.”

As Colonel Leady’s letter stated, under the Corps’ regulations, this consultation provides the opportunity for us to prepare and submit additional analysis to resolve these concerns. If appropriate based on this additional analysis, additional mutually agreeable conditions may be added to the August 29 authorization, and UPRR will revise the compensatory mitigation and monitoring plan accordingly to be consistent with the impacts analysis. If, at the end of our consultation, the Corps is still not satisfied that the overall project will result in less than minimal adverse effects, the Corps could revoke the existing authorization.

## **II. UPRR’s Plan to Reevaluate Potential Impacts of Culvert Closure and Bridge Construction**

One of the main criticisms of UPRR’s initial analysis to support its March 2011 application, as well as its January 2013 draft compensatory mitigation plan, was that it focused on bi-directional flows between the Great Salt Lake’s North and South arms without adequate consideration of the project’s potential impacts on the salt balance. In effect, the commenters asserted that inadequately addressed project impacts on the Great Salt Lake water and salt balance could result in unaddressed impacts on other important resources of the Great Salt Lake, including brine shrimp, mineral production and wildlife.

As reflected herein, UPRR has reevaluated its prior analysis and has modified its approach significantly to address the concerns raised by the Corps and other federal and state agencies. UPRR is in the process of reevaluating the potential impacts of this project. At the heart of this plan is a significant effort to update, recalibrate and run the USGS Water and Salt Balance Model—as the Corps, USGS and DWQ all have requested—to simulate the effects of this project.

UPRR has engaged two renowned experts to assist in the impacts reevaluation. First, we have engaged Kidd Waddell, retired from the U.S. Geological Survey and one of the original developers of the 1998 USGS Model and its predecessors. In addition, we have engaged Wally Gwynn, retired from the Utah Geological Survey. These two experts have been working on Great Salt Lake issues since 1969 and 1971 respectively; their past work and publications represent a significant contribution of scientific knowledge associated with the Great Salt Lake.

This impacts analysis will evaluate whether the proposed bridge will compensate for the loss of the aquatic functions that would result from closing the culverts as they functioned in 2012 before it became necessary to close the West culvert; these are the baseline conditions for purposes of our impacts analysis.

### **A. Updating, Recalibrating and Running the 1998 USGS Water and Salt Balance Model**

Since UPRR entered into consultation with the Corps, it has reevaluated the efficacy of using the USGS Water and Salt Model “to predict the impacts to salinity gradients and flows between the north and south arms” of the Great Salt Lake as requested by the Corps in its June 26. USGS and DWQ have made similar requests.

Some of the agencies commenting on UPRR’s project requested that UPRR “update and recalibrate” the USGS Model from 1998 forward and recalibrate it with data through 2012. Others, including Craig Miller of Utah’s Division of Water Resources, have conducted analyses based upon the USGS Model, without updating and recalibrating it.

UPRR has evaluated a number of options for using the USGS Model with the assistance of HDR's Karen Nichols, PE and Dr. Steve Ertman, PE (Senior water quality modeler), Wally Gwynn and Kidd Waddell. Mr. Waddell worked with others to develop and update the USGS model previously, and Dr. Gwynn has conducted numerous studies on the GSL bi-directional flows and salt balance. Dr. Ertman has over 25 years of professional and research experience in the aquatic sciences with over 10 years in the development and coding of numerical models of coastal and estuarine hydrodynamics. With the input of Mr. Waddell and Dr. Gwynn, the consulting team has evaluated several options of using the USGS Model to support the impacts reevaluation, which will in turn support the Corps' determination whether replacing the culverts with the proposed bridge under the August 29 Nationwide Permit would have no more than a minimal effect on the Great Salt Lake ecosystem, consistent with the Corps' Nationwide permit approval standards. This effort produced the following three-step plan to use the USGS Water and Salt Balance Model to compare baseline simulations (full flowing culverts, as they existed in November 2012 before West culvert closure) to a simulation of the proposed bridge.

The objective of this modeling effort is to evaluate the potential impacts of the East and West culvert closures and construction of the proposed bridge on the water and salt transfer between the North and South Arms of the Great Salt Lake—using the 1998 USGS Water and Salt Balance Model (the 1998 USGS Model) as represented in the Water-Resources Investigations Report 00-4221, Water and Salt Balance of Great Salt Lake, Utah, and Simulation of Water and Salt Movement through the Causeway, 1987 – 98 (Loving, Waddell and Miller, 2000). UPRR proposes a three-step modeling effort.

**Modeling Step 1: Run the existing 1998 USGS Model and simulations of 2012 culvert conditions and new bridge.**

This step would begin with running the 1987-1998 USGS calibrated model, after comparing existing model input files with existing model output files (acquired from B. Loving, USGS). Completion of this step will ensure that the model is compiling and producing the same output as the previous USGS effort that culminated in the publication of the 2000 report cited above.

The 1998 USGS Model will then be modified to simulate conditions in the North and South Arms of the Great Salt Lake under the following two scenarios:

- Simulated conditions for the East and West culverts before closure of the West culvert in 2012
  - 2012 culvert invert elevation (approximate 4173 and 4173.5)
  - Culverts will be free flowing
  - Existing breach geometry equation modified to reflect the actual trapezoidal shape of the opening
- Simulated conditions associated with the proposed bridge
  - Flow through the culverts would be removed
  - New bridge geometry added (180' span with and bottom width of 60 feet at an elevation of 4177.9) to replace the culverts
  - The existing breach geometry equation modified to reflect the actual trapezoidal opening

This step will produce a comparison of the predicted impacts resulting from the two simulations on North and South Arm lake levels, distribution of salt load between the North and South Arms, and flows between

the North and South Arms (north to south and south to north flows through the causeway), during the same 12-year time interval analyzed in the 1998 USGS model. This comparison will be conducted using historic hydrologic conditions as observed and recorded during 1987-1998, starting with water surface elevations near the Lakes' historic high levels and ending with water surface elevations as observed in 1998. In other words, this step is designed to allow a comparison of the two sets of simulated conditions and their impacts on Great Salt Lake water and salt balance under the historical hydrologic conditions that actually occurred during the 12 year period of this modeling effort.

**Modeling Step 2: Develop and calibrate a new version of the USGS Model for the time period 1987-2012.**

The next step in UPRR's plan is to extend the 1987-98 USGS Model from 1998 through 2012, to the point at which the West culvert was closed; this would extend the modeling period for a total of 25 years. This Step would follow the general purpose of the 1998 USGS Model, i.e., to simulate water and salt balance within the GSL and calibrate to historic lake levels and salinities. The 2012 updated and calibrated USGS Model would then be used to simulate the Great Salt Lake response under the two scenarios described under Step 1: the culverts as they functioned in 2012 and the proposed new bridge. Thus, this step would be similar to the process that the 1998 calibrated USGS Model followed to predict the lake response to the construction and subsequent modification of the existing breach.

This Step would allow for a more robust assessment of the potential response of the lake to having open culverts (at the 2012 elevations) versus the simulated response of the Lake if the proposed bridge were substituted for the open culverts. This would test the function of the proposed bridge versus the culverts over the observed hydrologic conditions of the 25 year period, which includes both the wetter climate of the 1980s and the drier climate period of the last few years.

This effort to update and calibrate the existing USGS Model, to include current conditions, has been suggested by the Corps, USGS and DWQ and appears to be supported by other resource agencies and academic professors. By definition, this process may lead to additional adjustments in the model equations (for the existing breach and the culverts) that more accurately represent measured flows and produce a smaller margin of error than the 1998 Model, due to the longer time period and the availability of additional measured data.

The first substep in this effort will be to update and calibrate the 1998 USGS Model through 2012 (up to the time the West culvert was closed), using the same calibration procedures that were utilized on the 1998 model.

The model update effort will include the following tasks:

- Collection and input of available data for river and groundwater inflow, evaporation, North Arm and South Arm salinities, North and South Arm water surface elevations and precipitation for the time interval of 1999-2012.
- Model equations representing the culvert positions and their functioning (clean/full) would be modified to reflect actual conditions for the interval 1999-2012.
- The existing breach sub-routine would be modified to reflect the 2000 lowering of the depth of the existing breach.

The model calibration effort will include the following tasks, also used in the 1998 model calibration effort:

- “Calibrate” the water balance routine, by adjusting annual evaporation up or down annually for 1999–2012 to better match measured water surface elevations (WSEL).
- “Calibrate” the salt balance routine, by adjusting the hydraulic conductivity for the causeway fill.
- Review and, if appropriate, adjust equations for causeway openings and compare to measured flow rates. This effort could yield more certainties and less margin of error between calculated flows and measured flows.

The second substep in this effort will be to modify the 2012 Updated and Calibrated Model to simulate conditions in the North and South Arms of the Great Salt Lake under the same two scenarios as in Step 1:

- Simulated conditions for the East and West culverts before closure of the West culvert in 2012
  - 2012 culvert invert elevation (approximate 4173 and 4173.5)
  - Culverts will be free flowing
  - Existing breach geometry equation modified to reflect the actual trapezoidal shape of the opening and the 2000 change in bottom depth
- Simulated conditions associated with the proposed bridge
  - Flow through the culverts would be removed
  - New bridge geometry added (180’ span with and bottom width of 60 feet at an elevation of 4177.9) to replace the culverts
  - The existing breach geometry equation modified to reflect the actual trapezoidal opening and the 2000 change in bottom depth

As in Step 1, a comparison of the two simulations on North and South Arm lake level will be conducted on the following parameters: distribution of salt load between North and South Arm, and flows between the North and South Arms (north to south and south to north flows through the causeway). The model results would be graphed and compared under the hydrologic conditions experienced during 1987-2012, i.e., the precipitation, groundwater and stream inflows, and evaporation exhibited during the 25 year Model period for the two simulations.

### **Step 3: Develop a new predictive model for selected climatology**

With the model updated and calibrated through 2012 and a comparison of the two simulations run through that period completed, Step 3 would predict how the Great Salt Lake water and salt balance would react to future hydrologic scenarios. Under Step 3, UPRR would compare simulation results of lake level, salinities, salt load and north to south and south to north flows for the existing culverts and the proposed bridge under theoretical wet, mild and dry hydrologic conditions (or other stated hydrologic conditions as appropriate). These simulations and comparisons would start with the lake characteristics (level and salinity) that were observed 2012.

This effort would predict how these lake parameters would react in the future if the culverts were open and fully operational at their 2012 elevations—under simulated wet, mild and dry conditions from 2012 forward. Those predicted reactions would be compared to the predictions of how these same parameters would react if the new bridge were constructed to replace the culverts.

UPRR proposes to develop the predictive model starting with 2012 initial conditions and conduct the following steps.

- Identify wet and mild cycle hydrology from the 1987-1998 USGS model input files or a rationale would be developed from the existing model data to represent the cycles.
- Identify and compile dry cycle hydrology, which does not exist in the 1987-1998 data, presumably from the 1998-2012 data set that will be compiled in Step 2.

The two simulations, as described below, would be evaluated with results graphed and compared under the applied theoretical wet/mild/dry hydrologic conditions (representative precipitation, groundwater and stream inflows, and evaporation parameters):

- Simulated conditions for the East and West culverts before closure of the West culvert in 2012
  - 2012 culvert invert elevation (approximate 4173 and 4173.5)
  - Culverts will be free flowing
  - Existing breach geometry equation modified to reflect the actual trapezoidal shape of the opening and the 2000 change in bottom depth
- Simulated conditions associated with the proposed bridge
  - Flow through the culverts would be removed
  - New bridge geometry added (180' span with and bottom width of 60 feet at an elevation of 4177.9) to replace the culverts
  - The existing breach geometry equation modified to reflect the actual trapezoidal opening and the 2000 change in bottom depth

The modeling effort would take the end results and repeat through the selected annual hydrologic conditions until dynamic equilibrium is achieved (i.e., the results for any specific date are the same from one cycle to the next).

This step is designed to answer two very basic questions: how current (2012) lake elevations and salinities would evolve over a prolonged, multi-year interval of the selected climatology (i.e., wet cycle, mild cycle, dry cycle) under each simulation (2012 culverts and the proposed new bridge) and how similar is the functioning of the open culverts versus the new bridge

The water and salt balance predictions would be the result of the theoretical climate conditions and the model results and, therefore, would only predict a range of values flows and salt transfer that relate to theoretical high, mild and low lake levels and associated salinities. However, against the backdrop and additional information provided by Steps 1 and 2, Step 3 would do just what the Corps and USGS have requested: to predict the impacts to salinity gradients and flows between the North and South arms" of the Great Salt Lake."

**Results:** The 3-step modeling effort would include the preparation of graphs, representing the Model outputs each year for the time period set in the model and each condition (free flowing culverts and new bridge) for the following parameters:

- 1) North Arm and South Arm: relative water surface elevations;
- 2) North and South Arm relative salinities (percent salinity);
- 3) Distribution of Salt Load between North and South Arms, and

- 4) Annual total north to south and south to north flow and salt transfer between the North and South Arms.

These graphs would be prepared and compared for both 2012 culvert simulation conditions and proposed new bridge simulation conditions (these are simulations because they will assume conditions that did not or do not actually exist (e.g., free flowing culverts in the culvert simulation condition for the entire modeling period)), for purposes of analysis and comparison. This comparison will illustrate potential similarities or differences in the selected parameter values.

Should any differences between the predicted reaction of the proposed new bridge in comparison to the predicted reaction of the functioning culverts be deemed significant and adverse in terms of impacts on water and salt balance ("more than a minimal effect"), the proposed bridge geometry could be modified to achieve a comparison of parameters that reduces the potential differences (and, therefore, the potential impacts) to levels that are considered minimal.

#### **B. Evaluation of Other Potential Impacts**

In order to predict the impacts of the project on the Great Salt Lake water and salt balance, we believe it will be crucial to complete the modeling effort, with progress reports and meetings with agency representatives as each of the three phases is completed. As that effort proceeds and nears completion, we also will be evaluating other potential impacts on Great Salt Lake resources. Specifically, our analysis will identify potential impacts to resources that have a cause and effect connection to culvert closure and replacement or, in other words, impacts to resources that would be adversely affected by further exacerbation of salinity concentration differences between the North and South Arms. We will work with the Corps, the State of Utah agencies and other coordinating resource agencies to distinguish such potential impacts from those that do not have a cause and effect relationship or are more closely identified with broader objectives of improving Great Salt Lake ecological conditions generally and, therefore, are not within the proper scope of this permitting effort. Dr. Gwynn will be very helpful in identifying those processes and resources that have actual potential to be adversely affected by the project.

#### **C. Agency Coordination and Next Steps**

In our August 29 meeting, UPRR proposed to prepare this submittal for the Corps' to circulate to the other interested state and federal agencies and then meet with the Corps and those agencies to discuss this plan and obtain their input as an element of our consultation with the Corps on the existing permit. We appreciate your circulating this to the resource agency representatives who will be attending the October 2 meeting at your offices. We look forward to discussing the proposal with these representatives.

We envision a phased approach in which we will further develop and refine each phase of the plan to reflect the results of the prior steps and agency input. For example, we envision reporting and meeting with the Corps and interested resource agencies at the end of each modeling step to update the plan and make any needed adjustments.

Further, as discussed above, based on the results of this impacts reevaluation, UPRR is prepared to adjust its bridge proposal in a manner that would result in the function of the bridge and its effect on the water and salt balance more closely resembling the predicted effects of the 2012 culverts.

Finally, once the impacts analysis is complete and any adjustments to the bridge proposal are made, UPRR will revisit and revise its compensatory mitigation and monitoring plan. We acknowledge many negative comments on the January 2013 plan from the coordinating agencies and we intend to address all of them in revising our compensatory mitigation and monitoring plan. However, that plan should be keyed to the results of the impacts reevaluation we are undertaking once it completed. It will be important to define and acknowledge the critical relationship between the impacts analysis/modeling effort and the mitigation and monitoring plan elements and parameters. It will be particularly important to establish an appropriate correlation between the selection of the parameters for monitoring and the results of the impacts analysis. Finally, we must establish an appropriate relationship between the precision of the model in predicting impacts and the precision of the performance standard and the monitoring and adaptive management requirements. We believe the consultation process we have defined with the Corps, including coordination with the other agencies, is well-suited to address and resolve these issues.

### III. Conclusion

UPRR's objective is to complete this reevaluation and make any adjustments needed that demonstrate that the project will have less than minimal effects on aquatic resources as required by the Corps regulations.

We appreciate the concern you share with UPRR regarding safety of railroad operations on the causeway and the need to monitor the condition of the remaining East culvert. Our monitoring indicates that it is continuing on the path to failure; emergency closure of this culvert could become necessary if safety conditions dictate.

Again, thanks to you and Kathleen for your cooperation in the consultation process and for your efforts to include the coordinating state and federal resource agencies in this process. We look forward to meeting with you on October 2 at your offices in Bountiful. Please contact me with any questions or concerns.

Sincerely,



Mark L. McCune, PE  
Director Structures Design

cc: Ms. Kathleen Anderson  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.  
Mr. Daniel T. Harbeke  
Wayne M. Whitlock, Esq.

## Nichols, Karen

---

**From:** Mark L. McCune <MLMCCUNE@up.com>  
**Sent:** Friday, November 01, 2013 3:24 PM  
**To:** Anderson, Kathleen E SPK  
**Cc:** Gipson, Jason A SPK; Debra L. Schafer; Stephen L. Cheney; Whitlock, Wayne M.; Robert C. Bylsma  
**Subject:** Information requested by USACE, proposed closing of East culvert Great Salt Lake causeway.

Kathleen,

The proposed filling of the East culvert will impact approximately 0.15 acres of waters of the United States. This includes filling the culvert itself and the grading to occur at each end of the culvert to facilitate the filling.

In answer to your specific questions:

- Estimated cubic yards of fill = 3650 C.Y.
- Alternatives rejected -
  - Inserting a smaller culvert within the existing opening would not be feasible or safe under the circumstances: Maximum conceivable opening would only be about 1/3 of existing and would involve handling a very heavy pipe in difficult conditions. Given the persisting unknowns regarding lake circulation, we are unable to predict an optimum depth for such a pipe. Also, much of this work would have to be performed underwater in and around the failing culvert, and would be unsafe for the contractor's forces.
  - Pumping brine across the causeway: This would not be feasible to install or operate across an operating rail line; also, not possible to determine how much flow, or in what direction, would replace the function of the culvert at any given time.

Note that trends in long-term data suggest that transfer of salt through the causeway itself are still occurring and, in fact, are larger than concurrent transfers through the culvert.

- While specific means and methods of filling the culverts will be left to the discretion of the contractor, we anticipate that the process will be:
  - Grade fill material into the channels at each end of the culvert (to contain the grout).
  - Pump grout into the culvert from one end, and observe when grout fills the opening and reaches the crown of the culvert at the other end.

Mark L. McCune, PE  
Director Structures Design  
Union Pacific Railroad Company  
(402) 544-5194

----- Forwarded by Mark L. McCune/UPC on 11/01/2013 04:09 PM -----

From: "Anderson, Kathleen E SPK" <[Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil)>  
To: "Debra L. Schafer" <[DEBRALSCHAFER@UP.COM](mailto:DEBRALSCHAFER@UP.COM)>, "Whitlock, Wayne M." <[wayne.whitlock@pillsburylaw.com](mailto:wayne.whitlock@pillsburylaw.com)>  
Cc: "Gipson, Jason A SPK" <[Jason.A.Gipson@usace.army.mil](mailto:Jason.A.Gipson@usace.army.mil)>

Date: 11/01/2013 02:18 PM  
Subject: Information from Steve Cheney (UNCLASSIFIED)

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Classification: UNCLASSIFIED  
Caveats: NONE

Deb, when you email Steve, could you ask that in addition to his description of the fill materials, could he provide an estimate of the cubic yardage of fill for closing the East Culvert. I would think he has a better estimate that the 2011 PCN Information based on the fill used to close the West Culvert.

Receiving this information on Monday along with a brief description of the alternatives that you have considered, such as placement of a smaller culvert within the failing culvert, and your rationale why these are not practicable for the situation, will be very useful for our decision process.

Again, thanks for taking time to call me - and hope you both have a great weekend.

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED  
Caveats: NONE

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## Nichols, Karen

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**From:** Mark L. McCune <MLMCCUNE@up.com>  
**Sent:** Friday, November 08, 2013 6:16 PM  
**To:** Anderson, Kathleen E SPK  
**Cc:** Gipson, Jason A SPK; John J. Hovanec; Robert C. Bylsma; Stephen L. Cheney; Whitlock, Wayne M.; Scott D. Moore; Aaron M. Hunt; Daniel T. Harbeke  
**Subject:** Re: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)  
**Attachments:** Financial\_Impacts\_Causeway.pdf

Kathleen,

Please see the attached document for impacts to the Union Pacific which would result from closing the Causeway. There would be significant immediate and continuing economic hardship imposed on the UP should this occur. This responds to the first three bullet points in your questions document.

The Jacobs report identified the risk of imminent failure and that it would be purely speculative to conclude that stopping train traffic will have any effect on the deterioration that is occurring. Even if traffic were removed from the Causeway, it is my professional opinion that deterioration and failure of the East Culvert would not be delayed. The loading from fill over the culvert is much larger than the loads imposed by passing trains.

Regarding compensatory pumping of brine from the North Arm to the South Arm, we had previously responded that this is not feasible. We have discussed this with Joe Havasi of Great Salt Lake Minerals and he advised that during cold weather increased brine viscosity tends to clog the pumps and other equipment and presents major maintenance issues. In addition, we note that the Utah DWQ has not seen the need or benefit of such an effort. For that reason, they have not proposed to impose such a responsibility. We request that you defer to their judgment on this and not impose this as a condition. And, were we to attempt to do so, we would still be left with the unanswerable question of how much brine should be pumped.

Finally, we remind the Corps of our discussions with Kidd Waddell and Wally Gwynn, the foremost experts on the Great Salt Lake. Although the closure of the East culvert would eliminate that source of flows, our experts have told us that the existing causeway fill and the Lakeside breach contribute to flows between the two arms of the Lake.

Thanks.

*(See attached file: Financial\_Impacts\_Causeway.pdf)*

Mark L. McCune, PE  
Director Structures Design  
Union Pacific Railroad Company  
(402) 544-5194

▼ "Anderson, Kathleen E SPK" ---11/08/2013 02:15:17 PM---Classification: UNCLASSIFIED Caveats: NONE

From: "Anderson, Kathleen E SPK" <[Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil)>  
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Date: 11/08/2013 02:15 PM

Subject: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)

---

Classification: UNCLASSIFIED

Caveats: NONE

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED

Caveats: NONE

[attachment "Questions for UPRR re Emergency Permitting.docx" deleted by Mark L. McCune/UPC] [attachment "GSLM pump station at Promontory Point.pdf" deleted by Mark L. McCune/UPC]

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## **UNION PACIFIC RAILROAD**

### **Impacts Associated with Imminent Culvert Failure on the Great Salt Lake Causeway**

#### **Economic Impacts**

Union Pacific Railroad's main line west from Ogden across the Great Salt Lake is part of the Lakeside Subdivision. There is only one alternate rail route from the Salt Lake Valley west to northern California—the Shafter Subdivision which runs west from Salt Lake City around the south side of the Great Salt Lake. The two subdivisions follow separate alignments until they join at Wells, Nevada.

On average, 16 trains cross the Great Salt Lake Causeway on the Lakeside Subdivision per day.

If the Causeway was unusable, the trains would need to be rerouted over the Shafter Subdivision. The Shafter Subdivision is approximately 73.3 miles longer than the Lakeside Sub, has approximately 1700 feet more rise and fall, and has approximately 1700 more degrees of curvature. All three factors increase fuel consumption. The Shafter Sub also has east bound siding restrictions. These siding restrictions would force running on average one additional train per day from origin to destination. Therefore 17 additional trains would be added to the Shafter Sub per day.

Union Pacific's Network Planning Group has analyzed costs associated with such a reroute. Rerouting all traffic from the Lakeside Subdivision to the Shafter Subdivision would result in increased direct costs to Union Pacific of \$258,000 per day. In addition, there are likely additional costs due to congestion on the Shafter Sub route, such as additional crews required by the Federal Railroad Administration's hours of service rules.

In addition to costs to Union Pacific, there would also be impacts to the public. Most notably, an additional 17 trains per day would traverse 38 at-grade crossings between Ogden and Smelter (18 miles west of Salt Lake City), causing inconvenience to motorists and increased vehicle exhaust.

#### **Impacts on Property**

The Causeway is a major structural asset and a critical element of Union Pacific's Overland Route and overall transportation infrastructure. Collapse of the culvert would render the causeway inoperable, which in turn would render this portion of the Overland Route inoperable. Accordingly, the collapse of the culvert would cause an immediate loss of productive use of our property (not only the Causeway itself but an additional 145 route miles between Ogden and Wells) that would continue until the Causeway is restored.

## **Impacts on Interstate Commerce**

The effects of shutdown would clearly impact interstate commerce. Our customers rely heavily on shipments over the Lakeside Subdivision main line. Not only would there be a direct impact on shipments over that line, but the ripple effect of such a shutdown would extend throughout the rail network. Such costs cannot be quantified in the time frame for responding to the Corps' inquiry.



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November 21, 2013

Via Electronic Mail and Hand Delivery

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Commander  
Mr. Wade L. Eakle  
Regulatory Program Manager  
U.S. Army Corps of Engineers,  
South Pacific Division  
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Mr. Jason A. Gipson  
Branch Chief, Regulatory Division  
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Colonel Michael Farrell  
Commander, Sacramento District  
Mr. Michael S. Jewell  
Chief, Regulatory Division  
Mr. Michael G. Nepstad  
Deputy Chief, Regulatory Division  
U.S. Army Corps of Engineers,  
Sacramento District  
1325 J Street  
Sacramento, CA 95814

Re: Union Pacific Railroad – Great Salt Lake Causeway – East Culvert  
Closure - Request for Reconsideration of Army Corps' Branch Chief's  
Emergency Situation Determination

Dear Sirs:

This letter concerns the imminent failure of the East culvert in the Great Salt Lake Causeway. Its condition threatens shutdown of the Causeway, which is a critical transportation structure that supports Union Pacific's main East-West interstate rail line. The risk of imminent failure of the Culvert and the resulting shutdown of the Causeway constitutes an emergency situation that requires expedited review and authorization.

On November 8, the Corps' Utah-Nevada Branch Chief, Jason Gipson, made an initial determination that the imminent failure of the East Culvert is not an

“Emergency Situation” under 33 CFR 325.2(e)(4).<sup>1</sup> On that basis, Mr. Gipson determined not to utilize emergency procedures to authorize closure as requested by Union Pacific Railroad (“Union Pacific” or “UPRR”). For the reasons detailed herein, on behalf of Union Pacific, we request reconsideration of the November 8 initial determination by Utah-Nevada Regulatory Branch Chief.<sup>2</sup> Due to the time-critical nature of this issue, we further ask for your expedited review of this request at the appropriate level within the Corps’ South Pacific Division and Sacramento District.

The East culvert must be closed in order to provide for the continued safe operation of the rail line on the Causeway. The Corps has indicated that the culvert closure requires a Clean Water Act Section 404 permit. A full individual permit and 401 certification process would take at least one year, during which the Causeway would have to be shut down. Therefore, the use of emergency procedures is necessary in order to provide the authorization to avoid the shutdown of the Causeway route. The Corps’ denial of Union Pacific’s request, if sustained in response to this request for reconsideration, would result in the shutdown the Great Salt Lake Causeway and the interstate rail route through Union Pacific’s Central Corridor for at least a year, likely more, while standard permitting procedures are completed.

As detailed herein, shutdown of the Causeway route would result in immediate, unforeseen and significant economic hardship to Union Pacific, its customers, the public and interstate commerce. It would force interstate rail traffic from the Causeway—22-24 extra trains per day—onto the local Shafter route, which already supports regional and local train traffic, immediately overloading it. This route goes through downtown Salt Lake City and some of the most populated and industrialized parts of the metropolitan Salt Lake City and Ogden areas. Forcing all the Causeway train traffic onto this route would increase road and highway traffic congestion as well as vehicle air emissions. It would immediately impact Union Pacific and its customers. Direct costs alone would exceed \$258,000 per day. Because the Corps’ standard permit process would be expected to take at least one year if the Corps refuses to utilize emergency permit processing procedures, the direct costs alone—excluding lost revenues—would be over \$94 million per year. These are just some of

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<sup>1</sup> See Regulatory Branch Chief Initial Emergency Determination (November 8, 2013) (enclosed as Exhibit A).

<sup>2</sup> Union Pacific has gathered additional information in support of its request for reconsideration which is submitted herein. To the extent there are any inconsistencies between this submission and the information contained in Union Pacific’s November 8 submission (UPRR Initial Response to ACOE Request for Additional Information (November 8, 2013) (enclosed as Exhibit B)) in response to the Regulatory Branch’s questions, the information contained herein supersedes the earlier submission.

the examples of significant economic hardship that would result from shutdown of the Causeway and which make it necessary for the Corps to authorize and use emergency procedures.

**I. Background and Historical Context.**

On October 21, 2013, Union Pacific notified the Army Corps Utah-Nevada Regulatory Branch of imminent failure of the East culvert and requested that the Corps authorize closure of the culvert pursuant to Nationwide Permit 14 and Union Pacific's Pre-Construction Notification ("PCN") submitted in March 2011.<sup>3</sup> As further outlined in its October 21 notification letter, pursuant to its March 2011 PCN, Union Pacific had originally requested Corps approval to close both the East and West culverts, which were deteriorating, and build a 180-ft bridge to compensate for the loss of aquatic functions the culverts provided in the Great Salt Lake. But, in August 2012, it became necessary for the Corps to grant emergency authorization to close the West culvert when underwater inspections revealed that its failure was imminent. On August 29, 2012, the Corps issued verification of coverage under Nationwide Permit 14 (the "August 2012 NWP")<sup>4</sup>, which authorized emergency closure of the West culvert and construction of the 180-ft bridge subject to a number of special conditions, including preparation of a mitigation and monitoring plan that satisfied the Corps' compensatory mitigation regulations.

As described in Union Pacific's October 21 notification letter and request for emergency authorization, the August 2012 NWP did not authorize closure of the East culvert at that time because its failure was not imminent. However, in an October 3, 2012 clarification of its Special Conditions, the Corps specified a procedure whereby Union Pacific could reactivate its March 2011 PCN application if subsequent inspections revealed that the East culvert suddenly deteriorated to a point where failure was imminent. The Corps explained this process as follows:

As soon as we receive your notification of the imminent failure of the East Culvert, we would reactivate your PCN application and verify a NWP 14 for closure of the East Culvert.<sup>5</sup>

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<sup>3</sup> See UPRR Notification of Imminent Failure and Request for Approval to Close East Culvert with Jacob Associates Report (October 21, 2013) (enclosed as Exhibit C).

<sup>4</sup> ACOE NWP 14 Verification Re West Culvert Closure and Compensatory Mitigation Bridge Project (August 29, 2012) (enclosed as Exhibit D).

<sup>5</sup> ACOE Clarification of August 2012 NWP Special Conditions (October 3, 2012) (enclosed as Exhibit E).

After closure of the West culvert, Union Pacific's consultant, Jacobs Associates, which had been inspecting the culverts periodically since 2004, continued inspecting the East culvert. Although previous inspections had found the condition of the East culvert to be relatively stable, the October 2013 inspection unexpectedly identified a sudden increase in deterioration. Jacobs Associates reported conditions indicating an imminent risk of culvert failure and informed Union Pacific that it would no longer be safe to perform underwater inspections of the culvert. Therefore, it became necessary to close the culvert in order to maintain the safety of the rail line.

On October 21, 2013, Union Pacific notified the Corps of the need to close the East culvert due to its sudden deterioration, following the process for obtaining emergency Corps approval for closing the East culvert outlined by the Corps in October 2012.

In its discussions with the Corps' Utah Regulatory Branch about Union Pacific's emergency notification and request for emergency approval of culvert closure, the Corps assured Union Pacific that it would process the request either under NWP 14 as outlined in the Corps' October 3, 2012 letter or using Regional General Permit 60 (Repair and Protection Activities in Emergency Situations). Consistent with that assurance, on October 24, the Corps issued a notice to federal and State coordinating agencies of its intent to authorize emergency closure of the East culvert under Nationwide Permit 14 as the Corps had outlined in October 2012.<sup>6</sup>

In a November 4 email to Union Pacific, the Corps changed its position. The Corps confirmed its intent to authorize emergency closure, stating "we recognize the emergency condition of the East Culvert and acknowledge the need to close this culvert without delay." However, the email stated that the Corps would be unable to follow the NWP 14 process it had outlined in October 2012, or issue emergency authorization under other General Permits. According to the email, this was "due to the Corps' inability to demonstrate the action would result in no more than minimal individual and cumulative adverse effects on the aquatic environment."<sup>7</sup>

This statement was in apparent reference to the ongoing informal consultation process on the August 2012 NWP, which had been instituted by the then-District Engineer, Colonel Leady. In this consultation process, Union Pacific has proposed and is carrying out an extensive modeling and impacts analysis with two of the Great Salt Lake's most well-respected experts, Wallace Gwynn and Kidd Waddell. In light of

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<sup>6</sup> See ACOE Notice to Coordinating Agencies of Intent to Authorize East Culvert Closure under NWP 14 (October 24, 2013) (enclosed as Exhibit F).

<sup>7</sup> ACOE Determination of Necessity To Proceed With Emergency Closure Authorization Under Standard Permit Emergency Procedures (November 4, 2013) (enclosed as Exhibit G).

that ongoing but unfinished process, the Corps stated that permitting the emergency closure would now fall under the Corps' "South Pacific Division Regulatory Program Standard Permit Emergency Procedures" which provide for abbreviated procedures for review, coordination and decision making in emergency situations pursuant to 33 CFR 325.2(e)(4).

According to the November 4 email to Union Pacific, the Corps was "currently working our procedures and preparing necessary documentation for the South Pacific Division [including] draft special conditions which we will forward by email for your review and acceptance."<sup>8</sup>

Based on the Corps' assurances that closure would be authorized using emergency procedures, Union Pacific scheduled the closure of the East culvert for November 11 and began the process of mobilizing the necessary equipment.<sup>9</sup> Further, as requested in the Corps' November 4 email, Union Pacific contacted the Utah Division of Water Quality ("DWQ") to obtain certification of the emergency closure under Clean Water Act Section 401 (unlike the Nationwide permits or RGP 60, the Corps indicated that use of an individual permit even with emergency procedures required Utah's individual 401 certification). The Utah DWQ responded quickly, providing draft conditions of certification for discussion on Thursday, November 7.

Union Pacific and the Utah DWQ were very close to completing the discussions on the 401 certification process as of Friday, November 8—the date by which the plan to close the culvert on November 11 had to be confirmed or cancelled in order to carry out the work on the causeway. However, in a phone call with Union Pacific on the morning of November 8, the Corps unexpectedly raised new concerns. Citing a negative and inaccurate *Salt Lake Tribune* news article, the Corps expressed concerns about whether an emergency determination was justified and indicated the Corps would be requesting additional information.

On November 8, 2013 at 2 p.m. Central time, Union Pacific received a list of questions from the Branch Chief's office seeking additional information to be provided to Colonel Farrell supporting the position that the closure of the East Culvert is an "emergency situation" under 33 CFR 325.2(e)(4).<sup>10</sup> Hoping to maintain its scheduled closure date of November 11, Union Pacific replied four hours later with a

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<sup>8</sup> Exhibit G (ACOE Determination of Necessity).

<sup>9</sup> Union Pacific had originally planned to close the culvert on November 4 but changed its plan to November 11 to accommodate the Corps' review and agency consultation efforts.

<sup>10</sup> See ACOE Email with Questions Regarding Determination of Emergency Situation (November 8, 2013) (enclosed as Exhibit H).

short response to the questions regarding the significant impacts that would result from failure of the culverts.<sup>11</sup> Within an hour, Union Pacific received an email from Regulatory Branch Chief Jason Gipson stating his determination that:

[T]he information provided does NOT meet the standards or definition of the [Corps' South Pacific Division] 'emergency situation.' There appears to be an alternative to using the causeway that does not appear to be an unforeseen nor significant economic impact. As such, we would need to process this action as a Standard Individual Permit.<sup>12</sup>

On that basis, it was necessary for Union Pacific to postpone the closure of the East Culvert that had been scheduled for Monday, November 11. However, in a conference call on that date, Mr. Gipson indicated the Corps would reconsider his initial determination that there was no emergency situation if Union Pacific provided additional information to support a determination of emergency.

Union Pacific maintains that the East culvert is at risk of imminent failure and that its request to close the East culvert clearly qualifies for processing under the South Pacific Division's emergency procedures, consistent with 33 CFR 325.2. Further, Union Pacific must object to the significant last-minute changes in the Corps' position, making these urgent circumstances even more challenging. Union Pacific has made a good faith effort to respond to every Corps request and every change of position. However, we are concerned that the significant safety concerns and the economic urgency of the situation have not received adequate consideration. Union Pacific requests that the Corps reconsider the Branch Chief's determination. We believe that the Branch Chief drew invalid conclusions from Union Pacific's November 8 submission, which, based on the very limited time available to respond, necessarily presented a limited response to the issues raised. Further, we dispute the Branch Chief's interpretation of the emergency situation criteria set forth in the regulations.

On these grounds, Union Pacific respectfully submits this letter and supplemental information, and requests that the Corps reconsider its determination that no "emergency situation" is present as set forth in Corps regulations and the South Pacific Division's Emergency Procedures.

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<sup>11</sup> See Exhibit B (UPRR Initial Response).

<sup>12</sup> Exhibit A (Regulatory Branch Chief Initial Emergency Determination).

## **II. Union Pacific Railroad's Submission of Supplemental Information and Request for Reconsideration.**

At the outset, Union Pacific reaffirms its existing commitment to work with the Corps, the Utah DWQ and other coordinating agencies to complete the extensive modeling and impacts analysis that Union Pacific is carrying out pursuant to the August 2012 NWP authorization and the informal consultation process, which may be folded into the individual permit process that accompanies the East culvert closure. This robust modeling and impacts evaluation effort is designed to confirm the design of the compensatory mitigation bridge as well as a monitoring and adaptive management program. Union Pacific has engaged two of the most well respected experts on the Great Salt Lake, Kidd Waddell and Wallace Gwynn, to assist in the modeling and evaluation efforts. The modeling and evaluation process includes regular interaction with the Corps and federal and state coordinating agencies to provide progress reports and obtain agency input. In addition to reviewing and approving these efforts at each significant step, the ultimate product of the overall effort—the final compensatory mitigation bridge design and an accompanying monitoring and adaptive management program—will, of course, be subject to approval by the Army Corps of Engineers and Utah Department of Water Quality.

Like the Corps and State agencies, Union Pacific had hoped that the East culvert would remain stable during the period that this evaluation is being completed. In explaining to Union Pacific his November 4 determination regarding the necessity of permitting with emergency procedures instead of NWP 14, Mr. Gipson expressed his surprise that the culvert had deteriorated suddenly to the point of imminent failure. Union Pacific was similarly surprised at this sudden deterioration. We appreciate the State DWQ's willingness to grant state certification of an emergency closure in these circumstances, conditioned on completing the modeling and study process we have been working through together with the Corps' Regulatory Branch.

As explained further below, the Causeway, which was constructed by Southern Pacific Railroad before the Union Pacific-Southern Pacific merger<sup>13</sup>, is a critical element of the Union Pacific railroad network. It is imperative that Union Pacific

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<sup>13</sup> Southern Pacific Railroad, then a competitor of Union Pacific, built the original causeway. In the 1950s, Southern Pacific constructed the fill portion of Great Salt Lake Causeway and installed the East and West culverts for the principal purpose of allowing boat traffic to pass through the causeway. In 1996, Union Pacific and Southern Pacific merged, making Union Pacific the owner and operator of the Causeway. As the culverts sank deeper in the lake over the years, they also provided for bi-directional water flow and transfer of salt between the North and the South Arms of the Great Salt Lake. Construction of the compensatory mitigation bridge was proposed to compensate for the loss of these functions.

maintain the safe operation of the Causeway and that it remain open to support Union Pacific's interstate rail shipments. There is an alternative route. However, contrary to the Branch Chief's assertion, the fact that an alternative route exists does not remove the urgency or render this a non-emergency situation. In the case of the Causeway, the information submitted below summarizes the impacts that would result from forcing Causeway traffic onto the alternative route for at least a year, if not more, during the time the Corps' and the States' standard permitting processes are completed.

For the reasons discussed herein, Union Pacific requests that the Corps reconsider its November 8 preliminary decision and process Union Pacific's request for approval of emergency closure of the East Culvert either using the South Pacific Division's Emergency Procedures or, as the Corps originally indicated in its October 3 letter to Union Pacific, under Nationwide Permit 14 and the procedures the Corps established in that letter.

**A. The Circumstances Here Constitute an "Emergency Situation" that Must Be Addressed through the Corps' Emergency Procedures.**

The imminent failure of the East culvert in the Great Salt Lake Causeway is described above. Its condition threatens shutdown of the Causeway as a critical transportation structure that supports Union Pacific's main East-West interstate rail line. The risk of imminent failure is an emergency situation that requires expedited review and authorization. The Corps' November 8 refusal to utilize emergency procedures, if sustained in response to this request for reconsideration, would force shutdown of the Causeway route.

Under Corps' regulations, Division Engineers are authorized to approve special permit processing procedures in an "emergency situation," defined as:

[A] situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures.<sup>14</sup>

As described in Union Pacific's October 21 notification letter and request for emergency authorization, and the Jacobs Associates report accompanying that

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<sup>14</sup> 33 CFR 325.2(e)(4).

request, the East culvert is at imminent risk of failure. Corrective action requiring an Army Corps permit must be taken, i.e., the East culvert must be closed in order to provide for the continued safe operation of the rail line on the Causeway. However, as explained above, the overall project (closing the culverts and replacing them with a compensatory mitigation bridge) entails continued evaluation of Union Pacific's compensatory mitigation bridge construction proposal, which was approved in concept in the August 2012 NWP. The focus of the modeling and impacts analysis is to confirm that the bridge proposal as designed will adequately compensate for the loss of aquatic functions provided by the West and East culverts.

If the Corps refuses to use emergency procedures to allow closure of the East culvert, and instead requires completion of the existing modeling and impacts evaluation process as well as completion of the Corps public review and the State 401 certification review periods, the overall approval process to close the culvert in this emergency situation could take at least one year. In fact, the process would likely take even longer due to seasonal limitations on construction. For purposes of the discussion below, this one year plus time period is considered the "normal time needed to process the application under standard procedures" referenced in the regulations.

Under the Corps' regulations, the evaluation of the emergency situation must be made in relation to the impacts of using the normal permitting alternative—which, in this case, would delay closure of the culvert and force the shutdown of Union Pacific's Causeway route for at least one year and likely longer. As explained further below, such a shutdown would result in a significant loss of property, as well as a significant, immediate and unforeseen economic hardship. Therefore, Union Pacific's request for the use of emergency procedures to approve the causeway shutdown constitutes an "Emergency Situation." 33 CFR 325.2(e)(4).

**B. Loss of Property from Causeway Shutdown While Standard Corps' Permit Processing is Completed Would be Significant.**

The Great Salt Lake Causeway structure is an integral part of the Lakeside Subdivision which is the main East-West line linking West Coast, Midwestern and Eastern customers and markets. The failure of the East culvert would render the Causeway structure inoperable and necessitate shutting down the 178-mile rail line the Causeway serves. Therefore, the damage to the Causeway structure caused by culvert failure would constitute a significant loss of the use of this valuable property and the entire rail line until the time that the structure could be repaired and rail operations restored.

**C. In Addition, Significant, Immediate and Unforeseen Economic Hardship Would Result from Causeway Closure During the Period While Standard Corps Permit Processing is Completed. This Hardship Would Fall Upon The General Public As Well As Union Pacific, Its Customers And Interstate Commerce.**

In addition to the above-described loss of property, significant economic hardship would result from shutting down the Causeway during the “normal time needed to process the application under standard procedures.” This hardship would be “immediate, unforeseen, and significant.” 33 CFR 325.2(e)(4).

Mr. Gipson based his initial determination on the fact that an alternative route is available to transport freight should the Causeway route be shut down. However, the simple fact that an alternative route is available does not end the inquiry under the Corps regulations. Following is a brief summary of the Causeway route and the alternative route, followed by a summary of the impacts that would result from a shutdown of the Causeway route.

**1. The Causeway Route and the Shafter Route are Not Readily Interchangeable to Accommodate Shifts of Train Traffic.**

**a. The Causeway Route.**

The Great Salt Lake Causeway is a critical element of Union Pacific’s Lakeside Subdivision, which is part of the main east-west interstate rail line in the central corridor of the United States. It serves major markets on the West Coast, California’s Central Valley, the Midwest and the East Coast, for example, intermodal traffic from Lathrop and Oakland, California to and from Chicago; bulk commodities, such as grain moving from Midwest farms to California and time-sensitive shipments of produce from California’s Central Valley to the East Coast.

The Causeway route extends for 178 miles from Wells, Nevada to Ogden, Utah. It currently supports an average of 16 trains per day of East-West traffic, and the level of traffic is expected to increase as the holiday season approaches. The Causeway route supports trains up to 9,000 feet long, representing an average of 600 intermodal box cars and 750 conventional rail cars per day. This volume of train traffic is the rough equivalent of 2,500-3,000 semi-trucks per day.

***b. The Alternative “Shafter Route” and Distinctions  
Between the Causeway and Shafter Routes.***

As explained in the November 8 submission, Union Pacific has another rail route—referred to herein as the “Shafter route”<sup>15</sup>—that intersects the Causeway route west of the Great Salt Lake near Wells, Nevada and east of the Great Salt Lake at Ogden, Utah. However, it is 250 miles in length, which is 73 miles longer than the Causeway route. Significantly, this route over Union Pacific’s Shafter Subdivision is also very active, servicing different but also very important regional and local markets, with a current average of 14 trains per day using the downtown Salt Lake City portion of the Shafter route. This line also supports East-West Amtrak traffic with two trains per day. In contrast to the interstate Causeway route, it does not support the same length of trains. Its train length limit, based on the length of sidings available for train meets, is 5,700 feet long.

The Shafter route goes around the south end of the Great Salt Lake near Magna, through the industrial areas west of Salt Lake City International Airport and downtown Salt Lake City and then north through urban and industrial areas to Ogden. Thus, it passes through some of the more heavily populated, busiest parts of the Salt Lake and Ogden metropolitan areas.

The Shafter route has 42 more at-grade public crossings than the Causeway route (58 versus 16). Significantly, in contrast to the Causeway route, which has only 2 at-grade public crossings in populated or higher traffic areas, 38 of the 58 (or 65 percent) public at-grade crossings on the Shafter route are within the downtown area of Salt Lake City and surrounding urban and industrial areas that have significant local vehicle traffic.

In addition, the Shafter route has approximately 1,700 feet more rise and fall in elevation, and approximately 1,700 more degrees of curvature, than the Causeway route. The current average run time for trains traveling over the Shafter route is over four hours per train longer than over the Causeway route. Equivalent trains on the Shafter route use an average of 900 gallons more fuel than those on the Causeway route, making freight transportation over the Shafter route more costly than over the Causeway route.

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<sup>15</sup> As referenced herein, the “Shafter route” includes: (a) Union Pacific’s Shafter subdivision, which runs between “Alazon” near Wells, Nevada and “Smelter”, near Magna, Utah, (b) the portion of the Lynndyl Subdivision between Smelter and Salt Lake City, at Union Pacific’s rail yard in North Salt Lake City and (c) the Salt Lake City Subdivision, which runs from the North Salt Lake City rail yard north to Ogden, where the Salt Lake City subdivision intersects with the Causeway route.

**2. Significant Economic Hardship on the Public, Union Pacific, Its Customers and Interstate Commerce Would Result from Shutting Down the Causeway Route and Forcing Rail Traffic onto the Shafter Route For Over One Year While a Standard Permitting Process Is Completed.**

If the Causeway route were shut down, as threatened by the Corps' initial rejection of emergency procedures, the Shafter route would be the only alternative for transporting the interstate freight that currently ships over the Causeway. Because the Shafter route is already being utilized, shifting the interstate freight shipments from the Causeway route to the Shafter route is not a simple matter—particularly if the shutdown extended for at least one year, as would be expected here, while a standard individual permit and State 401 certification are being processed. Following is a summary of the anticipated impacts of shutting down the Causeway and shifting its traffic to the Shafter route:

- Due to the shorter allowable train length on the Shafter subdivision, shifting the average 16 Causeway route trains to the Shafter route would necessitate breaking them up into an average of 22-24 shorter trains.
- Thus, 22-24 more trains (for a total of 36-38 trains) per day would run over the downtown portion of the Shafter route. This would increase average rail traffic by up to 2.7 times the current average through the downtown area of Salt Lake City and the more heavily populated areas west of the downtown area on this route.<sup>16</sup> Please note that this information supersedes the information on this point provided in Union Pacific's preliminary submittal on November 8.
- This increase in train traffic over the Shafter route and its 58 public at-grade crossings—with 38 (or 65 percent) of them in the metropolitan Salt Lake City and Ogden areas—would necessarily impact local vehicle traffic and increase vehicle emissions associated with traffic delays. Further, an increase in local train traffic in these areas would present additional safety concerns associated with vehicle traffic around at-grade crossings—both at these public crossings and at the numerous private at-grade crossings in these areas.
- Adding 22-24 trains to the Shafter route per day would increase rail traffic on that route in excess of its “fluid” capacity, i.e., the maximum traffic flow that can be operated without causing delays or service interruptions that result in

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<sup>16</sup> The Salt Lake City to Ogden portion of the route has a current average of 28 trains per day. Adding 22-24 trains to that segment would increase its traffic level approximately 1.8 times the current average to 50-52 trains per day.

failure to meet Union Pacific's customer delivery and service commitments.<sup>17</sup> The shift of Causeway traffic to the Shafter route would increase the average run time for trains on this route, which is already over four hours longer than the run time for trains on the longer, more efficient trains that use the Causeway route. This increase would add 3-4 more hours to the Shafter route, resulting in an overall increase of 7-8 hours in run time for trains forced off the Causeway route to the Shafter route.

- Because Amtrak uses the Shafter subdivision line for its East-West traffic between San Francisco, Chicago and the East Coast, Amtrak service also would be adversely impacted by this increase in freight train traffic and associated additional run times on the Shafter route.
- Because some interstate freight shipments over the Causeway route are time-sensitive (e.g., produce from California's Central Valley to the East Coast), extended run times could impact Union Pacific's ability to serve these markets and cause a shift to truck transportation, thereby adding to road and highway congestion as well as vehicle emissions. Union Pacific recognizes the concerns that such impacts could raise in the Salt Lake valley during the winter months when temperature inversions affect air quality.
- The increase in number of trains and the extended run times on the Shafter route would necessitate the use of additional train crews and increase labor costs. A 7-8 hour increase in run times of individual trains would increase the frequency of occasions when the Federal Railroad Administration hours of service regulations require a crew change while the train is en route—potentially causing cascading delays and increased labor costs throughout the system as delayed trains are forced to await replacement crews.<sup>18</sup>
- Forcing the Causeway traffic to this longer route (both in distance and time) with a greater rise and fall than the Causeway route, would increase fuel usage to levels above those needed for the normal train traffic patterns described, *supra*. Each Shafter route train uses approximately 900 more gallons of diesel fuel, so this shift of traffic would use 5-6 million more gallons per year in the Salt Lake City area.
- These circumstances would unquestionably impact interstate commerce. The delays in service alone would force changes in distribution patterns and the

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<sup>17</sup> Forcing 22-24 extra trains to the Shafter route would exceed fluid capacity of all three portions of the Shafter route described in footnote 15.

<sup>18</sup> When the FRA's crew hour limits—including but not limited to the 12-hour limit on hours of service—are reached, a crew change must occur before the train can proceed. *See* 49 CFR 228. The manner in which hours of service restrictions are managed is beyond the scope of this letter; suffice it to say that, under these limits, train traffic delays such as those contemplated here could have significant effects on the rail system.

competitiveness of Union Pacific and the customers it serves—both in the context of its East-West interstate business served by the Causeway route and its regional and local business served by the Shafter route. The resulting traffic shifts and dislocations would inevitably result in still other changes, potentially including shifting some freight transportation to trucking, with an attendant increase in truck traffic and fuel use.

As this summary reflects, shutting down the Causeway would immediately impact the public, in terms of rerouted trains through downtown Salt Lake City and more heavily populated areas with multiple at-grade crossings in those areas. The public would also be affected through the impacts on Amtrak traffic on the Shafter subdivision.

**3. Union Pacific Would Suffer Direct Economic Impacts From a Shutdown of the Causeway and the Rerouting of Freight and Train Traffic.**

As described in its November 8 submission, Union Pacific has estimated the direct costs Union Pacific would incur as a result of shutting down the Causeway and forcing traffic onto the Shafter Subdivision. These costs include the costs of operating additional trains and additional train crews due to train length limits, additional costs associated with run-time increases and further additions associated with delays and traffic congestion, and additional fuel. These costs are estimated to be \$258,000 per day, which translates into over \$94 million per year. Taking account of the likelihood that the time associated with standard permitting would take longer than one year, those costs would increase significantly.

Significantly, these estimates are only the direct costs associated with a shutdown of the Causeway route and forcing Causeway route traffic onto the Shafter route. It is not possible without an extensive, time consuming study to estimate lost revenues that would result. Therefore, lost revenues are not included in this estimate.

When the Regulatory Branch Chief explained the Corps' initial rejection of emergency procedures, he indicated that such costs did not appear to be significant in light of the significant size of Union Pacific as a company and particularly its annual profits. Union Pacific rejects the notion that the relative size of a company or its profits renders the economic impacts described herein less significant than if the impact were to a smaller, less profitable company or an individual. Such a determination would be arbitrary and capricious on its face. In any case, as demonstrated above with Union Pacific's supplemental information, these figures relate only to costs—not to lost revenues. Further, they do not include the economic impacts to the public, Union Pacific customers and interstate commerce as described above. Union Pacific asserts that the extensive impacts reflected in this summary are

sufficient to support a determination to use South Pacific Division emergency procedures consistent with Army Corps regulations.

**4. Economic Hardship Would be Immediate.**

As described above, the economic impact resulting from culvert failure and causeway closure would be immediate. Freight in route would have to be rerouted over other parts of the railroad network immediately, with resulting impacts as described above.

**5. The Economic Hardship Was Unforeseen.**

Under the Corps' regulations, an emergency situation arises when *economic hardship* is significant, immediate and unforeseen—not when the underlying event is unforeseeable. In this case, both the economic hardship and the underlying event—the sudden deterioration and imminent failure of the East Culvert—were unforeseen.

Regarding the economic hardship: the Corps represented to Union Pacific that, should the unexpected occur and the East culvert failure suddenly become imminent, an expedited process would be utilized to authorize closure. As described above, the possibility that the Corps would not recognize the culvert closure as an emergency and as a necessity was never at issue or, to Union Pacific's knowledge, even considered until Friday November 8. Thus, the economic hardship that would result if the Corps denies the use of emergency procedures and requires completion of the standard permit processes was both unforeseen and clearly unforeseeable. This lack of even a hint that there was an issue before Friday November 8 is one of the bases for the objections to this process.

Again, the timing of the sudden culvert deterioration was unforeseen. Further, based on Union Pacific's and the Corps' experience with the West culvert, the timing of the failure was unforeseeable. The Corps has acknowledged the unforeseen (and unforeseeable) nature of the culvert failure. As explained above, earlier inspections of the culverts had identified deterioration in the culverts and the necessity of eventually closing of both the East and West culverts. In 2010, Union Pacific began meeting with the Corps and State agencies to develop a plan to close the culverts and replace their aquatic function with a bridge. That process resulted in Union Pacific's submission of its March 2011 PCN application for coverage of this project under Nationwide Permit 14. However, the Corps' review process stalled, and the Corp originally rejected Union Pacific's PCN in March 2012.

By August of 2012, an inspection of the West culvert revealed that deterioration of the West Culvert had reached the point that failure was imminent. As a result, Union

Pacific provided additional supporting information and sought reconsideration of its Nationwide Permit 14 application, requesting immediate authorization to close the West culvert on an emergency basis.<sup>19</sup> At the time, the inspections by Jacobs Associates indicated that the East Culvert was relatively stable in comparison to the West Culvert. On that basis, when UP applied for emergency approval to close the failing West culvert, UP indicated that although the East Culvert would eventually need to be closed, that need was not immediate. Union Pacific stated:

The east culvert was also surveyed recently. Its condition is not as critical as the west culvert, although eventual failure of the east culvert is inevitable. It appears that the east culvert can remain open for the short term to continue to allow some circulation at this location. Therefore, UPRR will leave the east culvert in place for now and continue to monitor its condition. At the point in the future that failure of the east culvert becomes imminent, UPRR will notify the Corps of the necessity of closing it.<sup>20</sup>

Based on previous inspection reports and the slow progression of the West culvert deterioration that led up to its failure, neither Union Pacific nor the Corps expected failure of the East culvert based on the results of the July 2012 inspection. These expectations are reflected in the agreement between Union Pacific and the Corps that closure of the East culvert was not necessary at the time the West culvert failed and had to be filled. Both entities anticipated that the modeling, studies and development of the monitoring plan required under the August 2012 Nationwide Permit authorization could be completed before the East culvert failed. Unfortunately, the East culvert deterioration did not follow the pattern of the West culvert. Instead, after the March 2013 inspection, the East culvert deteriorated suddenly and more rapidly than expected based on Union Pacific's and Jacob Associates' experience with the West culvert.

Accordingly, both the economic hardship and the underlying event were unforeseen by Union Pacific and the Corps. The preliminary determination that the economic hardship was not unforeseen should be reversed based upon the additional facts and analysis provided herein.

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<sup>19</sup> See UPRR Declaration of Emergency Conditions at West Culvert and Request for Reconsideration of Supporting Information (August 16, 2012) (enclosed as Exhibit I).

<sup>20</sup> *Id.*

## **6. Summary.**

Consider, for purposes of analogy, the discovery of an imminent failure of an automobile/truck bridge connecting two densely populated metropolitan areas. The existence of a smaller regional bridge 35 miles away, over which traffic could be re-routed, would not eliminate the character of the emergency arising from the imminent failure of the primary bridge and the risk of closure. The compounding costs of re-routing traffic, fuel adjustments, traffic impacts, impacts to the alternative route through increased use and varied ripple effects, including impacts to interstate commerce, would demand an urgent response to avoid the closure of a primary corridor. Similarly, the imminent failure and risk of closure of the primary rail corridor through Salt Lake Valley warrants an urgent response. Citing the existence of a single alternate route through a populated, heavy traffic area of Salt Lake City as reason for not expediting review of Union Pacific's emergency closure application simply ignores the realities on the ground. The effort to re-route trains through a more demanding, more populated route would cause precisely the kind of situation that emergency procedures anticipate: an immediate, unforeseen economic hardship in the form of direct and indirect costs to Union Pacific exceeding a quarter of a million dollars a day. In addition, it would result in significant and immediate economic hardship to be borne by Union Pacific's customers, as well as the public, including impacts to local vehicle traffic, local rail traffic, increased concerns about public safety, not to mention the increased risk of shipping delays (especially during the upcoming holiday season). This shutdown would clearly affect interstate commerce adversely.

We trust that the Corps' review of the supplemental information and analysis provided herein will support a Corps determination to use emergency procedures. As shown above, the economic impacts would extend well beyond the direct costs to that Union Pacific estimated in its November 8 submission.

### **D. Elevated Review is Necessary and Appropriate.**

We appreciate Branch Chief Gipson's willingness to consider additional information. We also appreciate the affirmation of the Corps' readiness to consider this submission expressed to Union Pacific by District Regulatory Division Acting Chief Nepstad. Given the urgency of this matter, Union Pacific hereby asks that the review of Union Pacific's request also be performed at the District and Division Level and as necessary by District Commander Farrell and Division Commander Turner.

Army Corps' regulations provide that where there is substantial doubt as to the regulations or policies applicable to a proposed activity, it is appropriate for permit applications to be elevated for review, either to the District Engineer or Division Engineer. *See* 33 CFR 325.8(b)(3)-(c)(2).

Further, review by the District Engineer is called for by the Corps' "emergency procedures" regulations. Section 325.2(e)(4) and the South Pacific Division Regulatory Program Emergency Procedures provide that it is the District Engineer's role to understand the circumstances constituting an emergency and then elevate those facts to the Division Engineer for further review and additional instructions. *See* South Pacific Division Regulatory Program Emergency Procedures, 12502-SPD 7.2 ("In response to specific requests from the regulated public, the District Engineer must determine whether the use of emergency procedures is warranted.").

Here, under the urgent circumstances described above, Union Pacific wishes to ensure that the Division Engineer and the District Engineer are sufficiently informed of the facts at issue, in the first instance. Because of the urgency of the situation, it is proper for this matter to be elevated to the appropriate level to the District and Division levels to facilitate authorization of the emergency procedures needed to ensure the safe operation of the Causeway as provided in 33 CFR 325.2(e)(4).

**III. The State of Utah is Prepared to Issue a Conditional 401 Certification for the Emergency Closure.**

As explained above, the Utah Division of Water Quality has provided the conditions it intends to include with its 401 certification; DWQ and Union Pacific will soon complete working out the final details for processing the 401 certification. We understand that the State is prepared to issue a public notice that it intends to take emergency action as soon as the Corps determines to use emergency procedures to authorize culvert closure.

**IV. No Other Concern Would Warrant Rejection or Further Delay of Culvert Closure Approval Under Emergency Procedures.**

Union Pacific is aware that there are concerns at the District, based in part on inaccurate allegations made in news reports, that culvert closure would shut off the last source of water and salt transfer through the Causeway between the North and South parts of the Great Salt Lake. That claim is untrue. Both the Causeway itself and the existing Rambo bridge opening continue to allow for substantial transfer of water and salt between the North and South arms of the Great Salt Lake. Our Great Salt Lake experts, Wally Gwynn and Kidd Waddell, have confirmed these statements. As stated above, Union Pacific is conducting a robust modeling and impacts analysis to ensure that the long term mitigation solution adequately replaces the pre-closure contribution of both East and West culvert to bi-directional water flow and salt exchange between the North and South parts of the Great Salt Lake. In the short term, that exchange will be reduced by East culvert closure (assuming it is currently contributing to that exchange in spite of its deterioration). However, substantial flows and salt exchange (far greater volumes than contributed by the two culverts combined

before closure) between the North and South parts of the Lake continue through the Causeway itself and the existing Rambo Bridge.

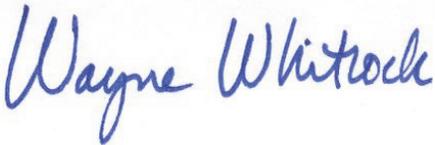
Union Pacific also acknowledges the Regulatory Branch's desire to identify practical engineering alternatives to closing the culvert on an emergency basis. Union Pacific has been asked to explain and justify not implementing various alternatives and wishes to work cooperatively with the Corps to address such questions. However, we must emphasize again that, in the view of Union Pacific and its professional engineers, there is a significant and imminent risk that the East culvert will fail completely if not closed. As reflected in Jacobs Associates' most recent report, at the time of the last inspection the culvert had severely deteriorated to the point that it is beyond repair. Divers cannot safely reenter the culvert for any purpose, and surface inspections have shown that surface material around the culvert is falling into it. Under these conditions, there is not sufficient evidence that any such interim alternative measure would adequately protect the track structure and, therefore, Causeway train traffic, against a culvert collapse, especially considering the severe deterioration identified by the Jacobs Associates' recent inspection. Further, Union Pacific's engineers are not confident that any identified alternative would remain serviceable during the time it would take to complete an individual Corp permit and 401 certification process and construct the compensatory mitigation bridge. Finally, under these circumstances, one can only speculate as to whether and, if so, how much the failing culvert continues to contribute to bi-directional water flow and salt transfer between the North and South parts of the Great Salt Lake. In the face of the safety and economic hardship concerns described herein, continued pursuit of alternatives that could only theoretically preserve the culvert function based on speculation about the aquatic benefits of doing so would be counterproductive.

Again, Union Pacific is fully committed to working with the Corps and Utah DWQ to complete the robust modeling, impacts evaluation and compensatory mitigation bridge review process that is well underway and progressing, just as required under the August 2012 NWP authorization. Union Pacific is scheduled to present its progress on this effort to the Corps, Utah DWQ and other coordinating agencies on November 25 in Salt Lake City. This effort, supported by our respected experts, presents the most sure path to replacing the aquatic functions of both East and West culverts successfully. We request that the Corps quickly authorize the emergency closure of the East culvert so that Union Pacific, the Corps and Utah DWQ can focus on this process again, in order to complete it and have the appropriate compensatory mitigation in place as quickly and effectively as possible.

**V. Conclusion.**

For the reasons stated herein, Union Pacific Railroad respectfully requests that the Corps of Engineers make a determination that the circumstances here justify the use of emergency procedures to authorize closure of the East culvert and proceed to authorize that work as soon as possible.

Sincerely,



Wayne M. Whitlock  
Counsel for Union Pacific Railroad

Enclosures

cc: Mr. Mark L. McCune  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.

List of Exhibits  
Union Pacific Railroad – Great Salt Lake Causeway – East Culvert Closure  
Request for Reconsideration of Army Corps' Branch Chief's Emergency Situation Determination

<b>Exhibit No.</b>	<b>Description</b>
A	Regulatory Branch Chief Initial Emergency Determination (November 8, 2013)
B	UPRR Initial Response to ACOE Request for Additional Information (November 8, 2013)
C	UPRR Notification of Imminent Failure and Request for Approval to Close East Culvert with Jacob Associates Report (October 21, 2013)
D	ACOE NWP 14 Verification Re West Culvert Closure and Compensatory Mitigation Bridge Project (August 29, 2012)
E	ACOE Clarification of August 2012 NWP Special Conditions (October 3, 2012)
F	ACOE Notice to Coordinating Agencies of Intent to Authorize East Culvert Closure under NWP 14 (October 24, 2013)
G	ACOE Determination of Necessity To Proceed With Emergency Closure Authorization Under Standard Permit Emergency Procedures (November 4, 2013)
H	ACOE Email with Questions Regarding Determination of Emergency Situation (November 8, 2013)
I	UPRR Declaration of Emergency Conditions at West Culvert and Request for Reconsideration of Supporting Information (August 16, 2012)

# Exhibit A

---

**From:** Gipson, Jason A SPK <Jason.A.Gipson@usace.army.mil>  
**Sent:** Friday, November 08, 2013 7:08 PM  
**To:** Mark L. McCune  
**Cc:** John J. Hovanec; Robert C. Bylsma; Stephen L. Cheney; Whitlock, Wayne M.; Scott D. Moore; Aaron M. Hunt; Daniel T. Harbeke; Anderson, Kathleen E SPK; Leah Ann Lamb; wbaker@utah.gov; 'Laura Lockhart'; 'cbittner@utah.gov'  
**Subject:** RE: [EXTERNAL] Re: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

Mark,

I have reviewed the information you submitted. However, based on my review and our counsels' concurrence I have determined that the information provided does NOT meet the standards or definition of the SPD "emergency situation". There appears to be an alternative to using the causeway that does not appear to be an unforeseen nor significant economic impact. As such, we would need to process this action as a Standard Individual Permit.

I apologize it took so long to respond.

Let us know how we're doing. Please complete the survey at:  
<http://per2.nwp.usace.army.mil/survey.html>

Jason Gipson  
Chief, Utah-Nevada Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Ph: 801-295-8380 x 14  
Fax: 801-295-8842

Information on the Regulatory Program.  
<http://www.spk.usace.army.mil/Missions/Regulatory.aspx>

-----Original Message-----

From: Mark L. McCune [mailto:MLMCCUNE@up.com]  
Sent: Friday, November 08, 2013 6:16 PM  
To: Anderson, Kathleen E SPK  
Cc: Gipson, Jason A SPK; John J. Hovanec; Robert C. Bylsma; Stephen L. Cheney; Whitlock, Wayne M.; Scott D. Moore; Aaron M. Hunt; Daniel T. Harbeke  
Subject: [EXTERNAL] Re: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an

Emergency Situation (UNCLASSIFIED)

Kathleen,

Please see the attached document for impacts to the Union Pacific which would result from closing the Causeway. There would be significant immediate and continuing economic hardship imposed on the UP should this occur. This responds to the first three bullet points in your questions document.

The Jacobs report identified the risk of imminent failure and that it would be purely speculative to conclude that stopping train traffic will have any effect on the deterioration that is occurring. Even if traffic were removed from the Causeway, it is my professional opinion that deterioration and failure of the East Culvert would not be delayed. The loading from fill over the culvert is much larger than the loads imposed by passing trains.

Regarding compensatory pumping of brine from the North Arm to the South Arm, we had previously responded that this is not feasible. We have discussed this with Joe Havasi of Great Salt Lake Minerals and he advised that during cold weather increased brine viscosity tends to clog the pumps and other equipment and presents major maintenance issues. In addition, we note that the Utah DWQ has not seen the need or benefit of such an effort. For that reason, they have not proposed to impose such a responsibility. We request that you defer to their judgment on this and not impose this as a condition. And, were we to attempt to do so, we would still be left with the unanswerable question of how much brine should be pumped.

Finally, we remind the Corps of our discussions with Kidd Waddell and Wally Gwynn, the foremost experts on the Great Salt Lake. Although the closure of the East culvert would eliminate that source of flows, our experts have told us that the existing causeway fill and the Lakeside breach contribute to flows between the two arms of the Lake.

Thanks.

(See attached file: Financial\_Impacts\_Causeway.pdf)

Mark L. McCune, PE  
Director Structures Design  
Union Pacific Railroad Company  
(402) 544-5194

Inactive hide details for "Anderson, Kathleen E SPK" ---11/08/2013 02:15:17 PM---Classification: UNCLASSIFIED Caveats: NONE"Anderson, Kathleen E SPK" ---11/08/2013 02:15:17 PM---Classification: UNCLASSIFIED Caveats: NONE

From: "Anderson, Kathleen E SPK" <Kathleen.Anderson@usace.army.mil>  
To: "Mark L. McCune" <MLMCCUNE@up.com>, "Debra L. Schafer" <DEBRALSCHAFFER@UP.COM>, "Stephen L. Cheney" <SLCHENEY@up.com>, "Robert C. Bylsma" <RCBYLSMA@up.com>, "Whitlock, Wayne M." <wayne.whitlock@pillsburylaw.com>

Cc: Leah Ann Lamb <llamb@utah.gov>, Walter Baker <wbaker@utah.gov>, "William Damery" <wdamery@utah.gov>, Melissa Hubbell <mhubbell@utah.gov>, "cbittner@utah.gov" <cbittner@utah.gov>, "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>, "Nepstad, Michael G SPK" <Michael.G.Nepstad@usace.army.mil>

Date: 11/08/2013 02:15 PM

Subject: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)

---

Classification: UNCLASSIFIED

Caveats: NONE

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED

Caveats: NONE

[attachment "Questions for UPRR re Emergency Permitting.docx" deleted by Mark L. McCune/UPC] [attachment "GSLM pump station at Promontory Point.pdf" deleted by Mark L. McCune/UPC]

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\*\*

Classification: UNCLASSIFIED

Caveats: NONE

# Exhibit B

---

**From:** Mark L. McCune <MLMCCUNE@up.com>  
**Sent:** Friday, November 08, 2013 5:16 PM  
**To:** Anderson, Kathleen E SPK  
**Cc:** Gipson, Jason A SPK; John J. Hovanec; Robert C. Bylsma; Stephen L. Cheney; Whitlock, Wayne M.; Scott D. Moore; Aaron M. Hunt; Daniel T. Harbeke  
**Subject:** Re: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)  
**Attachments:** Financial\_Impacts\_Causeway.pdf

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Finally, we remind the Corps of our discussions with Kidd Waddell and Wally Gwynn, the foremost experts on the Great Salt Lake. Although the closure of the East culvert would eliminate that source of flows, our experts have told us that the existing causeway fill and the Lakeside breach contribute to flows between the two arms of the Lake.

Thanks.

*(See attached file: Financial\_Impacts\_Causeway.pdf)*

Mark L. McCune, PE  
Director Structures Design  
Union Pacific Railroad Company  
(402) 544-5194

▼ "Anderson, Kathleen E SPK" ---11/08/2013 02:15:17 PM---Classification: UNCLASSIFIED Caveats: NONE

From: "Anderson, Kathleen E SPK" <[Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil)>  
To: "Mark L. McCune" <[MLMCCUNE@up.com](mailto:MLMCCUNE@up.com)>, "Debra L. Schafer" <[DEBRALSCHAFER@UP.COM](mailto:DEBRALSCHAFER@UP.COM)>, "Stephen L. Cheney" <[SLCHENEY@up.com](mailto:SLCHENEY@up.com)>, "Robert C. Bylsma" <[RCBYLSMA@up.com](mailto:RCBYLSMA@up.com)>, "Whitlock, Wayne M."

<[wayne.whitlock@pillsburylaw.com](mailto:wayne.whitlock@pillsburylaw.com)>

Cc: Leah Ann Lamb <[llamb@utah.gov](mailto:llamb@utah.gov)>, Walter Baker <[wbaker@utah.gov](mailto:wbaker@utah.gov)>, "William Damery" <[wdamery@utah.gov](mailto:wdamery@utah.gov)>, Melissa Hubbell <[mhubbell@utah.gov](mailto:mhubbell@utah.gov)>, "[cbittner@utah.gov](mailto:cbittner@utah.gov)" <[cbittner@utah.gov](mailto:cbittner@utah.gov)>, "Gipson, Jason A SPK" <[Jason.A.Gipson@usace.army.mil](mailto:Jason.A.Gipson@usace.army.mil)>, "Nepstad, Michael G SPK" <[Michael.G.Nepstad@usace.army.mil](mailto:Michael.G.Nepstad@usace.army.mil)>

Date: 11/08/2013 02:15 PM

Subject: Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)

---

Classification: UNCLASSIFIED

Caveats: NONE

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED

Caveats: NONE

[attachment "Questions for UPRR re Emergency Permitting.docx" deleted by Mark L. McCune/UPC] [attachment "GSLM pump station at Promontory Point.pdf" deleted by Mark L. McCune/UPC]

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## **UNION PACIFIC RAILROAD**

### **Impacts Associated with Imminent Culvert Failure on the Great Salt Lake Causeway**

#### **Economic Impacts**

Union Pacific Railroad's main line west from Ogden across the Great Salt Lake is part of the Lakeside Subdivision. There is only one alternate rail route from the Salt Lake Valley west to northern California—the Shafter Subdivision which runs west from Salt Lake City around the south side of the Great Salt Lake. The two subdivisions follow separate alignments until they join at Wells, Nevada.

On average, 16 trains cross the Great Salt Lake Causeway on the Lakeside Subdivision per day.

If the Causeway was unusable, the trains would need to be rerouted over the Shafter Subdivision. The Shafter Subdivision is approximately 73.3 miles longer than the Lakeside Sub, has approximately 1700 feet more rise and fall, and has approximately 1700 more degrees of curvature. All three factors increase fuel consumption. The Shafter Sub also has east bound siding restrictions. These siding restrictions would force running on average one additional train per day from origin to destination. Therefore 17 additional trains would be added to the Shafter Sub per day.

Union Pacific's Network Planning Group has analyzed costs associated with such a reroute. Rerouting all traffic from the Lakeside Subdivision to the Shafter Subdivision would result in increased direct costs to Union Pacific of \$258,000 per day. In addition, there are likely additional costs due to congestion on the Shafter Sub route, such as additional crews required by the Federal Railroad Administration's hours of service rules.

In addition to costs to Union Pacific, there would also be impacts to the public. Most notably, an additional 17 trains per day would traverse 38 at-grade crossings between Ogden and Smelter (18 miles west of Salt Lake City), causing inconvenience to motorists and increased vehicle exhaust.

#### **Impacts on Property**

The Causeway is a major structural asset and a critical element of Union Pacific's Overland Route and overall transportation infrastructure. Collapse of the culvert would render the causeway inoperable, which in turn would render this portion of the Overland Route inoperable. Accordingly, the collapse of the culvert would cause an immediate loss of productive use of our property (not only the Causeway itself but an additional 145 route miles between Ogden and Wells) that would continue until the Causeway is restored.

## **Impacts on Interstate Commerce**

The effects of shutdown would clearly impact interstate commerce. Our customers rely heavily on shipments over the Lakeside Subdivision main line. Not only would there be a direct impact on shipments over that line, but the ripple effect of such a shutdown would extend throughout the rail network. Such costs cannot be quantified in the time frame for responding to the Corps' inquiry.

# Exhibit C

UNION PACIFIC RAILROAD  
1400 Douglas Street, STOP 0910  
Omaha, Nebraska 68179-0910

**Structures Design Group**

P 402 544 5194  
F 402 501 0478  
mlmccune@up.com

October 21, 2013

File: Bridge 739.79 Lakeside Sub  
Culvert 750.53 Lakeside Sub

Via Electronic Mail and First Class Mail

Mr. Jason Gipson  
Branch Chief, Regulatory Division  
U.S. Army Corps of Engineers, Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Re: Union Pacific Railroad (UPRR) - Great Salt Lake Causeway - Notification of Imminent Failure of East Culvert and Declaration of Emergency Conditions - Request to Reactivate UPRR Preconstruction Notification

Dear Jason:

I am writing to follow up on the telephone report our outside counsel, Wayne Whitlock, made to you on October 14, 2013 regarding the results of our recent inspection of the East culvert in the Great Salt Lake Causeway. Unfortunately, that inspection revealed that the East culvert has now deteriorated to the point that it is beyond repair. We believe collapse of the culvert is imminent. Therefore, we are notifying the Army Corps of Engineers (Corps) that UPRR must move forward with closure of the East culvert as soon as possible to avoid a potential derailment due to culvert failure under train traffic. We request Corps authorization of this emergency closure.

**Background.** On August 29, 2012, the Corps authorized emergency closure of the West culvert pursuant to Nationwide Permit 14 (August 2012 NWP); the Corps also authorized construction of the proposed bridge to compensate for the loss of aquatic functions resulting from culvert closure. The August 2012 NWP authorization included a number of Special Conditions, including a requirement to develop of a compensatory mitigation and monitoring plan for Corps approval before bridge construction could proceed.

UPRR had sought authority to close both East and West culverts in the original March 2011 Preconstruction Notification (PCN). UPRR renewed its request for that authorization on August 16, 2012 when an inspection of the two culverts revealed that the West culvert had cracked and broken. It posed an imminent risk of collapse. Therefore, UPRR declared an emergency condition and requested Corps authorization to close the West culvert immediately.



At that time, the East culvert was deteriorating but its condition was not as critical as the West culvert. Therefore, although UPRR sought coverage for eventual closure of the East culvert, UPRR explained in its August 16 notification that it planned to leave that culvert in place for now in order to allow bi-directional flows through that culvert as long as safety conditions permitted. Specifically, UPRR proposed closure of the East culvert at the time the bridge would be constructed—unless culvert conditions worsened to the point that immediate closure would be required for safety reasons. UPRR's rationale for including the East culvert under the same authorization was that closure of the East culvert was inevitable because it was in the process of failing, and the bridge was proposed to compensate for the impacts of closing both East and West culverts.

In response, the Corps determined not to provide the requested coverage for eventual East culvert closure. The Corps acknowledged that the compensatory mitigation bridge (and the mitigation and monitoring plan called for in the August 2012 NWP Special Conditions) addressed the impacts of closing both culverts. However, the Corps stated its preference to avoid confusion of emergency and non-emergency closure work in the August 2012 NWP authorization and its hope that closure of the East culvert would not become necessary until the new bridge could be constructed. Rather than requiring a new permit application if emergency closure became necessary, the Corps clarified that it would provide such authorization by reactivating UPRR's existing PCN application:

[W]e are cognizant of the fact that you were not withdrawing your request to close the East Culvert and appreciate your good faith efforts to leave the East Culvert in place as long as it is possible to safely do so. We feel it appropriate to authorize closure of the East Culvert separately when it is evident that it necessary to do so. As soon as we receive your notification of the imminent failure of the East Culvert, we would reactivate your PCN application and verify a NWP 14 for closure of the East Culvert. ACOE to UPRR (October 3, 2012).

UPRR has prepared this notification consistent with the Corps' October 3 direction.

**Request to Reactivate Preconstruction Notification.** As reflected in our August 16 letter, we shared the Corps' hope that it would not be necessary to close the East culvert before the compensatory mitigation bridge could be constructed. Unfortunately, as reflected in the enclosed inspection report prepared by Jacobs Associates, the East culvert has deteriorated to conditions similar to those of the West culvert at the time it became necessary to close it. Further, we have determined that the culvert is beyond repair. Jacobs Associates' report reflects that culvert failure is imminent, posing the risk that the culvert could collapse and cause a train derailment. Therefore, UPRR is declaring an emergency condition that necessitates East culvert closure as soon as possible.

Pursuant to the Corps' October 3, 2012 direction, we request that the Corps reactivate the outstanding portion of UPRR's March 2011 Preconstruction Notification that covered closure of the East culvert and authorize emergency closure of the culvert under Nationwide Permit 14.

It will take a few days to mobilize the necessary equipment and materials. Currently, we expect to perform the emergency closure work on November 4. We will keep you informed as our plans develop.

**Consultation Process on Existing Corps Permit.** As we address the issues associated with emergency closure of the East culvert, UPRR again acknowledges the separate rights and obligations established under the August 2012 NWP authorization—specifically, the need to complete our reevaluation of potential

impacts of replacing the two causeway culverts with a new bridge and develop a revised mitigation and monitoring plan based on the results. UPRR remains fully committed to the consultation and agency coordination process established by the Corps and UPRR to resolve those issues.

We appreciated the opportunity to meet with the Corps and the coordinating agencies on October 2 to discuss UPRR's proposed impacts reevaluation and agency coordination plan described in our September 25 letter to the Corps and for the positive feedback UPRR has received. We look forward to working with you to complete the reevaluation plan and then make any appropriate adjustments to the bridge design and the mitigation monitoring plan that result from this reevaluation. We believe that the Corps' consultation process and our joint efforts present the best opportunity to achieve our common objectives of getting the mitigation in place as soon as possible in order to minimize the effects of culvert closure.

In that regard, we propose to schedule the next informal consultation meeting outlined in our September 25 letter as soon as possible in November to discuss the results of the first phase of the evaluation and the next steps, including a schedule for completing the impacts evaluation and the consultation process. In that meeting, we also propose to brief the Corps and the coordinating agencies on the East culvert closure and answer any questions of the coordinating agencies.

Please feel free to call me with any questions about our request for emergency authorization. We will contact you to make arrangements for the briefing meeting proposed above. Thank you in advance for your continued cooperation in our efforts to address these important safety and environmental concerns.

Sincerely,



Mark L. McCune, PE  
Director Structures Design

Enclosure

cc: Ms. Kathleen Anderson  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.  
Mr. Daniel T. Harbeke  
Wayne M. Whitlock, Esq.

**PROJECT MEMORANDUM**

**To:** Mark McCune, P.E., Steve Cheney, P.E., UPRR  
**From:** Carol Ravano, P.E.  
**Job No.:** 4294.0  
**Date:** 21 October 2013  
**Subject:** Great Salt Lake Causeway East Culvert- Results of Diving Inspection, 11 October 2013

---

**1 Introduction**

As part of Jacobs Associates' on-going monitoring of the East Culvert on the Great Salt Lake Causeway, Blackwater Marine inspected the East Culvert on Friday 11 October 2013. The previous dive into the culvert was on Monday, 4 March 2013. The memorandum summarizing the observations of that dive was sent to UPRR on 20 March 2013.

Upon arriving at the site, a safety meeting was held by Cory Choate of UPRR. Present at the site were George Lulham, Bryan Cox (diver), and two helpers from Blackwater Marine, and Carol Ravano from Jacobs Associates. Mr. Lulham gave a briefing on the dive sequence, roles, and safety.

**2 Results of East Culvert Dive Inspection**

Bryan Cox entered the East Culvert from the north side at 10 a.m. and completed his dive at 1130 a.m. While in the culvert, the diver had a camera mounted on his dive helmet which transmitted to a screen inside the dive trailer; there was also voice communication between the diver and the dive trailer. The diver examined the sidewalls, bottom, and crown of the culvert visually and tactilely.

## **2.1 11 October 2013 Crack Observations**

In the March 2013 memo to the UPRR reporting the results of the March inspection, we stated "...the diver did note that the cracks that are approximately 30 feet from the north entrance have increased in size since the last dive in July 2012. These cracks now continue over the crown and the floor of the culvert, connecting into a crack on the east wall. There also appeared to be one- to two-inch rounded gravel material coming out of the crack on the west wall; this is an indication that the original backfill material, which is rounded, is coming out of the crack."

### **2.1.1 East Sidewall**

During the 11 October 2013 dive, the following observations were made regarding the crack in the east sidewall: There is an existing crack located in the east sidewall, approximately 30 feet in from the north culvert entrance that was first noted in July 2005. Over the years, the crack has increased in width and it is now 18-inches wide and greater than 12 inches deep; the concrete sidewall has continued to spall and there is exposed, corroding rebar present in the crack. As of March 2013, the crack on the east sidewall had split at the top (approx. 10 foot level) into 2 separate cracks. During this 11 October 2013 dive, the diver noted that there are now 4 separate cracks at the top of this crack and that the size and number of loose concrete blocks has increased. The diver described this crack as looking like a tree, with the large open crack as the trunk and then the branches at the top. The loose concrete blocks are located where the cracks diverge from the main trunk.

One of the loose blocks on the east sidewall, located where the cracks diverge, was described by the diver as approximately 6 feet high and 18 inches wide. Just below this block, there were several smaller blocks of loose concrete, less than one foot in diameter. The large block weighs approximately one ton, but because of the buoyant force of the super saline water, the diver was able to move the block around.

As the diver was attempting to scale the cracks in the east sidewall to reach the crown, smaller pieces of the concrete (less than 6 inches in size), broke off in his hand. The diver also noted that there are parallel cracks that continue from the above described crack, through the 45 degree chamfer that is located at the intersection of the sidewall and the crown, and across the culvert crown, connecting with the major crack on the west sidewall, which is described below. Because the water clarity was good during this dive, we were able to see the bubbles which formed at each of the crack lines, indicating that there is a slight offset between the cracks.

At the base of this crack in the east sidewall, there is a pile of rock material that is less than six inches in diameter, presumed to have come into the culvert through the open crack. The diver examined the rock and found that there was a mixture of angular and rounded rock. The angular rock is presumed to be ballast which has either migrated down the outside of the culvert and come through the crack or has fallen into the GSL and been carried into the culvert by the currents. The rounded rock is presumed to be backfill, which was placed around the culvert during the original construction in the 1950s. The diver took a sample of this rock out of the culvert; a photo of it is shown in Appendix A. This rounded rock indicates that the material surrounding the culvert is coming through the crack, resulting in a potential loss of material under the track section.

### *2.1.2 West Sidewall*

Opposite the crack in the east sidewall, there is a crack in the west sidewall which appears to have widened since the March 2013 dive. The crack is approximately 2 feet wide at the base and greater than 12 inches deep. This crack divides into 3 smaller cracks, spaced approximately 2 to 3 feet apart, at about 10 feet up from the culvert bottom. Where the main crack divides into the smaller cracks, there are loose blocks of concrete, less than 1 foot in diameter.

Due to the amount of debris on the culvert bottom, the diver was not able to see or feel the crack, which is present on the bottom. This crack was present during previous dives and is presumed to still be present.

Similar to what we observed in March 2013, during this dive, we noted a pile of smaller rock, less than 6 inches in diameter, at the base of the crack in the west sidewall. The observations of the diver are similar to what was described above at the base of the crack on the east sidewall. This material is presumed to have come into the culvert through the open crack

During the dive, the diver also noted that the crack does continue through the 45 degree chamfers that are located at the intersections of the sidewalls and the crown and bottom of the culvert, making it a continuous crack around the entire perimeter of the culvert.

## **3 Conclusions and Recommendations**

Based on the diver's observations inside the culvert during this dive, previous culvert inspections dating from January 2005, and our previous experience with the culverts, we make the following conclusions and recommendations:

1. The East Culvert has separated into two sections, with significant degradation at the interface, and has lost its original structural integrity.
2. It appears that the original culvert backfill material is coming into the culvert through the cracks in the east and west sidewalls.
3. This pattern of worsening crack formation, the formation of the loose concrete blocks, and the backfill material flow into the culvert is similar to the structural degradation process observed at the West Culvert prior to its closure in 2012.
4. The 2006 grouting program at the West culvert occurred when the culvert was still in adequate structural condition, with no loose blocks of concrete present. This is not the case with the East Culvert. The current condition of the East Culvert is more similar to the West Culvert just prior to its closure. Grouting the exterior of this culvert might prevent additional backfill material from entering the culvert, but it will not cause the culvert to regain its structural integrity.
5. Blackwater Marine divers, specifically Bryan Cox, have been diving in the West and East Culverts since 2005. Mr. Cox is the most knowledgeable about the conditions of the East Culvert. Due to the condition of the culvert, especially with the presence of the loose blocks of concrete, Blackwater Marine considers it unsafe to continue to dive in the culvert for inspection purposes.

GSL East Culvert Memo

16 October 2013

Page 4 of 6

6. Based on the above points, we consider the culverts to be at risk of imminent failure and unable to be repaired; therefore, we do recommend completely filling in the culvert.

Please contact me if you have questions or would like to discuss.

Attachments:

Appendix A- Site Condition Photos and Sketches

## Appendix A-Site Condition Photos and Sketches

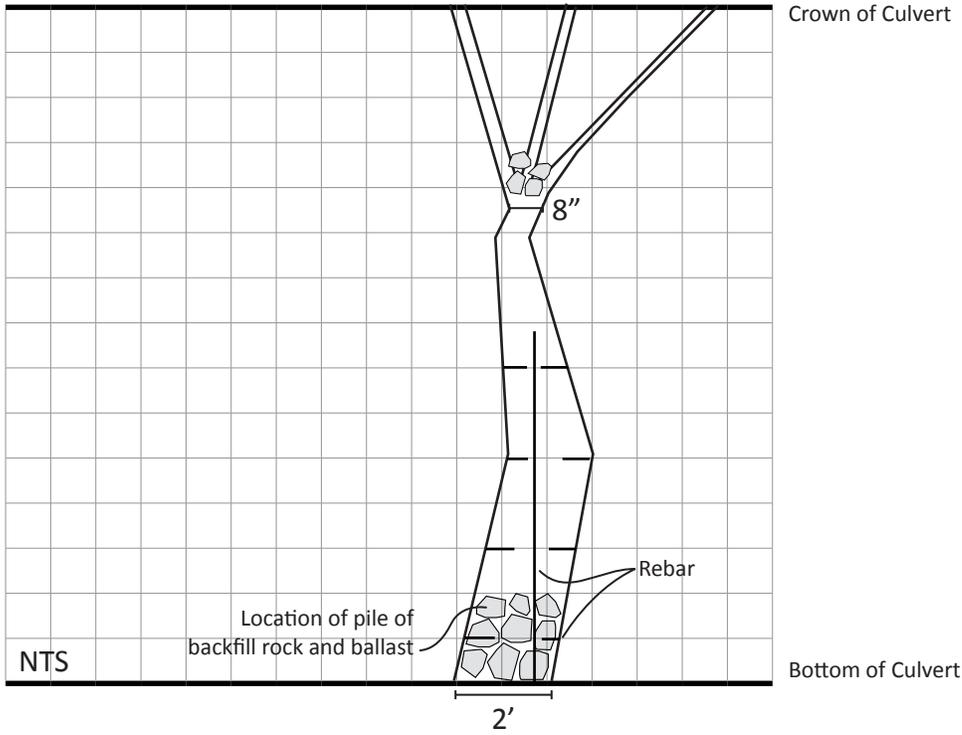


Photo 1- Sample of rounded rock taken from pile at base of crack in the west sidewall of the East Culvert. This is presumed to be original backfill material.

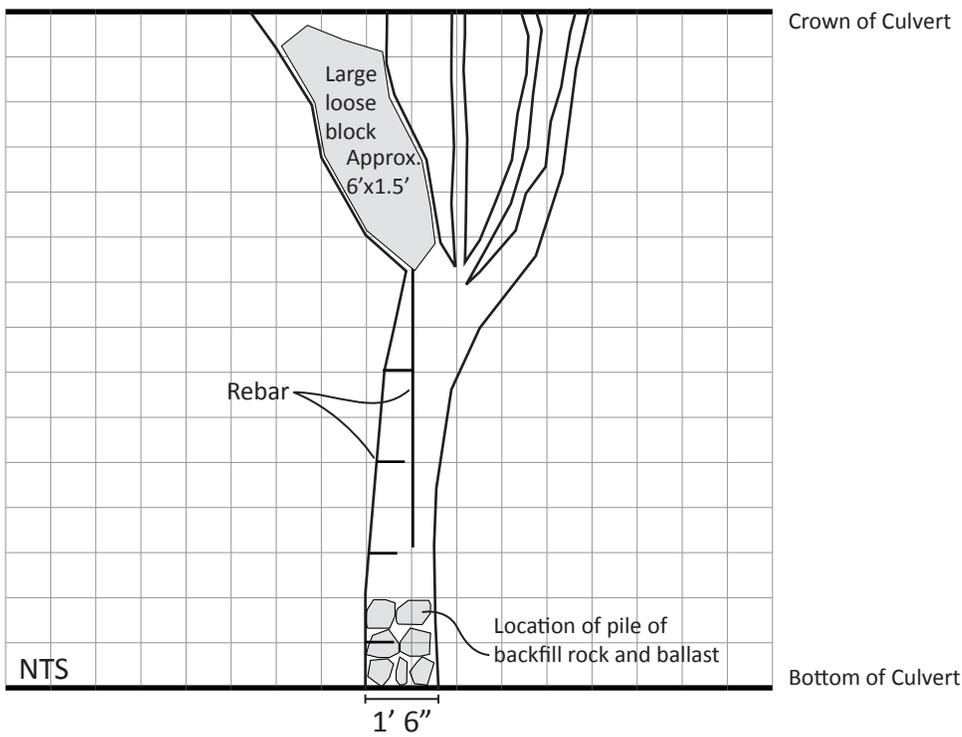


Photo 2-View of North Side of East Culvert. The water level is approximately 1.5 to 2 feet lower than in March 2013

# WEST SIDEWALL



# EAST SIDEWALL



# Exhibit D



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO CA 95814-2922

REPLY TO  
ATTENTION OF

August 29, 2012

Regulatory Division (SPK-2011-00755)

Mr. Mark L. McCune, P.E.  
Director, Structures Design  
Union Pacific Railroad  
1440 Douglas Street, Stop 0910  
Omaha, Nebraska 68179-0910

Dear Mr. McCune:

We are responding to your August 16, 2012 request for a Department of the Army permit for the Great Salt Lake UPRR Causeway West Culvert Closure and Bridge Construction project. This approximately two-acre linear project involves activities, including discharges of dredged or fill material, in waters of the United States to fill the failing West culvert located at Mile Post 744.94 and to construct a 180-foot long pile-support bridge on the west end of the causeway between Mile Post 739.79 to 739.83. The West culvert is located in the Great Salt Lake, in Section 26, Township 6 North, Range 9 West, Salt Lake Meridian, Latitude 41.2229°, Longitude -112.6608°, Box Elder County, Utah.

Based on the additional information you provided in your letter dated August 16, 2012, the proposed activity, resulting in the permanent loss of approximately 0.15- acre of waters of the Great Salt Lake to fill the West Culvert and temporary impacts to approximately 1.28 acres of waters associated with constructing the shoofly track, is authorized by Nationwide Permit Number (NWP) 14, Linear Transportation Projects (see enclosure 1, project maps and figures). Your work must comply with the general terms and conditions listed on the enclosed NWP 14 information sheets (enclosure 2), the Utah regional conditions (enclosure 3), and the following Special Conditions:

1. You are authorized to take immediate action to close the failing West culvert to preclude a potential derailment due to culvert failure under traffic. All equipment must work must from the causeway or from floating barges.
2. To compensate for the impacts of closure of the West culvert and impairment of bi-directional circulation of flows in that area, you shall construct the proposed 180-foot-long, pile-supported bridge at the west end of the causeway.

3. You shall work with the Corps to develop a final comprehensive mitigation and monitoring plan, which must be approved by the Corps in writing prior to initiation of construction activities for the new bridge.

4. The final compensatory mitigation and monitoring plan shall be submitted to the Corps no later than November 30, 2012.

5. Your mitigation and monitoring plan shall address the collection of baseline of bi-directional flows as well as the installation of appropriate monitoring gages, such as an Acoustic Doppler Current Profiler (ADCP) instruments or equivalent, to provide real-time water quality information on bi-directional flows, velocities, salinity levels and concentrations, etc., after construction of the bridge.

6. Your compensatory mitigation plan shall also address adaptive management measures to ensure minimization of adverse effects to circulation of flows. Your mitigation plan shall be presented in the format of the Sacramento District's Habitat Mitigation and Monitoring Proposal Guidelines, dated December 30, 2004, or subsequent guidance. The purpose of this requirement is to ensure the compensatory mitigation would, at a minimum, replace the functions of the aquatic environment that would be lost through project implementation.

7. You shall continue to monitor the East culvert to help ensure continued bi-directional circulation of flows at that location. Should it become evident that failure of the East culvert is imminent, you shall notify the Corps for authorization under a separate NWP 14 verification for that action prior to closure of that culvert.

8. You shall work to promptly resolve easement issues with the Utah Division of Forestry, Fire and State Lands to minimize the potential for additional loss of bi-directional flows between the North and South Arms of the Great Salt Lake. Upon resolution of the easement issues, you are authorized to commence construction of the temporary shoofly track; however, you must notify the Corps at least 10 work days in advance of commencement of the temporary fill work.

9. You shall comply with all terms and conditions of the enclosed Utah Department of Environmental Quality Section 401 Water Quality Certification, dated April 16, 2012 (enclosure 4).

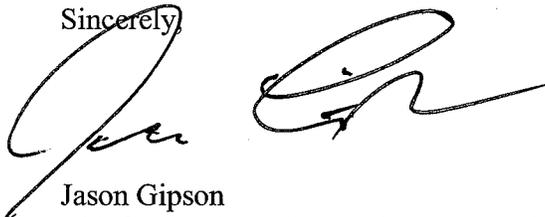
10. You must sign the enclosed Compliance Certification and return it to this office within 30 days after completion of the authorized work (enclosure 5).

This verification is valid for two years from the date of this letter or until the Nationwide Permit is modified, reissued, or revoked, whichever comes first. Failure to comply with the General and Regional Conditions of this Nationwide Permit, or the project-specific Special Conditions of this authorization, may result in the suspension or revocation of your authorization.

We would appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the *Customer Survey* from the link on our District program website at: [www.spk.usace.army.mil/Regulatory/Missions.aspx](http://www.spk.usace.army.mil/Regulatory/Missions.aspx).

Please refer to identification number SPK-2011-00755 in any correspondence concerning this project. If you have any questions, please contact Kathleen Anderson at the Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010, telephone 801-295-8380, ext. 10, or email [Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil).

Sincerely,

A handwritten signature in black ink, appearing to read 'Jason Gipson', written over the word 'Sincerely,'.

Jason Gipson  
Chief, Nevada-Utah Regulatory Branch  
Sacramento District

Enclosures

Copy furnished without enclosures:

Ms. Laura Ault, Utah Division of Forestry, Fire and State Lands, 1594 West North Temple,  
Suite 1210, P.O. Box 145703, Salt Lake City, Utah 84114-5703

Ms. Julia McCarthy, U.S. Environmental Protection Agency Region 8, 1595 Wynkoop Street,  
Denver, Colorado 80202

Mr. William Damery, Utah Division of Water Quality, 195 North 1950 West, P.O. Box 144870,  
Salt Lake City, Utah 84114-4870

# COMPLIANCE CERTIFICATION

**Permit File Number:** SPK-2011-00755

**Nationwide Permit Number:** NWP 14 Linear Transportation Projects.

**Permittee:** Mark L. McCune, P.E.  
Union Pacific Railroad  
1440 Douglas Street, Stop 0910  
Omaha, Nebraska 68179-0910

**County:** Box Elder

**Date of Verification:** August 29, 2012

Within 30 days after completion of the activity authorized by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers-Sacramento District  
Utah Regulatory Office  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010  
FAX: 801-295-8842  
*DLL-CESPK-RD-Compliance@usace.army.mil*

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked. If you have any questions about this certification, please contact the Corps of Engineers at 801-295-8380.

\* \* \* \* \*

*I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.*

\_\_\_\_\_  
Signature of Permittee

\_\_\_\_\_  
Date

# Exhibit E



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO CA 95814-2922

REPLY TO  
ATTENTION OF

October 3, 2012

Regulatory Division (SPK-2011-00755)

Mr. Mark L. McCune, P.E.  
Director, Structures Design  
Union Pacific Railroad  
1440 Douglas Street, Stop 0910  
Omaha, Nebraska 68179-0910

Dear Mr. McCune:

We are responding to your September 18, 2012 letter regarding the Nationwide Permit (NWP) 14 verification we issued for the Great Salt Lake Union Pacific Railroad (UPRR) Causeway West Culvert Closure and Bridge Construction project. This approximately two-acre linear project involves activities, including discharges of dredged or fill material, in waters of the United States to fill the failing West Culvert located at Mile Post 744.94 and to construct a 180-foot-long pile-support bridge on the west end of the causeway between Mile Post 739.79 to 739.83. The West Culvert is located in the Great Salt Lake, in Section 26, Township 6 North, Range 9 West, Salt Lake Meridian, Latitude 41.2229°, Longitude -112.6608°, Box Elder County, Utah.

Your letter addressed several concerns related to the NWP 14 we issued on August 29, 2012 to facilitate immediate closure of the West Culvert. The purpose of this letter is to respond to your concerns and provide additional clarifying information.

With regard to your concern about the need for a separate authorization for the East Culvert, you have acknowledged that this culvert does not require immediate closure at this time. Since it will not be possible for the UPRR to start construction of the bridge concurrently with closure of the West Culvert, we determined it appropriate to not authorize closure of the East Culvert until such time as the culvert exhibits further deterioration that warrants immediate closure. We did not authorize the East Culvert to be filled in our August 29, 2012 letter because we did not have a final mitigation plan and did we not want to confuse the issue of emergency and non-emergency work. Our intent is to ensure the continued connectivity between the North and South Arms and circulation of flows in the deeper waters of the lake after closure of the West Culvert so that your NWP verification is compliant, to the extent practicable, with the General Conditions of the NWP. We are hopeful that it will not become necessary to close the East Culvert until construction of the new bridge is completed.

Although Special Condition 2 states that UPRR shall construct the proposed 180-foot-long pile-supported bridge to compensate for the impacts of closure of the West Culvert, we are aware that this bridge was intended to compensate for closure of both culverts. Further, we are cognizant of the fact that you were not withdrawing your request to close the East Culvert and appreciate your good faith efforts to leave the East Culvert in place as long as it is possible to safely do so. We feel it appropriate to authorize closure of the East Culvert separately when it is evident that it necessary to do so. As soon as

we receive your notification of the imminent failure of the East Culvert, we would reactivate your PCN application and verify a NWP 14 for closure of the East Culvert.

Special Conditions 3, 4, 5 and 6 relate to development and submission of a final mitigation and monitoring plan as required under 33 CFR 332, U.S. Army Corps of Engineers and Environmental Protection Agencies' Joint Regulations on Compensatory Mitigation for Losses of Aquatic Resources dated April 10, 2008 (33 CFR 332). A mitigation plan is required for all forms of compensatory mitigation, whether the project will be permittee-responsible mitigation, purchase of mitigation banking credits, or an in-lieu fee mitigation project. For general permits such as your NWP 14 verification, 33 CFR 332 provides the District Engineer flexibility to issue a permit prior to approval of a final mitigation plan, providing that the final plan is approved prior to commencing work in waters of the U.S. Permittees are also required to commence the mitigation work prior to or concurrent with the authorized discharge activity to minimize temporal losses of waters of the U.S. Due to the emergency situation with the West Culvert, on behalf of the District Engineer, we authorized UPRR to take immediate action to close the failing culvert and implement Special Conditions 3, 4, 5, and 6 to allow this work to commence in waters prior to development and final Corps approval of the final mitigation and monitoring plan.

As you noted in your September 18, 2012 letter, there is also leeway for a mitigation proposal for a general permit action to be finalized and approved in the permit authorization through inclusion of additional special conditions supplementing the draft proposal. However, your application does not include a draft mitigation plan but rather included a statement that NWP 14 does not require mitigation for projects that do not impact wetlands and also stated that the project is self-mitigating as the bridge would offset the loss of flow through the filled culverts. General Condition 23, Mitigation, subparagraph b states: "Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal." Further, subparagraph d states: "For losses of streams or other open waters that require pre-construction notification, the District Engineer may require compensatory mitigation...to ensure that the activity results in minimal adverse effects on the aquatic environment." We have determined it appropriate to require compensatory mitigation to ensure that implementation of the project does not result in more than minimal impacts to the lake and its aquatic ecosystem and, further, that it will be necessary for UPRR to monitor the effects on factors such as flows and salinity gradients after the bridge is constructed.

We are enclosing a fact sheet describing the required mitigation plan elements detailed in 33 CFR 332.4(c)(2)-(14) as well as a fact sheet that describes the format and contents of monitoring reports. Ecologically-based standards that will be used to determine whether the mitigation project is achieving the defined plan objectives and an adaptive management strategy are required components of the mitigation plan. Some of the 12 mitigation plan elements will not apply to your project; however, you should address all other elements. For example, your proposal would also include a schedule for monitoring. Generally, a minimum of 5 years of monitoring shall occur and one annual monitoring report submittal is required. Per Special Condition 4 of you NWP 14 verification, this plan needs to be submitted to the Corps by November 30, 2012. Failure to comply with this Special Condition would result in non-compliance with the authorization.

As the Corps stated in our August 1, 2012 meeting regarding adaptive management strategies required in the mitigation plan, it is not the Corps' intent that the 180-foot bridge structure would need to be lengthened or otherwise modified after its construction, but rather the trench beneath the

bridge may require modifications. Modifications to the trench could include, but are not limited to, deepening or lengthening beyond the existing easement if monitoring indicates that the bridge is not performing in the manner that UPRR indicates it would. Other potential adaptive management actions could include constructing an additional causeway breach and bridge to the east on the Saline Fill.

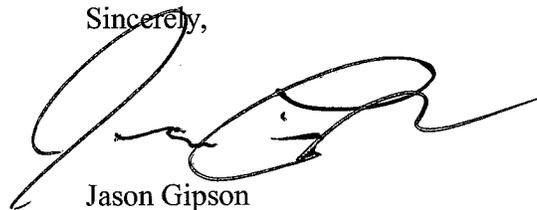
Proposing appropriate monitoring protocols and methodologies as well as the factors to examine are the responsibility of the applicant, but ultimately approved by the Corps. Although the Corps does not mandate the factors to monitor, we suggests UPRR consider monitoring issues such as salinity concentrations, flows, velocities, bi-directional flows, etc. after the bridge opening is constructed. Monitoring can take many forms including continuous data capture through instrumentation such as Acoustic Doppler Current Profiler (ADCP) or other similar gauging equipment. Alternatively, data can be acquired through manual sampling by onsite personnel. However, manual sampling would have to occur on a basis frequent enough so as to provide a robust data set to evaluate. We are happy to continue working with you in developing your final mitigation plan, if you desire.

The wording of Special Condition 8 was included in an effort to minimize the potential for delay in commencement of the bridge construction early next spring as projected in your August 16, 2012 letter. We are aware there are potential Causeway lease/right-of-way issues between UPRR and the State. Because of this, we are concerned about the potential for both culverts to require closure before these issues were resolved and the bridge not being constructed or in the process of construction. Again, filling the culverts and not adhering to the Special Conditions of the verification would result in the project being in non-compliance, regardless of the emergency issue. We wish to avoid any such issues.

We acknowledge the telephone conversation of September 21, 2012 wherein you expressed the need to go forward with immediate closure of the West Culvert to preclude the potential for a load-bearing failure. We reiterate here that you are authorized to conduct this work in accordance with Special Condition 1 of your NWP 14 verification letter dated August 29, 2012. We hope that this letter has resolved the concerns you expressed about the special conditions in the NWP 14 for the West Culvert.

Please refer to identification number SPK-2011-00755 in any correspondence concerning this project. If you have any questions, please contact Kathleen Anderson at the Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010, telephone 801-295-8380, ext. 10, or email [Kathleen.Anderson@usace.army.mil](mailto:Kathleen.Anderson@usace.army.mil).

Sincerely,

A handwritten signature in black ink, appearing to read 'Jason Gipson', written over a horizontal line.

Jason Gipson  
Chief, Nevada-Utah Regulatory Branch  
Sacramento District

Enclosures

Copy Furnished without enclosures:

Ms. Laura Ault, Utah Division of Forestry, Fire and State Lands, 1594 West North Temple,  
Suite 1210, Post Office Box 145703, Salt Lake City, Utah 84114-5703

Ms. Julia McCarthy, U.S. Environmental Protection Agency Region 8, Wetlands and Watersheds  
Unit (8EPR-EP), 1595 Wynkoop Street, Denver, Colorado 80202-1129

# Exhibit F

---

**From:** Anderson, Kathleen E SPK <Kathleen.Anderson@usace.army.mil>  
**Sent:** Monday, October 28, 2013 9:06 AM  
**To:** Whitlock, Wayne M.  
**Subject:** FW: UPRR Notification of Imminent Failure of East Culvert and Request to Reactivate Preconstruction Notification for emergency authorization to close culvert (UNCLASSIFIED)  
**Attachments:** UPRR Ltr 21 Oct 2013-USACE Notification re Imminent Failure of East Culvert \_Final 20131021\_.pdf; UPRR (JA) GSL East Culvert Status Memo-10-21-13.pdf

Classification: UNCLASSIFIED

Caveats: NONE

Wayne, here is the email that you requested.

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

-----Original Message-----

From: Anderson, Kathleen E SPK  
Sent: Thursday, October 24, 2013 11:05 AM  
To: 'Bill Damery (401 Cert)'; 'llamb@utah.gov'; 'cbittner@utah.gov'; Jodi Gardberg; 'Toby Hooker'; Laura Ault; 'Dick Buehler'; 'freddonaldson@utah.gov'; [chris.cline@fws.gov](mailto:chris.cline@fws.gov); 'Betsy Herrmann (FWS)'; Julia McCarthy (EPA R8); [angeroth@usgs.gov](mailto:angeroth@usgs.gov); [craigmiller@utah.gov](mailto:craigmiller@utah.gov); 'johnluft@utah.gov'; 'Pam Kramer (DWR)'; 'jimvanleeuwen@utah.gov'; 'Andrew Rupke'  
Cc: Gipson, Jason A SPK; 'Sindy Smith'  
Subject: UPRR Notification of Imminent Failure of East Culvert and Request to Reactivate Preconstruction Notification for emergency authorization to close culvert (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Wayne Whitlock, UPRR outside counsel, notified Jason Gipson by phone on October 14th, that the October 11 diving inspection of the East Culvert revealed that significant deterioration had occurred since the March 2013 dive and that the East Culvert is under imminent threat of collapse.

We received a letter from the UPRR by email on Monday, declaring the emergency condition of the East Culvert and requesting that we re-activate their July 2011 Nationwide Permit Preconstruction Notification to facilitate authorization to take immediate necessary actions to close the East Culvert due to the potential for imminent collapse of the culvert. A copy of the UPRR letter and accompanying Jacobs Associates Project Memorandum detailing

the October 11th East Culvert Diving Inspection, both dated October 21, 2013, are attached for your review.

It is our intent to quickly issue a Corps Nationwide Permit 14 verification letter to authorize closure of the East Culvert under emergency conditions to avoid a track failure. The UPRR anticipates they will be able to mobilize the equipment and materials to initiate the closure work on November 4th. We anticipate issuance of the NWP 14 prior to initiation of the closure work.

We are aware of concerns about the effects of closure of this culvert as we had hoped it might remain open until such time as all the issues concerning closure of the culverts and construction of the proposed bridge were resolved. Unfortunately, it has become necessary to close the East Culvert too.

Please advise us as soon as possible (NLT 31 Oct) if you have any additional or new concerns that we should address in processing a NWP 14 authorization for closure of the East Culvert.

The previous NWP 14 verification for closure of the West Culvert has been suspended due to unresolved concerns and consultation is on-going with UPRR to resolve these issues about the potential effects of closure of the culverts and construction of the bridge as compensatory mitigation for closure of both culverts. We anticipate another agency meeting before the holidays with UPRR and their consultants. The meeting will focus on the progress of their

Work to update the USGS Model from 1998 forward and recalibrate it with data through 2012 to compare baseline simulations (full flowing culverts prior to November 2012) to a simulation of the proposed bridge. The UPRR intends to use the results of this modeling and analysis to develop their final mitigation and monitoring plan.

Sorry for the short suspense - but we appreciate your understanding and prompt response (NLT 31 Oct).

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED  
Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

UNION PACIFIC RAILROAD  
1400 Douglas Street, STOP 0910  
Omaha, Nebraska 68179-0910

**Structures Design Group**

P 402 544 5194  
F 402 501 0478  
mlmccune@up.com

October 21, 2013

File: Bridge 739.79 Lakeside Sub  
Culvert 750.53 Lakeside Sub

Via Electronic Mail and First Class Mail

Mr. Jason Gipson  
Branch Chief, Regulatory Division  
U.S. Army Corps of Engineers, Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Re: Union Pacific Railroad (UPRR) - Great Salt Lake Causeway - Notification of Imminent Failure of East Culvert and Declaration of Emergency Conditions - Request to Reactivate UPRR Preconstruction Notification

Dear Jason:

I am writing to follow up on the telephone report our outside counsel, Wayne Whitlock, made to you on October 14, 2013 regarding the results of our recent inspection of the East culvert in the Great Salt Lake Causeway. Unfortunately, that inspection revealed that the East culvert has now deteriorated to the point that it is beyond repair. We believe collapse of the culvert is imminent. Therefore, we are notifying the Army Corps of Engineers (Corps) that UPRR must move forward with closure of the East culvert as soon as possible to avoid a potential derailment due to culvert failure under train traffic. We request Corps authorization of this emergency closure.

**Background.** On August 29, 2012, the Corps authorized emergency closure of the West culvert pursuant to Nationwide Permit 14 (August 2012 NWP); the Corps also authorized construction of the proposed bridge to compensate for the loss of aquatic functions resulting from culvert closure. The August 2012 NWP authorization included a number of Special Conditions, including a requirement to develop of a compensatory mitigation and monitoring plan for Corps approval before bridge construction could proceed.

UPRR had sought authority to close both East and West culverts in the original March 2011 Preconstruction Notification (PCN). UPRR renewed its request for that authorization on August 16, 2012 when an inspection of the two culverts revealed that the West culvert had cracked and broken. It posed an imminent risk of collapse. Therefore, UPRR declared an emergency condition and requested Corps authorization to close the West culvert immediately.



At that time, the East culvert was deteriorating but its condition was not as critical as the West culvert. Therefore, although UPRR sought coverage for eventual closure of the East culvert, UPRR explained in its August 16 notification that it planned to leave that culvert in place for now in order to allow bi-directional flows through that culvert as long as safety conditions permitted. Specifically, UPRR proposed closure of the East culvert at the time the bridge would be constructed—unless culvert conditions worsened to the point that immediate closure would be required for safety reasons. UPRR's rationale for including the East culvert under the same authorization was that closure of the East culvert was inevitable because it was in the process of failing, and the bridge was proposed to compensate for the impacts of closing both East and West culverts.

In response, the Corps determined not to provide the requested coverage for eventual East culvert closure. The Corps acknowledged that the compensatory mitigation bridge (and the mitigation and monitoring plan called for in the August 2012 NWP Special Conditions) addressed the impacts of closing both culverts. However, the Corps stated its preference to avoid confusion of emergency and non-emergency closure work in the August 2012 NWP authorization and its hope that closure of the East culvert would not become necessary until the new bridge could be constructed. Rather than requiring a new permit application if emergency closure became necessary, the Corps clarified that it would provide such authorization by reactivating UPRR's existing PCN application:

[W]e are cognizant of the fact that you were not withdrawing your request to close the East Culvert and appreciate your good faith efforts to leave the East Culvert in place as long as it is possible to safely do so. We feel it appropriate to authorize closure of the East Culvert separately when it is evident that it necessary to do so. As soon as we receive your notification of the imminent failure of the East Culvert, we would reactivate your PCN application and verify a NWP 14 for closure of the East Culvert. ACOE to UPRR (October 3, 2012).

UPRR has prepared this notification consistent with the Corps' October 3 direction.

**Request to Reactivate Preconstruction Notification.** As reflected in our August 16 letter, we shared the Corps' hope that it would not be necessary to close the East culvert before the compensatory mitigation bridge could be constructed. Unfortunately, as reflected in the enclosed inspection report prepared by Jacobs Associates, the East culvert has deteriorated to conditions similar to those of the West culvert at the time it became necessary to close it. Further, we have determined that the culvert is beyond repair. Jacobs Associates' report reflects that culvert failure is imminent, posing the risk that the culvert could collapse and cause a train derailment. Therefore, UPRR is declaring an emergency condition that necessitates East culvert closure as soon as possible.

Pursuant to the Corps' October 3, 2012 direction, we request that the Corps reactivate the outstanding portion of UPRR's March 2011 Preconstruction Notification that covered closure of the East culvert and authorize emergency closure of the culvert under Nationwide Permit 14.

It will take a few days to mobilize the necessary equipment and materials. Currently, we expect to perform the emergency closure work on November 4. We will keep you informed as our plans develop.

**Consultation Process on Existing Corps Permit.** As we address the issues associated with emergency closure of the East culvert, UPRR again acknowledges the separate rights and obligations established under the August 2012 NWP authorization—specifically, the need to complete our reevaluation of potential

impacts of replacing the two causeway culverts with a new bridge and develop a revised mitigation and monitoring plan based on the results. UPRR remains fully committed to the consultation and agency coordination process established by the Corps and UPRR to resolve those issues.

We appreciated the opportunity to meet with the Corps and the coordinating agencies on October 2 to discuss UPRR's proposed impacts reevaluation and agency coordination plan described in our September 25 letter to the Corps and for the positive feedback UPRR has received. We look forward to working with you to complete the reevaluation plan and then make any appropriate adjustments to the bridge design and the mitigation monitoring plan that result from this reevaluation. We believe that the Corps' consultation process and our joint efforts present the best opportunity to achieve our common objectives of getting the mitigation in place as soon as possible in order to minimize the effects of culvert closure.

In that regard, we propose to schedule the next informal consultation meeting outlined in our September 25 letter as soon as possible in November to discuss the results of the first phase of the evaluation and the next steps, including a schedule for completing the impacts evaluation and the consultation process. In that meeting, we also propose to brief the Corps and the coordinating agencies on the East culvert closure and answer any questions of the coordinating agencies.

Please feel free to call me with any questions about our request for emergency authorization. We will contact you to make arrangements for the briefing meeting proposed above. Thank you in advance for your continued cooperation in our efforts to address these important safety and environmental concerns.

Sincerely,



Mark L. McCune, PE  
Director Structures Design

Enclosure

cc: Ms. Kathleen Anderson  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.  
Mr. Daniel T. Harbeke  
Wayne M. Whitlock, Esq.

# Exhibit G

---

**From:** Anderson, Kathleen E SPK <Kathleen.Anderson@usace.army.mil>  
**Sent:** Monday, November 04, 2013 10:34 AM  
**To:** Mark L. McCune; Debra L. Schafer; Stephen L. Cheney; Whitlock, Wayne M.; Robert C. Bylsma  
**Cc:** Laura Ault; Dick Buehler; freddonaldson@utah.gov; Chris Cline; Betsy Herrmann; Julia McCarthy (EPA R8); llamb@utah.gov; wbaker@utah.gov; mhubbell@utah.gov; cbittner@utah.gov; johnluft@utah.gov; jimvanleeuwen@utah.gov; Pam Kramer (DWR); angeroth@usgs.gov; Andrew Rupke; Gipson, Jason A SPK; Nepstad, Michael G SPK; Jewell, Michael S SPK; Cavanaugh, Thomas J SPD; Eakle, Wade L SPD  
**Subject:** Re UPRR Notification of Imminent Failure of East Culvert and Declaration of Emergency Conditions (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

We recognize the emergency condition of the East Culvert and acknowledge the need to close this culvert without delay. However, after careful review of our regulations and agency comments and discussion with our District Office, we have determined that we are unable to authorize closure of the East Culvert under a Nationwide Permit or other General Permits due to the Corps' inability to demonstrate the action would result in no more than minimal individual and cumulative adverse effects on the aquatic environment (33 CFR Part 330). Therefore, authorization to close the culvert could only fall under our South Pacific Division Regulatory Program Standard Permit Emergency Procedures which provide for abbreviated procedures for review, coordination and decision making in emergency situations pursuant to 33 CFR 325.2(e)(4).

These procedures authorize the District Engineer, in consultation of with the Division Engineer, to engage in special permitting procedures. However, the Corps is prohibited by statute from issuing any authorization, verbal or otherwise, without the activity first receiving 401 Water Quality certification. Ref 33 USC 1341 (a), "No license or permit shall be granted until the certification required by this section has been obtained or has been waived as provided in the preceding sentence. No license or permit shall be granted if certification has been denied by the State, interstate agency, or the Administrator, as the case may be."

We have been in contact with Leah Ann Lamb and Walt Baker of the Division of Water Quality regarding this matter. In order to move this process forward, UPRR must take immediate action to apply for an individual water quality certification for the closure action.

We are currently working our procedures and preparing necessary documentation for the South Pacific Division. We will be working on draft special conditions which we will forward by email for your review and acceptance. Once 401 certification has been received and we have concluded our coordination procedures, on behalf of the District Engineer, we will provide verbal (email) authorization with any appropriate special conditions, followed

by written authorization as soon as possible.

Further, in accordance with 33 CFR 325.2(e)(4), we will issue a public notice detailing any special procedures authorized, including our rationale, within 30 days of the date of the District Engineer's authorization to use special processing procedures. This notice will be circulated to appropriate Federal, State, and local agencies and the affected public as defined in 33 CFR 325(a)(3)-(7).

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED  
Caveats: NONE

# Exhibit H

---

**From:** Anderson, Kathleen E SPK <Kathleen.Anderson@usace.army.mil>  
**Sent:** Friday, November 08, 2013 12:15 PM  
**To:** Mark L. McCune; Debra L. Schafer; Stephen L. Cheney; Robert C. Bylsma; Whitlock, Wayne M.  
**Cc:** Leah Ann Lamb; Walter Baker; William Damery; Melissa Hubbell; cbittner@utah.gov; Gipson, Jason A SPK; Nepstad, Michael G SPK  
**Subject:** Questions re additional info for us to provide to Colonel Farrel supporting position that closure of East Culvert is an Emergency Situation (UNCLASSIFIED)  
**Attachments:** Questions for UPRR re Emergency Permitting.docx; GSLM pump station at Promontory Point.pdf

Classification: UNCLASSIFIED  
Caveats: NONE

Kathleen Anderson  
Regulatory Assistant  
Nevada-Utah Regulatory Branch  
801-295-8380 x10

Classification: UNCLASSIFIED  
Caveats: NONE

As discussed when Wayne phoned earlier this am, Jason briefed our District Engineer late yesterday afternoon. We have some additional questions that we must answer today to allow us to make a more informed decision about whether special individual permit processing procedures under emergency procedure is warranted.

To clarify, under Corps regulations, an “emergency situation” is defined as one which would “result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures” (33 CFR 325.2(e)(4)). For any activity that would result in impacts to waters of the U.S., the District Engineer must determine if an emergency situation exists and, in turn, recommend special permitting procedures to our South Pacific Division Engineer who would instruct the District as to further processing.

Please provide responses to the following questions:

- Describe short- and long-term impacts to UPRR operations due to a closed causeway for weeks/months – i.e., would overall east-west operations just slow down due to need to use alternate routes; would the overall number of trains be reduced such that interstate commerce delays are encountered; does current traffic use maximum length per train or could additional cars be added to scheduled trains; is the alternate route through Salt Lake City the only east-west alternative; etc.?
- Please describe the economic hardship incurred with the loss of the causeway if corrective action is not taken.
- Please describe the significant loss of property that may occur.
- If traffic is immediately removed from causeway, would the East Culvert area continue to deteriorate and rapidly collapse?
- In light of the significant effects to Great Salt Lake under closure of the East Culvert, we are inquiring about minimizing temporal losses through interim mitigation measures. What is the feasibility of North Arm brine being pumped into the South Arm to replace lost flows into the South Arm until such time as the bridge could be constructed – one thought we brainstormed was that it might be possible for UPRR construct a pump/lift station similar to the Great Salt Lake Minerals station at the east end of Promontory Point – or to enter into an agreement with GSLM to utilize their existing pumping activities at the west shore of Promontory Point from fall through late winter? Attached is an aerial of the pump station we are referring to.
- Also, please provide any available documentation of the sink holes that have developed in the ballast near the track over the East Culvert.

# Untitled Map

Write a description for your map.

Legend

Google earth

© 2013 Google  
Image © 2013 DigitalGlobe

1000 ft



# Exhibit I

UNION PACIFIC RAILROAD  
1400 Douglas Street, STOP 0910  
Omaha, Nebraska 68179-0910

**Structures Design Group**

P 402 544 5194  
F 402 501 0478  
mlmccune@up.com

August 16, 2012

File: Bridge 739.79 Lakeside Sub  
Culvert 744.94 Lakeside Sub  
Culvert 750.53 Lakeside Sub

Mr. Michael Jewell  
Sacramento District, Regulatory Branch  
U.S. Army Corps of Engineers  
1325 J Street  
Sacramento, CA 95814-2922

Subject: Union Pacific Railroad Causeway over the Great Salt Lake (GSL)—Culvert Failure and  
Emergency Closure

Dear Mike:

Thank you for the opportunity to meet with you and Jason Gipson on August 1, 2012. As previously mentioned, we have enjoyed an excellent working relationship with your office and appreciate your time and effort to help us resolve this ongoing permitting issue. This letter confirms the key points we discussed at our meeting, in which Union Pacific Railroad (UPRR) requested reconsideration of its application for approval of its previously submitted Nationwide Permit 14 Pre-Construction Notification (NWP 14 PCN). Following is a summary of each of these points:

- **Declaration of emergency condition at the West Culvert requiring immediate action:** UPRR continues to monitor the east and west culverts for signs of imminent failure. A recent survey was performed July 31, 2012, by a team of divers and geotechnical engineers. The west culvert continues to fail, and has now separated and broken. Previous attempts to patch the culvert using a concrete grout have failed, and we believe the collapse of the culvert is imminent. As we discussed in the meeting, UPRR must move forward with immediate closure of the west culvert to avoid a potential derailment due to culvert failure under traffic.
- **UPRR will monitor the East Culvert but wait to close it until safety conditions dictate:** The east culvert was also surveyed recently. Its condition is not as critical as the west culvert, although eventual failure of the east culvert is inevitable. It appears that the east culvert can remain open for the short term to continue to allow some circulation at this location. Therefore, UPRR will leave the east culvert in place for now and continue to monitor its condition. At the point in the future that failure of the east culvert becomes imminent, UPRR will notify the Corps of the necessity of closing it.
- **UPRR proposed to build the bridge as an accommodation to other interests; although UPRR is still willing to construct the bridge, UPRR does not need to build the proposed bridge to**



**facilitate railroad operations on the causeway:** UPRR has proposed to construct a bridge as a good faith attempt to provide circulation to replace the circulation that could be lost as a result of the closure of the failed culverts. The culverts were originally installed to allow boat passage through the causeway. The Rambo Bridge project was constructed to allow water levels to equalize across the causeway. Based on the original design parameters for the causeway, there is no engineering need for a new bridge to ensure effective causeway operation and use. The culverts were nearly 100 percent plugged until recent years when the Corps requested that UPRR clean and reopen them. The protective berms installed to prevent rocks and debris from filling the culverts could be removed, and the culverts would almost certainly fill naturally. No modeling or adaptive management was performed when flow was re-established through the culverts and the berms were installed. UPRR is prepared to go forward constructing the bridge as proposed and on the schedule outlined below once we receive the Corps approval to proceed. However, we appreciate the Corps concurrence stated in our meeting that the bridge construction need not delay any action needed to address the failing culverts for safety reasons.

- **The proposed bridge is designed to accommodate worst case conditions for circulation:** The NWP 14 PCN included an Appendix C that provided the engineering design basis for the sizing of the proposed bridge. The replacement bridge was designed for the lake elevation in early 2011, which was near the historical low. Accordingly, this design represents a worst-case flow replacement scenario to make sure that **at least the same** flow would occur through the proposed bridge at low lake elevations as occurs through the two culverts as they currently exist; greater flow and circulation would occur when the lake elevation is at higher levels, such as those that exist at present. The bridge cannot feasibly be constructed in the same location as the culverts because the geotechnical conditions at the culverts are unstable and, therefore, not acceptable for placement of the bridge. The location selected for the proposed bridge provides the deepest water available at a geotechnically stable location while avoiding curves on the railroad alignment.
- **The bridge design information submitted by UPRR supports the bridge proposal; additional modeling previously requested is infeasible:** The U.S. Geological Survey Utah Water Science Center previously developed a salt balance model. It has been suggested that this model could be updated and then used to simulate the effects of various-size openings in the Great Salt Lake Causeway on the salt and water balance of the lake to support a determination as to the appropriate size of the bridge. This suggested approach would include adaptive management to change the size of the bridge as additional data is gathered and the model is updated following construction. As we discussed, this suggested approach is simply not feasible. One of the greatest challenges this proposal presents is that the model is not capable of taking account of the many significant and ever-changing variables that would affect the north/south circulation, let alone the impacts of the continued sinking of the culverts.

These variables are entirely out of the control of UPRR and the Corps. Such ever-changing conditions make establishing the bridge size based on this modeling proposal a moving target. This proposal would not provide a sound basis for determining the bridge size. Furthermore, given the significant investment that must be made to design and construct the bridge, we believe the bridge size must be established based upon the best available current information rather than providing for future adjustments to the bridge size under an adaptive management concept.

As discussed above, UPRR has provided significant support for its estimates that the bridge, as designed, would provide at least the equivalent circulation when the lake is at or near its historical lowest level—in other words during the worst case conditions for circulation. Whereas the information contained in UPRR's bridge proposal reflects that the bridge replaces the function of the culverts, the suggestion to do further modeling implies that UPRR and the bridge proposal have much greater influence on flow and salinity in the dynamic system of the Great Salt Lake than the information in the record supports.

- **Bridge construction schedule:** Typical fall and winter weather conditions on the Great Salt Lake preclude beginning construction of a replacement bridge until March 2013, with construction expected to take approximately 8 months. Expedious issuance of an NWP 14 would provide for restoration of interchange flows as quickly as possible.
- **Acreeage of waters of the U.S. affected:** The size of the footprint and volume of material where removal of causeway would occur at the bridge location would more than offset the size of the footprint of fill and volume of material placed at the culvert locations when the culverts are filled. Thus, there would be no net loss of waters of the U.S.; rather there would be a net increase in waters of the U.S.

With the submission of these clarifying points, UPRR formally requests reconsideration of the NWP 14 PCN application by the Sacramento District Engineer. Furthermore, we hereby inform you of the imminent need to fill the existing west culvert as an emergency action.

Yours truly,



Mark L. McCune, P.E.  
Director Structures Design

cc: Mr. Jason Gipson  
United States Army Corps of Engineers  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

## Nichols, Karen

---

**From:** Whitlock, Wayne M. <wayne.whitlock@pillsburylaw.com>  
**Sent:** Thursday, November 21, 2013 6:34 PM  
**To:** Gipson, Jason A SPK; Nepstad, Michael G SPK  
**Cc:** Anderson, Kathleen E SPK; Mark L. McCune (MLMCCUNE@up.com); Debra L. Schafer (DEBRALSCHAFFER@UP.COM); Steve Cheney (SLCHENEY@up.com); Robert C. Bylsma (rcbylsma@up.com)  
**Subject:** RE: Union Pacific Railroad - Great Salt Lake Causeway - Request for Reconsideration of Utah-Nevada Regulatory Branch Emergency Determination and Submission of Supplemental Information (UNCLASSIFIED)

Jason,

Here is a brief response and I'll get back to you after I can discuss with Union Pacific. As to the steel plate question, please see Section IV for a general response regarding temporary engineering alternatives. We can explain further how that response addresses the steel plate alternative and the assumptions about culvert stability that apparently underlie these requests.

Regarding the question about operations in the 80's, as you know that was a very different time, with different railroads operating various routes, including the causeway and the alternative route, and with very different levels of rail traffic and demands. We will ask around for information about what happened then. However, our response focused on the more relevant question of what impacts would result from shutting down the causeway today. Please be assured that our submission projects those impacts carefully under the current railroad infrastructure (which may or may not be different from what existed in the 1980s), current levels of demand, the current economy and current transportation patterns. The alternative route and the impacts of overloading it with rerouted interstate train traffic from the causeway are what would happen today if the Corps were to sustain your earlier rejection of emergency procedures. The impacts we summarized are based on extensive evaluation and discussion since your November 8 decision. Again, I will ask for more information about historical operations in the 1980s.

I will confer with UP and get back to you.

Thanks  
Wayne

Wayne M. Whitlock | Partner  
Pillsbury Winthrop Shaw Pittman LLP  
2550 Hanover Street | Palo Alto, CA 94304-1114  
4 Embarcadero Center, 22nd Floor | San Francisco, CA 94111-5998 t 650.233.4528 | f 650.233.4500  
wayne.whitlock@pillsburylaw.com | website bio

-----Original Message-----

From: Gipson, Jason A SPK [mailto:Jason.A.Gipson@usace.army.mil]  
Sent: Thursday, November 21, 2013 4:36 PM  
To: Whitlock, Wayne M.; Nepstad, Michael G SPK  
Cc: Anderson, Kathleen E SPK; Mark L. McCune (MLMCCUNE@up.com); Debra L. Schafer (DEBRALSCHAFFER@UP.COM); Steve Cheney (SLCHENEY@up.com); Robert C. Bylsma (rcbylsma@up.com)

Subject: RE: Union Pacific Railroad - Great Salt Lake Causeway - Request for Reconsideration of Utah-Nevada Regulatory Branch Emergency Determination and Submission of Supplemental Information (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Wayne,

I my cursory review of this response, it looks like UP omitted a response to our inquiry of using a steel plate to span the culverts as a temporary measure. This measure was included in UP's 2011 PCN proposal (Page 5 of PCN addendum) as a viable interim measure to avoid closure of the culverts. We sent this inquiry on Friday, Nov 15. Please review that request and provide a response as soon as possible.

Also, I did not see anything in this response pertaining to the effects the closure had on UP's operations in the 1980's when the causeway was closed then and UP used the southern route. Would this not be useful information to help justify UP's claim of the impacts. Is there any information UP can provide regarding the effects to operations then and if it would be commensurate with today's conditions?

Let us know how we're doing. Please complete the survey at:  
<http://per2.nwp.usace.army.mil/survey.html>

Jason Gipson  
Chief, Utah-Nevada Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Ph: 801-295-8380 x 14  
Fax: 801-295-8842

Information on the Regulatory Program.  
<http://www.spk.usace.army.mil/Missions/Regulatory.aspx>

-----Original Message-----

From: Whitlock, Wayne M. [mailto:wayne.whitlock@pillsburylaw.com]  
Sent: Thursday, November 21, 2013 4:28 PM  
To: Eakle, Wade L SPD; Jewell, Michael S SPK; Nepstad, Michael G SPK; Gipson, Jason A SPK  
Cc: Anderson, Kathleen E SPK; Mark L. McCune (MLMCCUNE@up.com); Debra L. Schafer (DEBRALSCHAFFER@UP.COM); Steve Cheney (SLCHENEY@up.com); Robert C. Bylsma (rcbylsma@up.com)  
Subject: [EXTERNAL] Union Pacific Railroad - Great Salt Lake Causeway - Request for Reconsideration of Utah-Nevada Regulatory Branch Emergency Determination and Submission of Supplemental Information

Attached please find Union Pacific Railroad's request for reconsideration of the Regulatory Branch Chief's preliminary determination that emergency procedures could not be used to authorize closure of the East culvert in the Great Salt Lake Causeway.

Included within the attached letter is additional information to address the regulatory criteria for determining an emergency situation exists under the Corps regulations and the South Pacific Division Emergency Procedures. This information supplements and supersedes (to the degree there are inconsistencies) Union Pacific's preliminary submission prepared and sent on November 8 in an effort to respond quickly to the Corps' questions of that date.

We are having hard copies delivered as well, but I am requesting that you acknowledge receipt of this electronic copy.

Please contact me with any questions and I will ensure that we identify the right people to help us respond. My cell phone number is ((650) 867-9774.

Thank you for your attention to this important matter

Wayne Whitlock

Wayne M. Whitlock | Partner  
Pillsbury Winthrop Shaw Pittman LLP  
2550 Hanover Street | Palo Alto, CA 94304-1114

4 Embarcadero Center, 22nd Floor | San Francisco, CA 94111-5998 t 650.233.4528 <tel:650.233.4528> | f 650.233.4500 <tel:650.233.4500> wayne.whitlock@pillsburylaw.com <mailto:wayne.whitlock@pillsburylaw.com> | website bio <http://www.pillsburylaw.com/wayne.whitlock>

Image

Pillsbury Law <http://www.pillsburylaw.com/>

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=====

Classification: UNCLASSIFIED

Caveats: NONE



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Wayne M. Whitlock  
tel 650.233.4528  
wayne.whitlock@pillsburylaw.com

November 27, 2013

Via Electronic Mail

Mr. Jason A. Gipson  
Branch Chief, Regulatory Division  
Kathleen Anderson  
Regulatory Assistant, Nevada-Utah  
Regulatory Branch  
U.S. Army Corps of Engineers,  
Sacramento District  
Nevada-Utah Regulatory Branch  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Mr. Michael S. Jewell  
Chief, Regulatory Division  
Mr. Michael G. Nepstad  
Deputy Chief, Regulatory Division  
U.S. Army Corps of Engineers,  
Sacramento District  
1325 J Street  
Sacramento, CA 95814

Re: Union Pacific Railroad – Great Salt Lake Causeway – East Culvert  
Closure - Response to U.S. Army Corps of Engineers Questions  
Regarding Emergency Determination

Dear Messrs. Jewell, Nepstad and Gipson and Ms. Anderson:

This letter transmits the responses of Union Pacific Railroad (“Union Pacific”) to questions regarding the Army Corps of Engineers (the “Corps”) emergency determination that Kathleen Anderson sent by email to Union Pacific yesterday, November 26, 2013, on behalf of the Corps’ Nevada-Utah Regulatory Branch. Union Pacific believes that some of the questions are not pertinent to the Corps’ emergency determination under the Corps’ regulations and that we have already responded adequately to others. Nevertheless, Union Pacific is providing a response to all questions in an effort to facilitate timely completion of the Corps’ review.

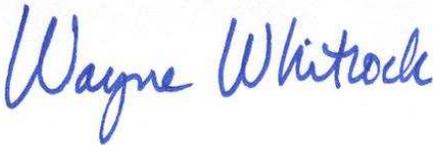
On November 21, Union Pacific submitted its Request for Reconsideration of Regulatory Branch Chief Gipson’s initial determination that the imminent failure of the East culvert is not an “Emergency Situation” under 33 CFR 325.2(e)(4). The November 21 submission documents the loss of property and immediate, unforeseen and significant economic hardship that would result if corrective action requiring a permit is not undertaken immediately. It supplements the record and provides over a

dozen pages of information regarding the hardship the public, Union Pacific, its customers and interstate commerce will suffer if the culvert is not closed. In these circumstances, the potential loss of property and economic hardship are the sole criteria upon which an "Emergency Situation" determination rests under 33 CFR 325.2(e)(4).

Union Pacific has worked diligently to provide requested information to the Nevada-Utah Regulatory Branch since first notifying the Corps of the East culvert's imminent failure on October 21, 2013. We have continued our cooperative efforts through significant, unexpected changes of the Corps' position regarding permit processing. However, Union Pacific remains very concerned about the imminent failure of the East culvert and the safety of rail operations. Union Pacific is also very concerned about the economic hardship that will result if the Great Salt Lake Causeway and the interstate rail line it supports are forced to be shut down and rail traffic rerouted through Salt Lake City. Therefore, we ask that the Corps focus with us on reviewing the information necessary to make the emergency determination and issue the East culvert closure authorization as soon as possible.

We will check again with you on Monday regarding the status of your review. Please feel free to call me over the holiday weekend with any questions. I will be monitoring my voicemail and have provided you with my cell phone number.

Sincerely,



Wayne M. Whitlock  
Counsel for Union Pacific Railroad

Enclosure

cc: Mr. Mark L. McCune  
Ms. Debra L. Schafer  
Mr. Stephen L. Cheney  
Robert C. Bylsma, Esq.

UNION PACIFIC RAILROAD RESPONSE TO ARMY CORPS OF ENGINEERS UTAH-  
NEVADA REGULATORY BRANCH QUESTIONS RELATING TO EMERGENCY  
DETERMINATION

UNION PACIFIC RAILROAD – GREAT SALT LAKE CAUSEWAY  
PROPOSED EMERGENCY CLOSURE OF EAST CULVERT

November 27, 2013

This document sets out the questions raised by Kathleen Anderson’s email of November 26, 2013, followed by Union Pacific Railroad’s (“Union Pacific” or “UPRR”) response. Ms. Anderson’s email included questions on five different subjects, with a number of individual questions asked in each paragraph. Where one or more questions are interrelated, they are grouped and answered together. Questions are answered individually where appropriate.

Please note that UPRR has responded to many of these questions already and UPRR requests that the Army Corps review those responses—particularly the November 21 request for reconsideration and supporting documents—together with its review of UPRR’s response below. This document references but does not repeat those responses, except where helpful for context, and supplements prior submissions where appropriate.

**I. ACOE QUESTIONS REGARDING TEMPORARY STRUCTURAL  
ALTERNATIVES TO CLOSING THE CULVERT**

- A. ACOE QUESTIONS: We are still awaiting a detailed response to our question as to the potential of spanning the east culvert with a steel plate as an interim measure to help increase the life of the east culvert and maintain some flow between the N and S arms. Please provide a written response for our record that supports your decision as to whether or not this alternative would be feasible. If it is not feasible, what has changed since the 2011 PCN proposal?

***UPRR RESPONSE:***

*Section IV of Union Pacific’s November 21 request for reconsideration outlined Union Pacific’s general concerns about the various proposals the Corps’ Regulatory Branch has advanced. As explained therein, Union Pacific believes that it is neither feasible nor safe to attempt to place a steel plate or concrete slab over the top of the existing failing culvert or in the unstable substrate.*

*To review the critical facts, the most recent inspection found that the culvert has severely deteriorated to the point that it is beyond repair and there is a great deal of concern about its stability. Union Pacific and its professional engineers believe there is a significant and imminent risk that the East culvert will fail completely if not closed. Divers cannot safely reenter the culvert for any purpose, and surface inspections have shown that surface material around the culvert is falling into it.*

*Furthermore, in light of the ongoing failure of the culvert, it is unclear just how much, if any, the remaining culvert is functioning in terms of maintaining the contribution to flow and salt transfer that was occurring when the culverts were open and flowing. Accordingly, circumstances have changed significantly since the March 2011 PCN was submitted—at a time when the culvert was*

*relatively stable and was functioning in terms of water flow and salt transfer. Union Pacific no longer believes that alternatives considered then are feasible or that there is any likely short term aquatic benefit of pursuing them in light of the failing condition of the culvert.*

*Regarding the steel plate question, UPRR has not suggested nor entertained a temporary repair alternative using a steel plate. (The 2011 PCN mentioned a "concrete slab or deck.") A steel plate of a thickness that could be reasonably handled and utilized for this purpose could span only a few feet under railroad loading without excessive stress and deflection, and even less with any fill material above it. In contrast, the potential slip surfaces from a culvert failure, i.e., the surfaces that would be displaced by failure, would extend over 100 feet longitudinally at track level. The use of a steel plate or any other similar structural alternative would simply not extend far enough to cover potential slip surfaces without excessive instability.*

*All of the alternatives listed in the 2011 PCN were considered for stable culverts with intact structural integrity. This is no longer the case with the East culvert. It has completely separated into two pieces, which are offset from each other. The culvert is unstable, and failure would likely undermine fill material both above it and alongside it. There is nothing stable on which to support a plate, slab or deck, a necessity for placing something like this between the tracks and the culvert. It is simply not practical to construct anything stable on this unstable substrate.*

*Under the circumstances as they have developed here, Union Pacific strongly believes that there is no feasible alternative to closing the culvert as soon as possible. Further, Union Pacific is increasingly concerned that further delay of culvert closure would be counterproductive and would expose railroad operations to additional undue risk.*

- B. ACOE SUBQUESTIONS: Also, in removing the ballast from above the culvert, it may necessary to buttress the walls using a structure similar to a trench wall support system. Would this type of structure help stabilize the walls of the ballast above the culvert and alleviate stability concerns?

***UPRR RESPONSE:***

*We are uncertain as to the meaning of this question. Removing the ballast above the culvert would render the causeway inoperable for railroad transportation. There is approximately 15 feet of fill and ballast between the top of the failed box culvert and the track.*

*Perhaps the reference is to a temporary excavation as part of one of the impractical structural alternatives referenced by the Corps. Assuming this is the case, "buttressing" the culvert walls by such a method is also impractical and of dubious benefit. Shoring systems for trenching work, such as Trench Boxes, are generally used for shallow excavations like utility installations and always use struts of some kind to brace the two opposing walls. Even if the causeway were excavated to the top of the culvert, a 25-ft deep wall would be required and would only partially relieve the culvert wall of soil pressure. And the presence of the culvert precludes the use of struts. So, walls would have to be laterally supported by some type of tie-back requiring a specialty geotechnical contractor. These activities would necessitate shutdown of rail operations for at least several weeks. The result would be a failed culvert surrounded by extensive new*

*infrastructure, at least partially dependent on the culvert for its support, in an unstable and highly corrosive environment.*

## **II. ACOE QUESTIONS REGARDING OTHER INTERIM MEASURES AND SHORT TERM IMPACTS OF CULVERT CLOSURE**

- A. ACOE QUESTION: Also, please provide any further information to document why you believe other interim measures are not practical - i.e., pumping or some other method to maintain some connectivity between the arms.

### ***UPRR RESPONSE:***

*UPRR has responded to these questions previously in our responses of November 1 and 8 and documents referenced therein. Our prior submissions discussed other methods as well as pumping.*

*Union Pacific continues to believe that a pumping project would be infeasible and would provide very limited benefit.*

*First, as discussed in our November 21 submission, connectivity between the two parts of the Great Salt Lake will not be discontinued by closure of the culvert as implied by the question. In fact, water flow and salt transfer continues through the causeway itself and through the existing Rambo Bridge. As discussed in Response II.B below the actual contribution of the culverts to South Arm salinity is relatively small in relation to that of the causeway, particularly under current lake levels. Given the volume of salt transfer through the causeway, any contribution by pumping would be small in relation to those volumes.*

*Second, with regard to interim pumping of brine from North to South, it is not clear at this point in the modeling and impacts analysis being conducted pursuant to Union Pacific's September 25 letter to the Army Corps of Engineers how much brine was being transferred North to South and South to North through the East and West culverts. While USGS periodic spot estimates of these flows are available, they are inconsistent and show no apparent correlation to lake elevations or salinities. Even if the lower limits of USGS measured flows were used to set pumping targets, our calculations of pumping capacity even for a system as large as that of Great Salt Lake Minerals is that it could at best pump only about one third of the brine required to replace net North to South salt transfer through the culverts. Therefore, such a pumping station's best case annual contribution to the salinity of the South Arm would be only a few hundredths of a percent increase.*

*Finally, while it might be technically possible to construct a pumping station similar to the existing Great Salt Lake Mineral facility, it would be a significant project in its own right. Pumps would not be readily available and would have to be custom built. Power would have to come either from a new 3-phase electrical line or from a generator (more likely multiple generators in parallel). Estimated lead time for pumps and power equipment (procurement only) is six months minimum. Furthermore, Great Salt Lake Minerals' experience indicates that pumping during the*

winter months is impractical. Therefore, any small contribution to salt transfer would be further reduced by a long delay (perhaps up to a year) before a pump station could actually go on line.

B. ACOE QUESTION: “Further, why does UP believe the loss of culvert flows for up to 2 years would not be significant?”

**UPRR RESPONSE:**

*Union Pacific’s intent is not to minimize the importance of replacing the aquatic functions that the culverts serve; that is the basis for UP’s proposal to replace the culverts with the 180-ft bridge. However, it is important not to exaggerate the overall change in bi-directional flows and salt transfer that would occur if during the time the culverts are closed and before the compensatory mitigation bridge is constructed. Of course, the modeling and impacts analyses that are underway will help identify more specifically the contribution that the culverts made to the water and salt balance between the two parts of the Great Salt Lake before the culverts were closed. However, our analyses so far indicate the following:*

*UPRR has completed the first of its three-step modeling plan using the USGS Water and Salt Balance computer model. The first step was to rerun the existing model calibrated for the period from 1987 through 1998 (12 years). This step included modeling a hypothetical scenario with two unobstructed culverts as they existed in November 2012, using 1987-1998 hydrology. In fact, during that period, the culverts were plugged with rubble and ineffective for most of this time. At the end of the modeling period (1998), the simulation produced a South Arm salinity of 11.3%. The average South Arm salinity based on actual measurements was 8.9%, a difference of 2.4%. This suggests that the average effect of the two unobstructed culverts on South Arm salinity was limited to about 0.2% per year. In other words, during extended periods of high water levels, such as existed during the time period of 1987-1998, flows through the unobstructed culverts are estimated to contribute only about a 0.2% increase in South Arm salinity annually.*

*Water and salt balance modeling has not yet been completed for the period from 1998 to 2012 (the second step of UPRR’s plan). However, salt transfers for the period from spring 2004 to spring 2009—a period of lower but relatively stable water elevations—can be calculated and evaluated using three sets of interrelated data from that period:*

- *Sampled North and South Arm salinities;*
- *Measured bidirectional flows through the culverts;*
- *Total salt load in the South Arm.*

*This period (spring 2004 to spring 2009) is the only one on record that is relevant for the purpose of this evaluation because it begins when UPRR removed all rubble from the culverts and constructed protective berms and ends with the latest known computation of salt load in the North and South Arms (Kidd M. Waddell, “The Potential Effects of the Proposed Great Salt Lake Minerals Project on the Water and Salt Balance of Great Salt Lake, Utah,” 2010).*

*In spring 2009, total salt load in the South Arm was approximately 1.7 billion tons. Measured average South Arm salinity was 15.5%. Correlating the salinities and the bidirectional flows through the culverts, the net salt transfer through the two culverts (over a 5-year period ending*

spring 2009) was about 150 million tons north to south. Had the culverts been closed during that time, the estimated salt load in the South Arm in spring 2009 would therefore be 1.55 billion tons, or a salinity of 14.2%. This suggests that the average effect of the two culverts on South Arm salinity was limited to about 0.26% per year. In other words, during low water levels, such as existed at that time, flows through the unobstructed culverts are estimated to contribute about a 0.26% increase in South Arm salinity annually (although this might be partially offset by increased salt transfers through the causeway fill due to increased salinity differential). Lake elevations during this 2004 to 2009 period were similar to the current elevation.

Therefore, using this data, which is currently the best available until the completion of modeling, the estimated impact on South Arm salinity due to closure of both culverts would be expected to be on the order of 0.2% to 0.25% per year. During the 2004-2009 time period, South Arm salinity varied 4.3% (between 11.9% and 16.2%), an order of magnitude greater than the estimated annual contribution of the culverts, confirming that other factors affect salinity much more than the culverts.

- C. ACOE QUESTION: Why would pumping not be a viable option? Why would it not be a reasonable assumption to replicate the lower limits of the USGS measured north/south flows?

**UPRR RESPONSE:**

See Response to Question II.A above regarding the viability of pumping and using the USGS measured flows to set pumping targets.

**III. ACOE QUESTIONS REGARDING IMPACTS OF CAUSEWAY SHUTDOWN ON UPRR OPERATIONS (Grouped together for response):**

If it becomes necessary to use the Shafter route, what would be the effect in terms of hours of operation to that route? Jason understood the 16 Causeway trains would become 24-26 trains due to train length limitations on the Shafter route, making 40 in total when added to the Shafter average 16 daily trains. Do the 16 normal Shafter trains operate at varying hours or mostly in the day time? Would the majority of train traffic operate during primarily daytime hours or night time - or would UPRR need to basically use the Shafter route around the clock to handle and appropriately space 40 trains on a daily basis? Are we talking a train every half hour? How long does it take the average train to clear a grade crossing?

**UPRR RESPONSE:**

The following discussion further supplements the information provided in Union Pacific's November 21 submission.

- As discussed in Union Pacific's November 21 letter, Section II.C., shifting an average of 16 trains per day to the Shafter route would require breaking those trains up into 22-24

*trains per day to accommodate the 5700 ft. limit on train lengths for this route. For a portion of the Shafter route, from just west of the downtown Salt Lake City area out to the Magna area, this would increase the average total trains per day to 38-40, including at-grade crossings at 800 West, 900 West, and 1000 West. Significantly, some of the greatest impacts on Salt Lake City traffic would be at three other at-grade locations in downtown Salt Lake City (see footnote 16 in the November 21 submission; these at-grade crossings are located at 600 West, 300 North, and 400 North), where the current average number of trains per day is 28. The increase in train traffic at those three downtown Salt Lake City at-grade crossings (as well as all the way north to Ogden) would result in a total of 50-52 trains per day.*

- *Trains on the Shafter route operate on a 24-hour/day 7 days/week schedule and that would necessarily continue if the Causeway were shut down and its traffic shifted on to the Shafter Route. As noted in Union Pacific's November 21 letter, all components of the Shafter route would be loaded above fluid capacity, removing any option other than running trains as frequently as the system will allow. The average time between trains would be 36-38 minutes on the western portion of the downtown area, and 28-29 minutes in the downtown area itself and north to Ogden.*
- *For the six at-grade crossings in the downtown Salt Lake City area, maximum allowable train speed is 40 mph due to curvature. In reality, most trains transit the area at 20 mph or less and, in congested circumstances, could end up stopped in one or more crossings. Assuming a constant 20 mph, a crossing would be blocked for about 4 minutes per train. This could easily extend to 10 minutes or more due to congestion.*

#### **IV. ACOE QUESTIONS REGARDING DIRECT COSTS OF CAUSEWAY SHUTDOWN**

Also, there was not a response to our question if the \$258,000 per day associated with moving Causeway trains to the Shafter route could/would be mitigated by passing some or all of this cost on to your customers, similar to a fuel surcharge that might be used to offset rising fuel costs? Would this amount in fact be a cost UP would incur directly? Would you have recourse to recoup some of the additional costs? (grouped together)

#### ***UPRR RESPONSE:***

*As described in the Corps' regulations, the test of emergency conditions is associated with "economic hardship." 33 CFR 325.2(e)(4). Union Pacific's submittal described economic hardship that would arise from a Corps refusal to utilize emergency procedures, including hardships to the public, interstate commerce, Union Pacific's customers and Union Pacific itself.*

*In terms of Union Pacific's estimate of \$258,000/day discussed in the November 21 submission, that estimate was only for the direct costs of shutting down the Causeway and rerouting trains and freight over the Shafter route as defined in the November 21 request for reconsideration. As to passing on costs to customers, the freight transportation business is highly competitive and prices are controlled by market conditions; raising prices to recoup the costs of rerouting trains*

*(as described in our request for recirculation), even if it were possible under existing contracts, would risk loss or reduction of business to competitors that do not incur these costs.*

*Furthermore, to the extent that Union Pacific's customer costs would increase as a result of rerouting of trains, such increased costs would still constitute an "economic hardship" under the Corps' regulations at 33 CFR 325.2(e)(4).*

**V. ACOE ADDITIONAL QUESTIONS REGARDING SHORT TERM IMPACTS OF CAUSEWAY SHUTDOWN**

Also we want to clarify that the 0.2% average salinity change per year that Karen and Mark spoke about relates to the percentage of current salinity, i.e., if the south arm salinity were 8% this year, closure of both culverts for 2014 with precipitation similar to this year, the model would predict that south arm salinity would decrease from 8% to 7.8%?

***UPRR RESPONSE:***

*In principle, this is a correct interpretation, but the 0.2% contribution was based on modeling at higher lake elevations. Furthermore, it is doubtful that there has ever been a time when salinity has been the same in two successive years. As noted in previous discussion, other factors account for much greater swings in salinity.*

*Additionally, we note that, at current lake levels, South Arm salinity is likely in the 14 to 15% range, or very near causeway-era highs. A minor (on the order of 0.5%), temporary, reduction in salinity, as estimated to result here, is clearly more tolerable under these conditions than if current South Arm salinity were lower.*

## Nichols, Karen

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**From:** Whitlock, Wayne M. <wayne.whitlock@pillsburylaw.com>  
**Sent:** Monday, December 02, 2013 3:10 PM  
**To:** Michael G Nepstad (Michael.G.Nepstad@usace.army.mil)  
**Cc:** Michael S. Jewell (michael.s.jewell@usace.army.mil); Mark L. McCune (MLMCCUNE@up.com); Debra L. Schafer (DEBRALSCHAFFER@UP.COM); Robert C. Bylsma (rcbylsma@up.com)  
**Subject:** Union Pacific Railroad - Great Salt Lake Causeway -- East Culvert condition

Mike

Thanks for your status report earlier today. In our call you asked that we provide a brief summary of the nature of the emergency condition of the East Culvert in the context of Union Pacific's current rail traffic on the causeway.

Mark McCune, Union Pacific's Director of Structures Design, provided me with this email to forward on to you.

As I explained on the phone, the details of the emergency condition were provided in Union Pacific's October 21 notification of emergency conditions. Jacobs Associates report detailing the deterioration of the culvert since the last inspection and its current condition was attached to Mark McCune's letter to Jason Gipson.

On November 8 Jason Gipson denied the use of emergency procedures based on his determination that an alternative to the Great Salt Lake Causeway route was available. However, in all the correspondence leading up to that denial, there was never any indication that Mr. Gipson was questioning the opinion of Union Pacific's and Jacobs Associates that the culvert is at imminent risk of failure. In fact, the Corps repeatedly acknowledged the necessity of closing the culvert but found that there would not be sufficient hardship or property loss to justify the use of emergency procedures under the Corps regulations. Union Pacific's November 21 submission set forth the loss of property and economic hardship that would result if the Causeway is shutdown and it becomes necessary to use the alternative route. Those impacts are set out starting at page 12 of the November 21 submission (attached)

Most recently, on November 25, Union Pacific responded to a number of questions from Jason Gipson, including the feasibility of interim alternatives to closing the culvert. Union Pacific's response again explained the highly deteriorated condition of the culverts as one of the principal reasons that such alternatives would not be feasible.

We understand you are discussing these issues this afternoon. I would be happy to arrange further discussions with Mark McCune if you would find them helpful.

Thank you  
Wayne

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**From:** Mark L. McCune [mailto:MLMCCUNE@up.com]  
**Sent:** Monday, December 02, 2013 2:00 PM  
**To:** Whitlock, Wayne M.  
**Cc:** Robert C. Bylsma; Debra L. Schafer; Stephen L. Cheney; John J. Hovanec; Todd A. Wimmer  
**Subject:** RE: GSL Culvert condition

Wayne,

Per your request, here is my assessment of the emergency status of the East Culvert in the Great Salt Lake Causeway:

Union Pacific has requested that the Army Corps of Engineers approve emergency closure (filling) of the East Culvert in the Great Salt Lake Causeway. On October 21, Union Pacific provided an engineering report from Jacobs Associates to explain why Union Pacific has declared an emergency condition based upon the imminent failure (collapse) of the East Culvert. The Jacobs Associates Divers/Engineers report lays out the very poor condition of the East Culvert. The culvert has separated into two sections, with the break under the track. The diver, who has been in the culvert multiple times over the last few years, has reported that it is unsafe for him to reenter, as large blocks of loose concrete could fall at any time. The diver further reported that fill material has spilled into the culvert through the cracks in the sidewall. We have observed sinkholes develop on the surface (which we have then filled), confirming this reported condition. The culvert structure is so unstable that it is beyond repair and, as explained in detail in Union Pacific's submission to Jason Gipson last week, it is too unstable to support any kind of interim repair, such as interim placement of a steel or concrete plate over the top of the culvert instead of closing (filling) the culvert.

The Corps denied Union Pacific's request for emergency authorization on November 8, two days before the culvert was scheduled for closure. Union Pacific is running trains over the causeway, but that traffic is subject to a slow order, and is inspected regularly (at least daily) in order to minimize the risk that the culvert will collapse under traffic. Further, while I cannot predict the timing of a complete failure and collapse, it is my professional opinion that this will occur at some time in the near future. Our November 21 request for reconsideration summarized the consequences to the Salt Lake/Ogden public, Union Pacific's customers and Union Pacific itself of a causeway shutdown resulting from a culvert collapse or a Corps rejection of the use of emergency procedures to authorize culvert closure.

As a professional engineer, I have recommended closure (filling) of the culvert as soon as possible, and, given my knowledge of the culvert's condition, feel that this is the only action I can recommend consistent with my professional ethics. In addition to the recommendation of Jacobs Associates, all Union Pacific's professional engineers who have reviewed this situation concur with this recommendation.

Mark L. McCune, PE  
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