

**PROGRAMMATIC AGREEMENT  
AMONG  
THE NATIONAL PARK SERVICE - LAKE MEAD NATIONAL RECREATION AREA  
AND  
THE NEVADA STATE HISTORIC PRESERVATION OFFICER  
AND  
THE ARIZONA STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
IMPLEMENTATION OF THE LOW WATER PLAN  
GENERAL MANAGEMENT PLAN AMENDMENT**

**WHEREAS**, the National Park Service (NPS) has completed a Low Water Plan Environmental Assessment (the plan) as an amendment to the General Management Plan for Lake Mead National Recreation Area. The purpose of the plan is to continue to provide recreational facilities and services at Hemenway Harbor, Callville Bay, Echo Bay, and Temple Bar at or in close proximity to existing areas to the maximum extent physically and financially feasible as lake levels change. Visitor access may be maintained, even if some facilities and services change; and

**WHEREAS**, the Superintendent of the Lake Mead National Recreation Area is the responsible NPS agency official for the plan. The Superintendent has determined that the implementation of this plan is an undertaking subject to review under 54 USC § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA), and its implementing regulations, 36 CFR § 800; and

**WHEREAS**, the NPS has determined that effects on historic properties cannot be fully evaluated prior to approval of the plan, and has developed this Programmatic Agreement (PA) establishing a process to assess and resolve adverse effects in accordance with 36 CFR § 800.14(b)(1)(ii); and

**WHEREAS**, the NPS has defined the plan's Area of Potential Effects, which includes the developed areas of Hemenway Harbor, Callville Bay, Echo Bay and Temple Bar as defined by Alternative A of the plan (see map in Attachment A); and

**WHEREAS**, the NPS considered alternatives and provided opportunities for public involvement in the context of complying with the National Environmental Policy Act of 1969 (NEPA) as provided for in 36 CFR § 800.8; and

**WHEREAS**, the NPS initiated Native American consultation for the plan which included sending letters at the beginning of the planning process to those Tribes that may attach religious or cultural importance to affected cultural resources and Traditional Cultural Properties pursuant to 36 CFR § 800.2(c)(2)(ii)(A-F). The Tribes consulted included: Kaibab Paiute Tribe, Las Vegas Paiute Tribe, Moapa Band of Paiute Indians, Shivwits Band of Paiute, Paiute Indian Tribe of Utah, Chemehuevi Indian Tribe, Colorado River Indian Tribe, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Gila River Indian Community, Havasupai Tribe, Hopi Tribe, Hualapai Tribe, Salt River Pima-Maricopa Indian Community, Yavapai-Prescott Indian Tribe, Ak-Chin Indian Community, Navajo Nation, and Pueblo of Zuni. The NPS will continue to consult with the Tribes and has invited them to sign this PA as

concurring parties; and

**WHEREAS**, the NPS has consulted with the Nevada State Historic Preservation Officer (NVSHPO) and the Arizona State Historic Preservation Officer (AZSHPO) pursuant to Section 106 of the NHPA and 36 CFR § 800.14(b)(2); and

**WHEREAS**, the SHPO is authorized to enter this PA in order to fulfill its role of advising and assisting Federal agencies in carrying out Section 106 responsibilities pursuant to Section 101 and 106 of the NHPA, at § 800.2(c)(1)(i) and § 800.6(b), and the NVSHPO and AZSHPO are Signatories to this PA; and

**WHEREAS**, the NPS has notified the Advisory Council on Historic Preservation (ACHP) of its undertaking in accordance with 36 CFR § 800.6(a)(1)(C), and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

**WHEREAS**, unless defined differently in this PA, all terms are used in accordance with 36 CFR § 800.16; and

**NOW, THEREFORE**, the NPS, the AZSHPO, and the NVSHPO agree that the plan shall be implemented in accordance with the following stipulations to take into account the effect of the plan on historic properties in compliance with Section 106 of the NHPA.

## **STIPULATIONS**

The NPS will ensure that the following stipulations are carried out:

### **I. Professional Qualifications**

All historic preservation work, including reviews of modifications under Stipulation V below, carried out pursuant to this PA shall be carried out by or under the supervision of a person, or persons, meeting at a minimum the Secretary of Interior's Professional Qualifications Standards (48FR 44738-44739) appropriate to the cultural resources anticipated, evaluated or mitigated.

### **II. Identification and Evaluation of Historic Properties**

- A. Area of Potential Effects (APE). The APE for the project considers direct (physical), indirect (visual, audible, atmospheric), and cumulative effects for all project features. The project APE is depicted on the map in Attachment A.
- B. The NPS shall ensure that all areas directly or indirectly affected by the project, are surveyed for cultural resources in accordance with Director's Order No. 28 and current standards for intensive pedestrian survey and cultural resource recording, as appropriate. The NPS shall consult with the appropriate SHPO on survey methodology prior to commencement of any archeological fieldwork. Portions of the project that were surveyed over 10 years to the effective date of this PA will be reviewed to ensure they

meet current methods of site for site recording and survey or need to be resurveyed using current standards.

- C. The NPS will prepare a cultural resources report that describes the cultural resources survey effort as a whole, the survey methods used, provides the results of the literature review and pedestrian surveys, and includes any previous NPS determinations of National Register of Historic Places (NRHP) eligibility, or if not previously completed, new determinations of eligibility, are made in accordance with 36 CFR § 80.4(c) for all cultural resources discovered or revisited.
- D. The NPS shall provide cultural resources survey reports, site documentation, and NRHP evaluations to the appropriate SHPO and concurring parties for review and comment. The appropriate SHPO and concurring parties shall have thirty (30) calendar days from receipt to provide comments to the NPS. However, NPS shall make a good faith effort to obtain a response before proceeding to the next step in the process. If the appropriate SHPO or concurring parties do not provide comments, the NPS may move forward to the next step in the design process or implement the plans, as appropriate.
- E. The NPS shall provide the appropriate SHPO with all comments received from the concurring parties on the documents in Stipulation II.D above within ten (10) calendar days of receipt.
- F. If the appropriate SHPO and concurring parties provide comments within thirty (30) calendar days from receipt, the NPS shall provide the SHPO and concurring parties with a written response including, as necessary, an explanation as to how the submission will be revised to address the comments within thirty (30) calendar days of receiving comments.

### **III. Design Review for the Low Water Plan**

- A. The NPS shall submit a description of the proposed undertaking, which will consist of any proposed modifications to the facilities at Hemenway Harbor, Callville Bay, Echo Bay, and Temple Bar, and a map showing the APE. An assessment of effects to historic properties will also be included in the submittal. All draft design development documents for projects within the APE (e.g. 30% plans, site plans, renderings, sections, elevations, specifications, photographs, narrative scopes of work) shall be submitted to the appropriate SHPO for review and comment.
- B. The SHPO shall have thirty (30) calendar days from the date of receipt to provide comments to the NPS.
- C. The NPS shall make a good faith effort to obtain a response before proceeding to the next step in the process. If the SHPO does not provide comments, the NPS may move forward to the next step in the design process or implement the plans, as appropriate.
- D. If the SHPO provides comments within the specified time period, the NPS shall provide the SHPO with a written response including, as necessary, an explanation as to how the design will be revised to address the comments within thirty (30) calendar days of

receiving comments from the appropriate SHPO.

#### **IV. Assessment of Effects and Resolution of Adverse Effects**

- A. The NPS, in consultation with the appropriate SHPO, shall seek to avoid adverse effects to historic properties during the design of project activities where feasible and prudent. The NPS may achieve this through engineering redesign, alternate placement of necessary structures, or shifting of alignments to avoid historic properties.
- B. If the NPS finds that the project activities will not adversely affect historic properties within the APE, NPS shall consult with the appropriate SHPO and the concurring parties regarding their assessments of effects for project activities at the 70% design phase. The SHPO and concurring parties will have thirty (30) calendar days from receipt to review and comment on the NPS findings. The NPS shall make a good faith effort to obtain a response before proceeding to the next step in the process. If the SHPO and concurring parties fail to respond to NPS within thirty (30) calendar days of receipt of an adequately documented submission, NPS may finalize the documentation and initiate the project.
- C. If the NPS, in consultation with the appropriate SHPO, finds that project activities will adversely affect historic properties and cannot be resolved through avoidance or design changes, then the NPS shall prepare a Historic Properties Treatment Plan (HPTP) as part of a Memorandum of Agreement to detail the appropriate mitigation to address effects as determined for the project activity.
- D. Historic Properties Treatment Plan
  - a. The NPS will develop an HPTP to address adverse effects of the project to historic properties. The HPTP will describe the environmental setting, include a research design, research questions and relevant data requirements, identify the nature of the effects to which each historic property will be subjected and the proposed mitigation to minimize or mitigate adverse effects.
  - b. Monitoring and inadvertent discoveries plans will be developed and included as part of the HPTP. The HPTP will identify those areas that will be monitored. Cultural resources discovered during project activities will be treated in accordance with the inadvertent discoveries plan.
- E. The NPS shall submit a draft HPTP to the appropriate SHPO and concurring parties, as appropriate, for review and comment. The SHPO will have thirty (30) calendar days from receipt to review and comment on the HPTP. If the SHPO fails to respond to the NPS within thirty (30) calendar days of receipt of an adequately documented submission, the NPS may initiate the fieldwork portion of the HPTP.
- F. The NPS shall submit the draft final HPTP, revised as necessary to address SHPO comments, to the appropriate SHPO for review and comment. The SHPO will have thirty (30) calendar days from receipt to provide comments to the NPS. If the SHPO does not submit comments within thirty (30) calendar days of receipt, the NPS may

finalize the HPTP.

- G. The NPS shall submit a draft report of the results of any mitigation effort to the appropriate SHPO and concurring parties as appropriate. The SHPO will have thirty (30) calendar days from receipt to review and comment on the draft report. If the SHPO fails to respond to the NPS within thirty (30) calendar days of receipt of an adequately documented submission, the NPS may finalize the document.
- H. The NPS will edit the draft report to address any SHPO and/or concurring party comments or concerns.
- I. The NPS shall submit the draft final report, revised as necessary to address SHPO comments, to the appropriate SHPO for review and comment. The SHPO will have thirty (30) calendar days from receipt to provide comments to the NPS. If the SHPO does not submit comments within thirty (30) calendar days of receipt, the NPS may finalize the report.

## **V. Post-Review Exempted Modifications**

In the event that minor modifications in design or materials are required after the design review process outlined in Stipulation III above has been completed and/or after construction has begun, such modifications may occur provided that the changes are approved by NPS cultural resources staff. Such modifications must be consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and must not result in a loss of integrity or changes to character-defining features. The NPS will document such minor modifications in an internal memorandum to the files that will be made available for inspection by the appropriate SHPO. The NPS shall provide a summary memorandum listing the modifications reviewed during the year to the appropriate SHPO in the annual summary report required under Stipulation IX.

## **VI. Standards for Survey and Curation**

All records, photographs, maps, field notes, artifacts, and other material collected or developed for any mitigation activities will be curated in a NPS facility in the appropriate state that meets the standards set forth in 36 CFR § 79.

## **VII. Inadvertent Resource Discoveries or Unanticipated Effects**

If during construction previously unknown archeological resources are discovered or unanticipated effect to historic properties are identified, all work in the immediate vicinity of the discovery or historic property would be halted and the procedures of 36 CFR § 800.13(c) followed. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, the regulations implementing the Native American Graves Protection and Repatriation Act (43 CFR §10) (NAGPRA) would be followed under an NPS NAGPRA Plan of Action.

## **VIII. Dispute Resolution**

Should any signatory or concurring party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, the NPS shall consult with such party to resolve the objection. If the NPS determines that such objection cannot be resolved, the NPS will:

- A. Forward all documentation relevant to the dispute, including the NPS's proposed resolution, to the ACHP. The ACHP shall provide the NPS with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the NPS shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. The NPS will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, the NPS may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the NPS shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the PA, and provide them and the ACHP with a copy of such written response.
- C. The NPS' responsibility to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

## **IX. Annual Report and Meeting**

Each year, following the execution of this PA until it expires or is terminated, the NPS shall provide the signatories and concurring parties with a summary report detailing work carried out pursuant to its terms. Such report shall include any proposed scheduling changes, any problems encountered, and any disputes or objections received in the NPS's efforts to carry out the terms of this PA. A meeting to review these undertakings will be held if so requested by the signatories.

## **X. Amendment**

The PA may be modified by amendment at any time by mutual concurrence of all signatories. Amendment of the PA as necessary shall be accomplished in the same manner as the original agreement. Amendments will be in writing and approved by the original signatories or their designated official and will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

## **XI. Emergency Situation**

Should an emergency situation occur which represents an imminent threat to public health or safety, or creates a hazardous condition, the NPS shall immediately notify the SHPO and the ACHP of the condition which has initiated the situation and the measures taken to respond to the emergency or hazardous condition. Should the SHPO or the ACHP desire to provide technical assistance to the NPS, they shall submit comments within seven (7) calendar days

from notification, if the nature of the emergency or hazardous condition allows for such coordination.

## **XII. Termination of Agreement**

If any signatory to this PA determines that its terms will not or cannot be carried out, that signatory shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VIII above. Following consultation, any signatory may terminate the PA by providing thirty (30) calendar days written notice to the other signatories. In the event of termination by a signatory, the NPS will request the comments of the ACHP, in accordance with 36 CFR §800.7(a).

In the event of termination and, to the extent feasible prior to work continuing on the plan, the NPS must either (a) execute a new agreement pursuant to 36 CFR § 800.14(b)(3), or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7, or (c) comply with 36 CFR §§ 800.1 et. seq. with regard to individual actions covered by this PA. The NPS shall notify the signatories as to the course of action it will pursue.

## **XIII. Term**

This PA shall become effective upon signature of the last signatory and will remain in effect for ten (10) years after the effective date, or when the plan is complete and all of the above stipulations are fulfilled, whichever occurs first. The signatories may agree in writing to an extension for carrying out its terms prior to its expiration. The agreement and any amendments shall be binding upon the parties, their successors, and assigns.

## **XIV. Anti-deficiency Act**

Any requirement for the payment or obligation of funds by the Government established by the terms of this PA shall be subject to availability of appropriated funds. No provision in this PA shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 USC Section 1341. If the availability of funds and compliance with the Anti-Deficiency Act impair the NPS' ability to perform under this PA, then the NPS shall consult in accordance with Stipulation XI of this PA.

## **XV. Counterpart Signatures**

This PA may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument. The NPS shall distribute copies of the entire PA to all signatories and concurring parties once the agreement is fully executed.

**EXECUTION** of this PA by the NPS, AZSHPO, and NVSHPO, and implementation of its terms, evidences that the NPS has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

**PROGRAMMATIC AGREEMENT  
LAKE MEAD NATIONAL RECREATION AREA  
IMPLEMENTATION OF THE LOW WATER PLAN  
GENERAL MANAGEMENT PLAN AMENDMENT**

**SIGNATORIES**

**Lake Mead National Recreation Area**

Todd J. Suess Date: 2-7-19  
Todd Suess  
Acting Superintendent, Lake Mead National Recreation Area

**Nevada State Historic Preservation Office**

Rebecca L. Palmer Date: 02/19/19  
Rebecca L. Palmer  
Nevada State Historic Preservation Officer

**Arizona State Historic Preservation Office**

\_\_\_\_\_  
Kathryn Leonard  
Arizona State Historic Preservation Officer

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



**PROGRAMMATIC AGREEMENT  
LAKE MEAD NATIONAL RECREATION AREA  
IMPLEMENTATION OF THE LOW WATER PLAN  
GENERAL MANAGEMENT PLAN AMENDMENT**

**SIGNATORIES**

**Lake Mead National Recreation Area**



Date: 2-7-19

Todd Suess

Acting Superintendent, Lake Mead National Recreation Area

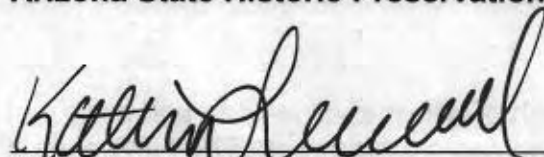
**Nevada State Historic Preservation Office**

\_\_\_\_\_  
Rebecca L. Palmer

Nevada State Historic Preservation Officer

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

**Arizona State Historic Preservation Office**



Kathryn Leonard

Arizona State Historic Preservation Officer

Date: 27 Feb 2019

**PROGRAMMATIC AGREEMENT  
LAKE MEAD NATIONAL RECREATION AREA  
IMPLEMENTATION OF THE LOW WATER PLAN  
GENERAL MANAGEMENT PLAN AMENDMENT**

**CONCURRING PARTIES:**

Ak-Chin Indian Community

\_\_\_\_\_  
Robert Miguel, Chairman

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

Chemehuevi Indian Tribe

\_\_\_\_\_  
Charles Woods, Chairman

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

Colorado River Indian Tribes

\_\_\_\_\_  
Dennis Patch, Chairman

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

Fort Mojave Indian Tribe

\_\_\_\_\_  
Timothy Williams, Chairman

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

Fort Yuma-Quechan Indian Tribe

\_\_\_\_\_  
Michael Jackson, Chairman

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

Gila River Indian Community

\_\_\_\_\_  
Stephen Lewis, Governor

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

**PROGRAMMATIC AGREEMENT  
LAKE MEAD NATIONAL RECREATION AREA  
IMPLEMENTATION OF THE LOW WATER PLAN  
GENERAL MANAGEMENT PLAN AMENDMENT**

Havasupai Tribe

\_\_\_\_\_ Date: \_\_\_\_\_  
Don E. Watahomigie, Chairman

Hopi Tribe

\_\_\_\_\_ Date \_\_\_\_\_  
Hermon Honanie, Chairman

Hualapai Tribe

\_\_\_\_\_ Date \_\_\_\_\_  
Damon Clarke, Chairperson

Kaibab Paiute Tribe

\_\_\_\_\_ Date \_\_\_\_\_  
Rolando Maldonado, Chairman

Las Vegas Paiute Tribe

\_\_\_\_\_ Date \_\_\_\_\_  
Benny Tso, Chairperson

Moapa Band of Paiute Indians

\_\_\_\_\_ Date \_\_\_\_\_  
Darren Deboda, Chairperson

**PROGRAMMATIC AGREEMENT  
LAKE MEAD NATIONAL RECREATION AREA  
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GENERAL MANAGEMENT PLAN AMENDMENT**

Paiute Indian Tribe of Utah

\_\_\_\_\_ Date: \_\_\_\_\_  
Tammy Slayton, Chairperson

Pueblo of Zuni

\_\_\_\_\_ Date: \_\_\_\_\_  
Arlen Quetawki, Sr., Governor

Salt River Pima-Maricopa Indian Community

\_\_\_\_\_ Date: \_\_\_\_\_  
Delbert Ray, Governor

Shivwits Band of Paiutes

\_\_\_\_\_ Date: \_\_\_\_\_  
Patrick Charles, Chairperson

Yavapai-Prescott Indian Tribe

\_\_\_\_\_ Date: \_\_\_\_\_  
Ernest Jones, Sr., President

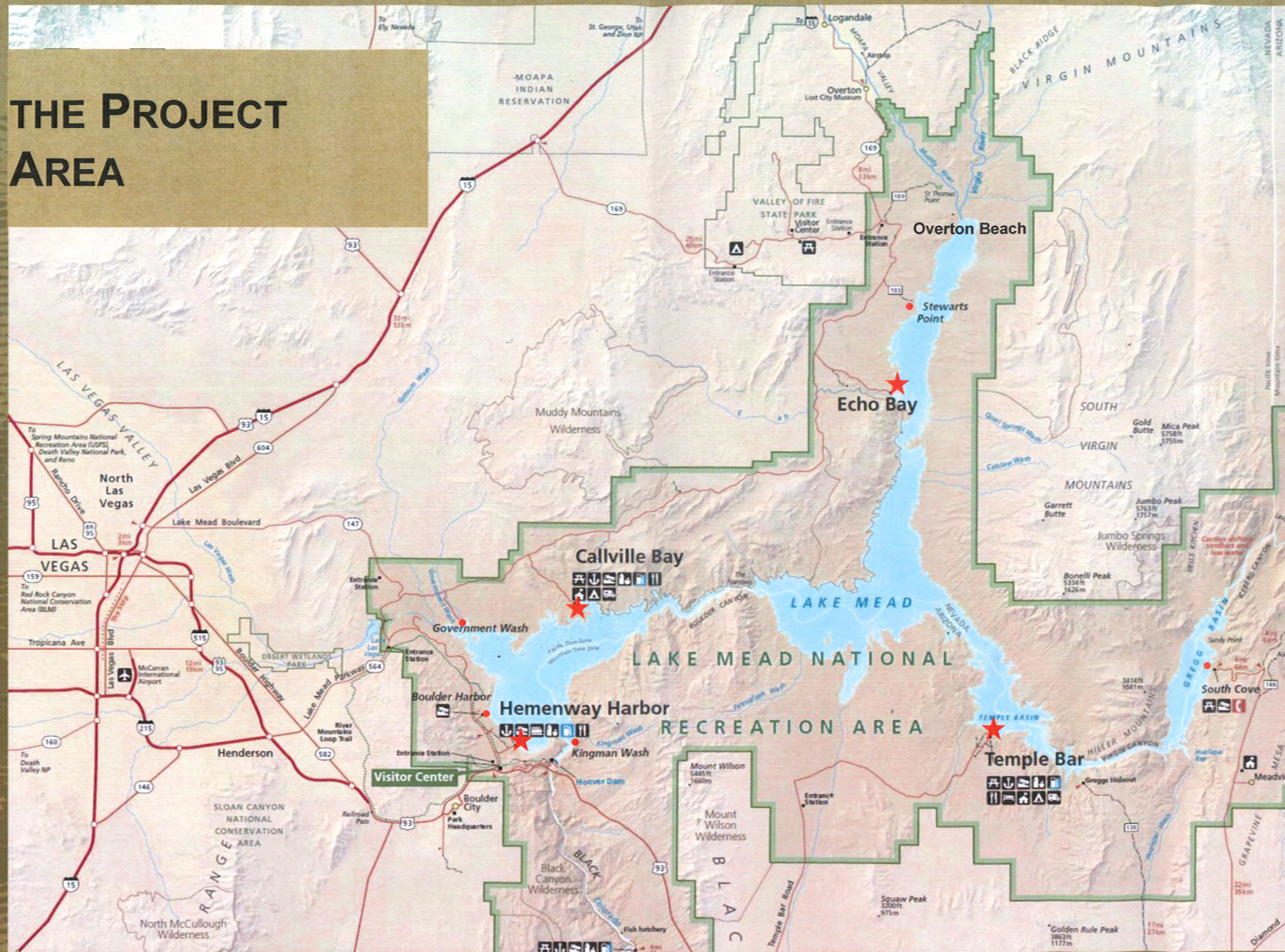
Navajo Nation

\_\_\_\_\_ Date: \_\_\_\_\_  
Russel Begay, President

**ATTACHMENT A**  
**(Area of Potential Effect Maps)**



# THE PROJECT AREA



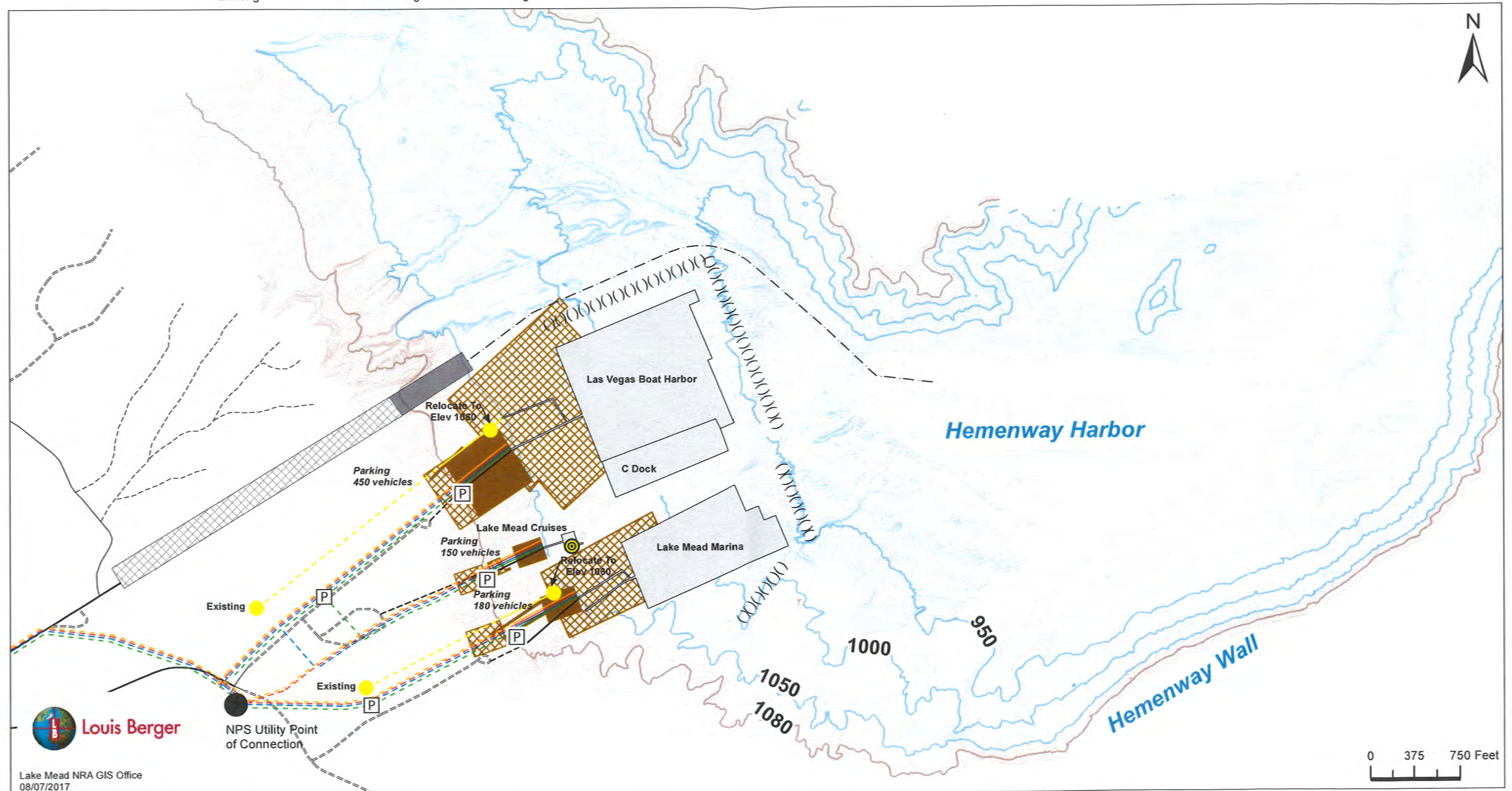
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# Low Water Planning: Hemenway Harbor, Lake Elevation 1050 ft



- |                    |                                  |                          |                    |                                     |                         |                          |                      |  |
|--------------------|----------------------------------|--------------------------|--------------------|-------------------------------------|-------------------------|--------------------------|----------------------|--|
| Wastewater Pump    | Telecommunications line Proposed | Water line Proposed      | Fuel line Proposed | Roads open to the public Major road | Maintained unpaved road | Marina                   | Launch Ramp Proposed | Terrestrial Index Contours             |
| Floating Fuel Dock | Telecommunications line Existing | Water line Existing      | Fuel line Existing | Roads open to the public Local road | 4WD road                | Existing Parking         | Launch Ramp Existing | Bathymetric Index Contours             |
| Fuel Farm          | Power line Proposed              | Wastewater line Proposed | Access Proposed    | Breakwater                          | Fairway                 | Proposed Parking         |                      | Terrestrial 1 and 2 ft Contours (2008) |
|                    | Power line Existing              | Wastewater line Existing | Access Existing    |                                     |                         | Existing Marina_Hemenway |                      | Bathymetric 1 and 2 ft Contours (2008) |

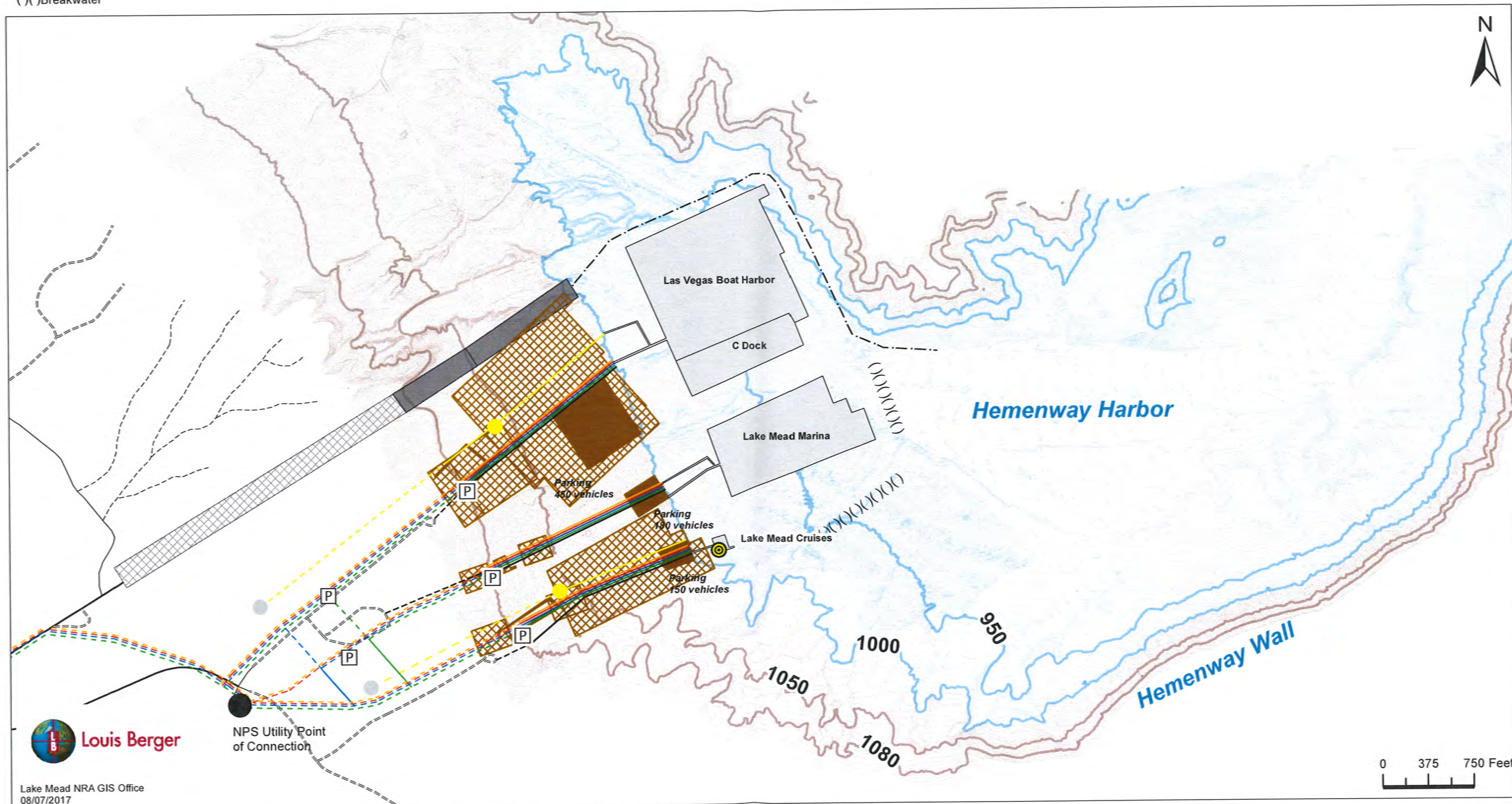




# Low Water Planning: Hemenway Harbor, Lake Elevation 1000 ft



- |  |  |   |  |  |   |   |  |  |   |   |
|--|--|---|--|--|---|---|--|--|---|---|
| <p>[P] Wastewater Pump</p> <p>[⊙] Floating Fuel Dock</p> <p>● Fuel Farm</p> <p>— Fairway</p> <p>( ) Breakwater</p> | <p><b>Access</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Telecommunications line</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Power line</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Water line</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Wastewater line</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Fuel line</b></p> <p>--- Existing</p> <p>— Proposed</p> | <p><b>Roads open to the public</b></p> <p>— Major road</p> <p>— Local road</p> <p>== Maintained unpaved road</p> <p>--- 4WD road</p> <p>Existing Marina_Hemenway</p> | <p><b>Marina</b></p> <p>Existing Parking</p> <p>Proposed Parking</p> | <p><b>Launch Ramp</b></p> <p>Existing</p> <p>Proposed</p> | <p>Terrestrial Index Contours</p> <p>Bathymetric Index Contours</p> <p>Terrestrial 1 and 2 ft Contours (2008)</p> <p>Bathymetric 1 and 2 ft Contours (2008)</p> |
|--|--|---|--|--|---|---|--|--|---|---|





# Low Water Planning: Hemenway Harbor, Lake Elevation 950 ft



- [P] Wastewater Pump
- [⊙] Floating Fuel Dock
- Fuel Farm
- Fairway
- ( ) Breakwater

- Access**
- Existing
  - Proposed

- Telecommunications line**
- Existing
  - Proposed

- Power line**
- Existing
  - Proposed

- Water line**
- Existing
  - Proposed

- Existing**
- Existing
  - Proposed

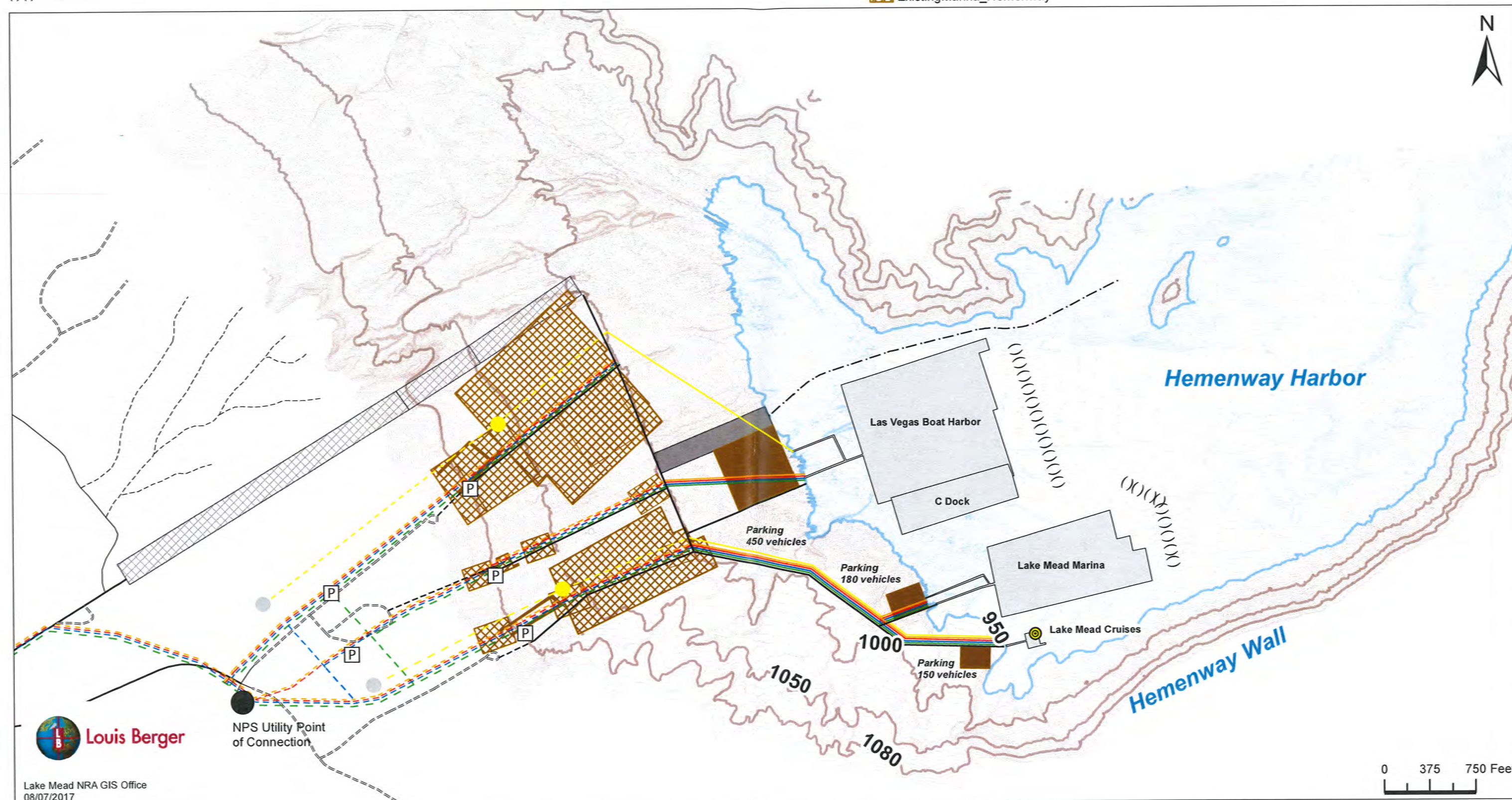
- Fuel line**
- Existing
  - Proposed

- Roads open to the public**
- Major road
  - Local road
  - Maintained unpaved road
  - 4WD road

- Existing Marina\_Hemenway

- Marina
- Existing Parking
- Proposed Parking
- Existing Launch Ramp
- Proposed Launch Ramp

- Terrestrial Index Contours
- Bathymetric Index Contours
- Terrestrial 1 and 2 ft Contours (2008)
- Bathymetric 1 and 2 ft Contours (2008)

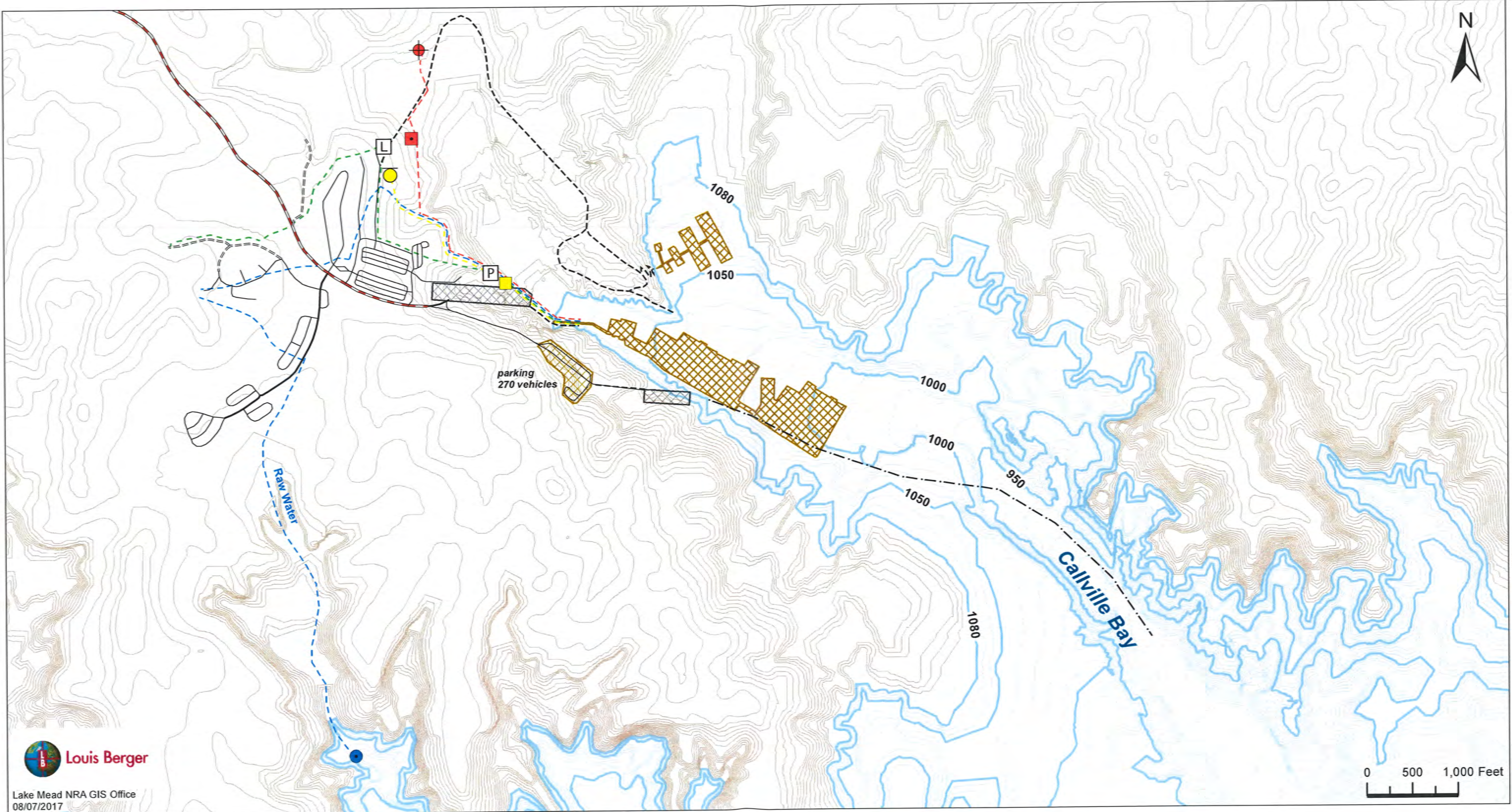




# Low Water Planning: Callville Bay, Lake Elevation 1080 ft



- |                          |                         |                         |                 |                     |                      |                             |
|--------------------------|-------------------------|-------------------------|-----------------|---------------------|----------------------|-----------------------------|
| Existing Fuel Storage    | Wastewater Pump         | Secondary highway       | Fairway         | Existing Fuel Line  | Existing Launch Ramp | Bathymetric Index Contour   |
| Underground Fuel Storage | Wastewater Lift Station | Major road              | Existing Access | Existing Power Line | Existing Marina      | Terrestrial Contour (10 ft) |
| Power Pole               | Water Intake Barge      | Local road              |                 | Existing Sewer Line | Existing Parking     | Bathymetric Contour (10 ft) |
| Substation               |                         | Maintained unpaved road |                 | Existing Water Line |                      |                             |

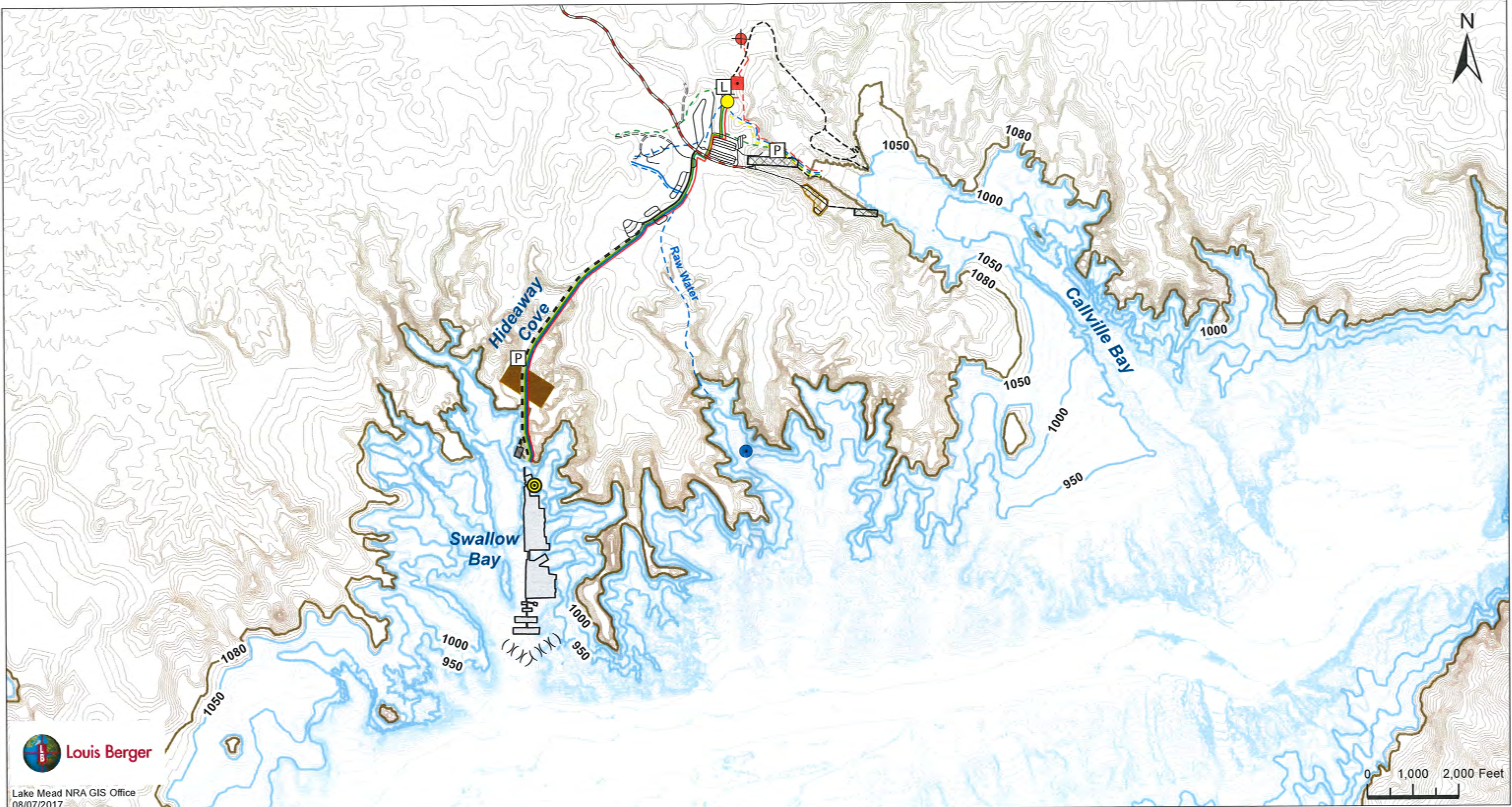




# Low Water Planning: Callville Bay, Lake Elevation 1050 ft (Alternative B)



- |                          |                         |                         |                    |                     |                      |                             |
|--------------------------|-------------------------|-------------------------|--------------------|---------------------|----------------------|-----------------------------|
| Floating Fuel Dock       | Wastewater Pump         | Secondary highway       | Existing Access    | Existing Sewer Line | Marina               | Terrestrial Index Contour   |
| Underground Fuel Storage | Wastewater Lift Station | Major road              | Proposed Fuel      | Proposed Water      | Proposed Launch Ramp | Bathymetric Index Contour   |
| Power Pole               | Water Intake Barge      | Local road              | Existing Fuel Line | Existing Water Line | Existing Launch Ramp | Terrestrial Contour (10 ft) |
| Substation               | Breakwater              | Maintained unpaved road | Proposed Power     | Existing Power Line | Proposed Parking     | Bathymetric Contour (10 ft) |
|                          |                         | Proposed Access         | Proposed Sewer     |                     | Existing Parking     |                             |

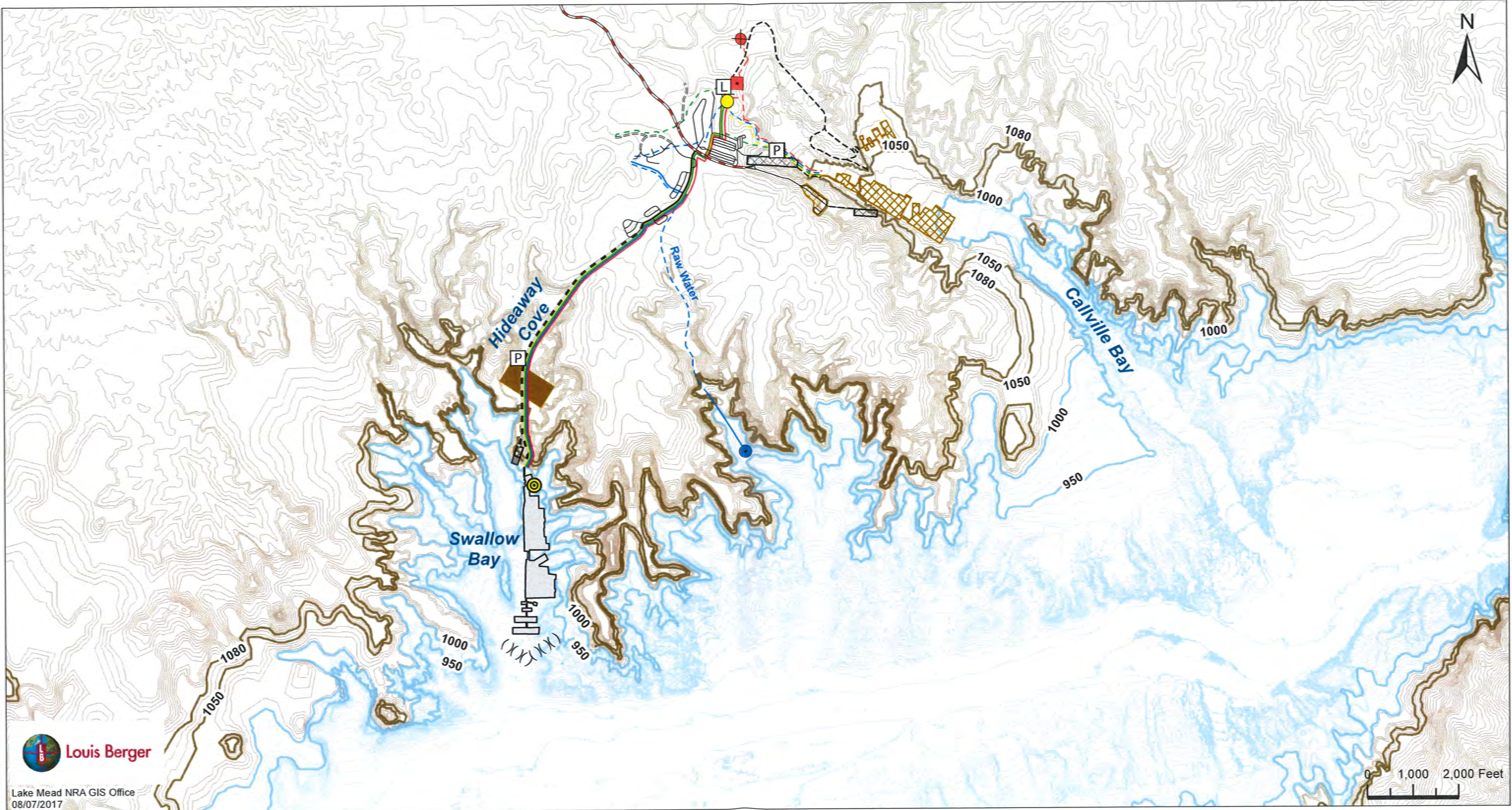




# Low Water Planning: Callville Bay, Lake Elevation 1000 ft (Alternative B)



- |                          |                         |                         |                     |                    |                     |                     |                      |                             |
|--------------------------|-------------------------|-------------------------|---------------------|--------------------|---------------------|---------------------|----------------------|-----------------------------|
| Floating Fuel Dock       | Wastewater Pump         | Secondary highway       | Existing Access     | Existing Fuel Line | Existing Sewer Line | Existing Water Line | Marina               | Terrestrial Index Contour   |
| Underground Fuel Storage | Wastewater Lift Station | Major road              | Proposed Fuel       | Proposed Power     | Proposed Water      | Existing Water Line | Proposed Launch Ramp | Bathymetric Index Contour   |
| Power Pole               | Water Intake Barge      | Local road              | Existing Power Line | Proposed Sewer     |                     |                     | Existing Launch Ramp | Terrestrial Contour (10 ft) |
| Substation               | Breakwater              | Maintained unpaved road | Proposed Access     |                    |                     |                     | Existing Parking     | Bathymetric Contour (10 ft) |

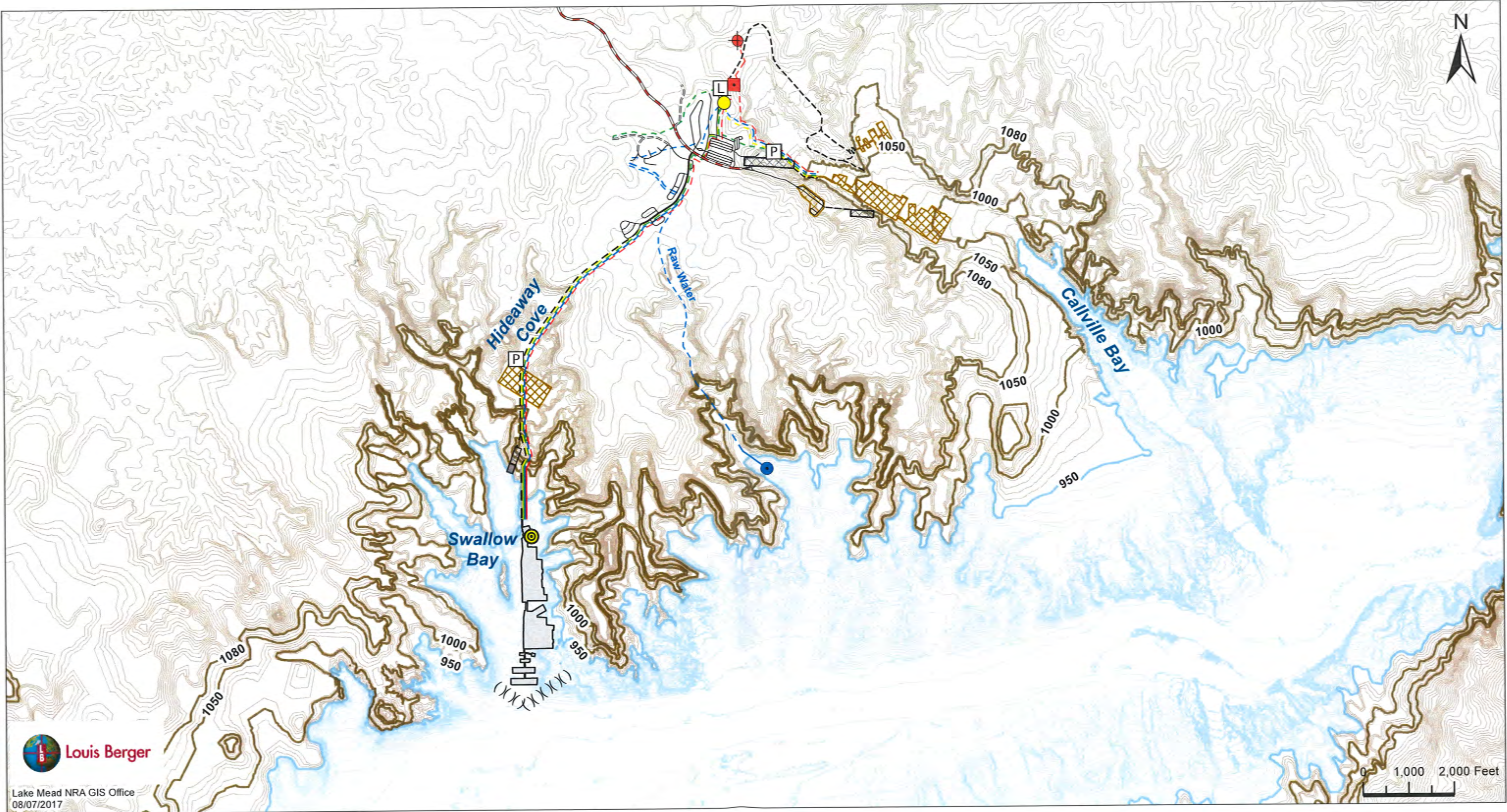




Low Water Planning: Callville Bay, Lake Elevation 950 ft (Alternative B)



- |                          |                         |                         |                     |                     |                      |                             |
|--------------------------|-------------------------|-------------------------|---------------------|---------------------|----------------------|-----------------------------|
| Floating Fuel Dock       | Wastewater Pump         | Secondary highway       | Existing Access     | Proposed Sewer Line | Marina               | Terrestrial Index Contour   |
| Underground Fuel Storage | Wastewater Lift Station | Major road              | Proposed Fuel Line  | Existing Sewer Line | Proposed Launch Ramp | Bathymetric Index Contour   |
| Power Pole               | Water Intake Barge      | Local road              | Existing Fuel Line  | Proposed Water Line | Existing Launch Ramp | Terrestrial Contour (10 ft) |
| Substation               | Breakwater              | Maintained unpaved road | Proposed Power Line | Existing Water Line | Existing Parking     | Bathymetric Contour (10 ft) |
|                          |                         | Proposed Access         | Existing Power Line |                     | Existing Marina      |                             |





Low Water Planning: Temple Bar, Lake Elevation 1050 ft



- Existing Fuel Farm

Proposed Fuel Farm

Wastewater Pump

Secondary highway

Major road

Local road

Maintained unpaved road

Proposed Access

Existing Access

Proposed Fuel Line

Existing Fuel Line

Proposed Power Line

Existing Power Line

Proposed Sewer Line

Existing Sewer Line

Proposed Water Line

Existing Water Line

Breakwater

Proposed Launch Ramp

Existing Launch Ramp

Marina

Proposed Parking

Existing Parking

Existing Marina
- 1 ft index terrestrial contour (2008)

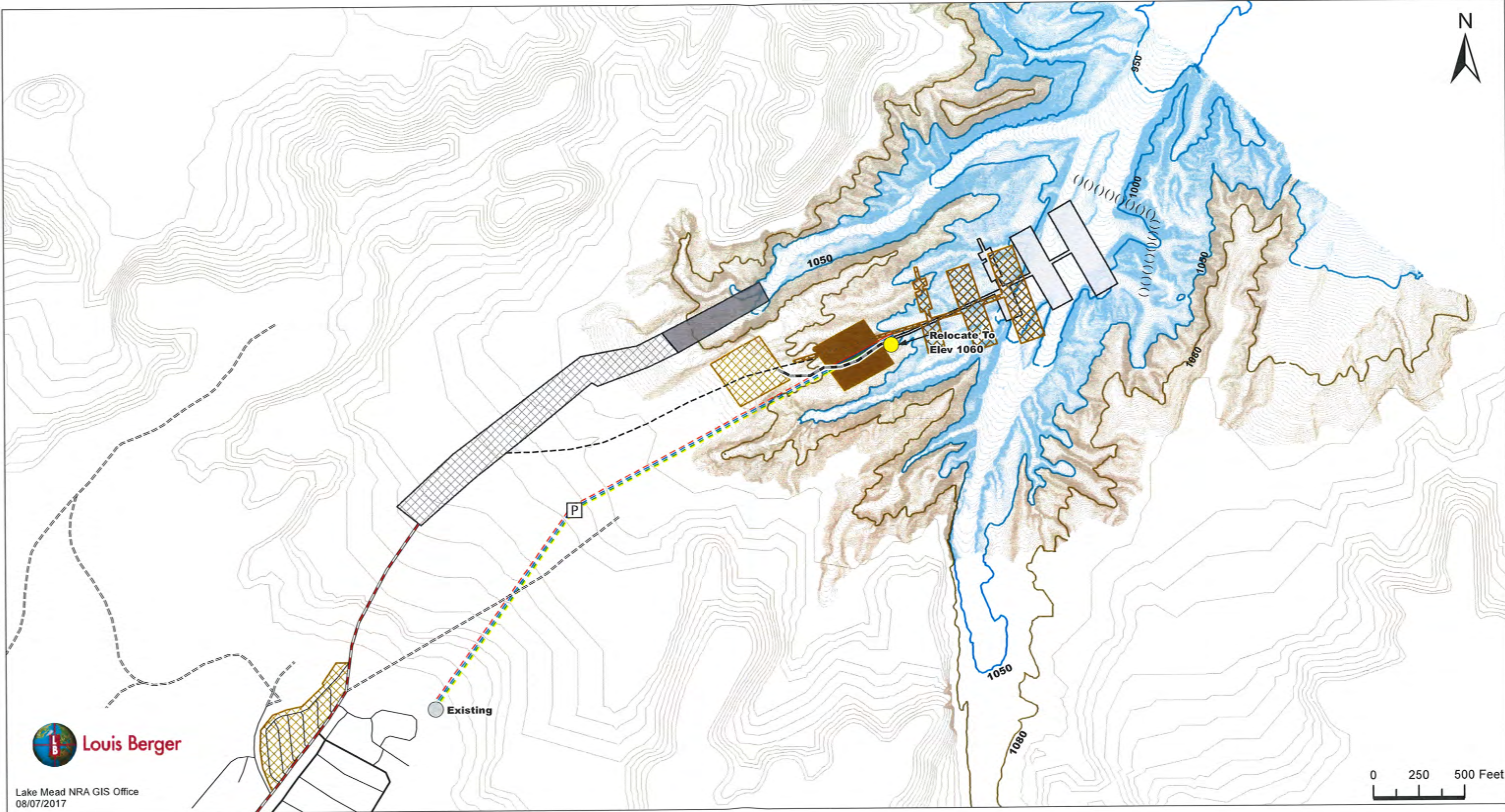
1 ft terrestrial contour (2008)

1 ft index bathymetric contour (2008)

1 ft bathymetric contour (2008)

Terrestrial Contour (10 ft)

Bathymetric Contour (10 ft)



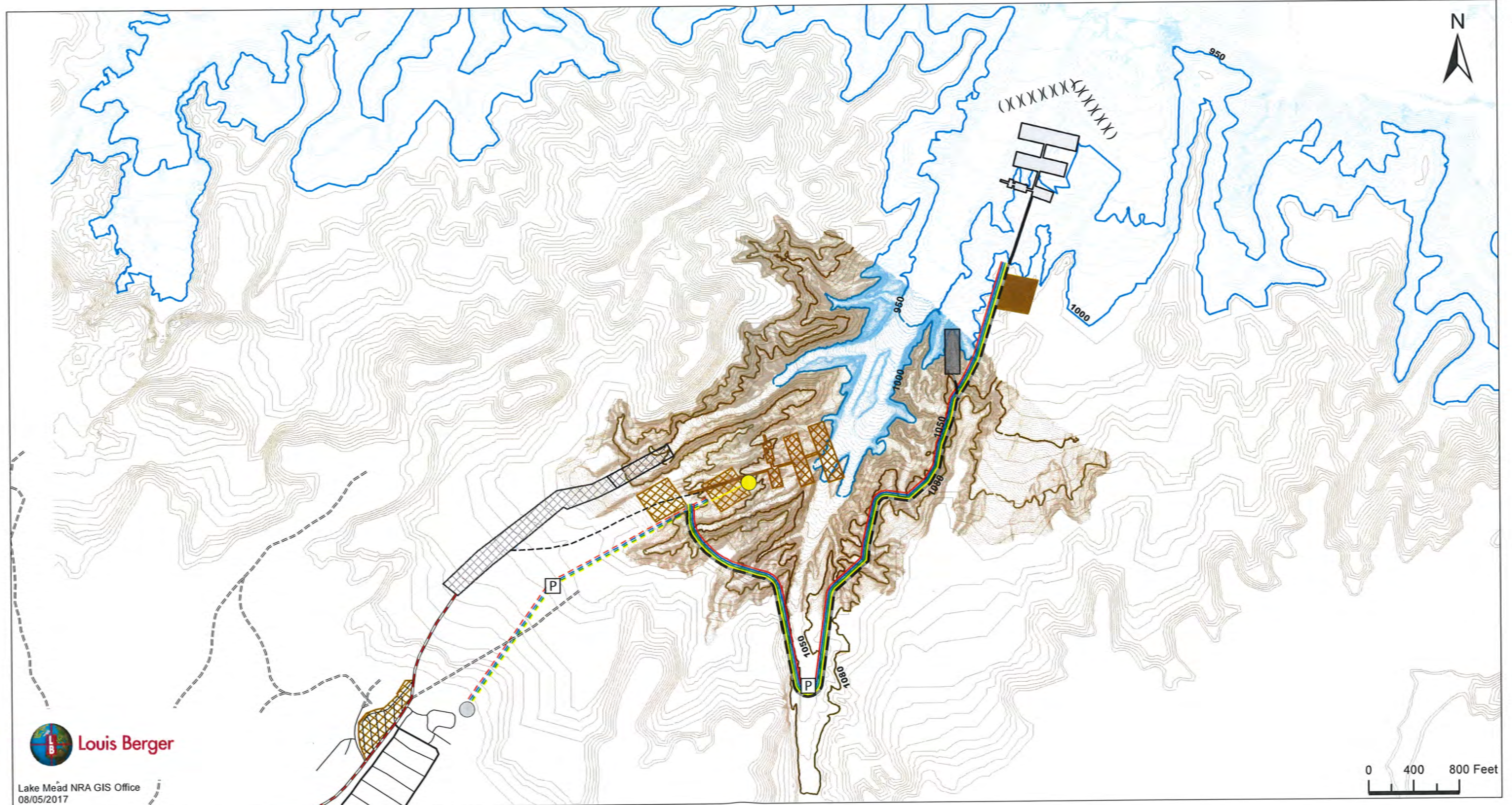


# Low Water Planning: Temple Bar, Lake Elevation 1000 ft



- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>Existing Fuel Farm</li> <li>Proposed Fuel Farm</li> <li>Wastewater Pump</li> <li>Secondary highway</li> <li>Major road</li> <li>Local road</li> <li>Maintained unpaved road</li> <li>Proposed Access</li> </ul> | <ul style="list-style-type: none"> <li>Existing Access</li> <li>Proposed Fuel Line</li> <li>Proposed_FuelLine_Temple1050-LBG</li> <li>Existing Fuel Line</li> <li>Proposed Power Line</li> <li>Existing Power Line</li> <li>Proposed Sewer Line</li> <li>Existing Sewer Line</li> <li>Proposed Water Line</li> <li>Existing Water Line</li> <li>Breakwater</li> <li>ExistingMarina_TempleBar</li> <li>Proposed Launch Ramp</li> </ul> | <ul style="list-style-type: none"> <li>Existing Launch Ramp</li> <li>Marina</li> <li>Proposed Parking</li> <li>Existing Parking</li> </ul> |
|--|---|--|

- 1 ft index terrestrial contour (2008)
- 1 ft index bathymetric contour (2008)
- 1 ft bathymetric contour (2008)
- 1 ft terrestrial contour (2008)
- Terrestrial Contour (10 ft)
- Bathymetric Contour (10 ft)



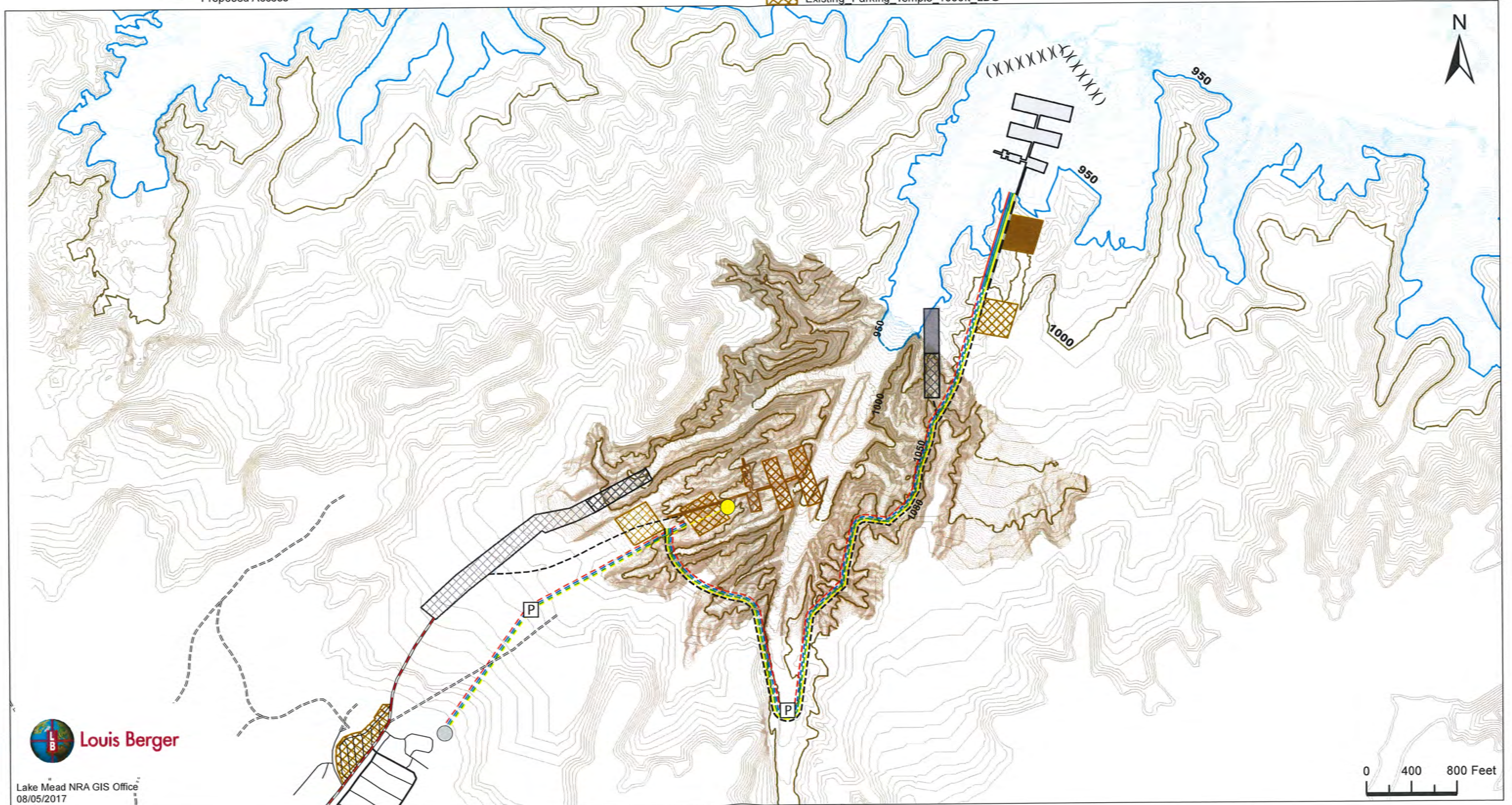


Lake Mead National Recreation Area  
Arizona/Nevada

- Existing Fuel Farm
- Proposed Fuel Farm
- Wastewater Pump
- Proposed Power Line
- Proposed Water Line
- Proposed Sewer Line
- Proposed Fuel Line
- Proposed Access
- Secondary highway
- Major road
- Local road
- Maintained unpaved road
- Existing Access
- Existing Fuel Line
- Existing Power Line
- Existing Sewer Line
- Existing Water Line
- Breakwater
- Existing Marina\_TempleBar
- Proposed Launch Ramp
- Existing Parking\_Temple\_1000ft\_LBG
- Existing Launch Ramp
- Marina
- Proposed Parking
- Existing Parking
- Bathymetric\_1050ft\_Contour

# Low Water Planning: Temple Bar, Lake Elevation 950 ft

- National Park Service  
U.S. Department of the Interior
- 1 ft index terrestrial contour (2008)
  - 1 ft index bathymetric contour (2008)
  - 1 ft bathymetric contour (2008)
  - 1 ft terrestrial contour (2008)
  - Terrestrial Contour (10 ft)
  - Bathymetric Contour (10 ft)

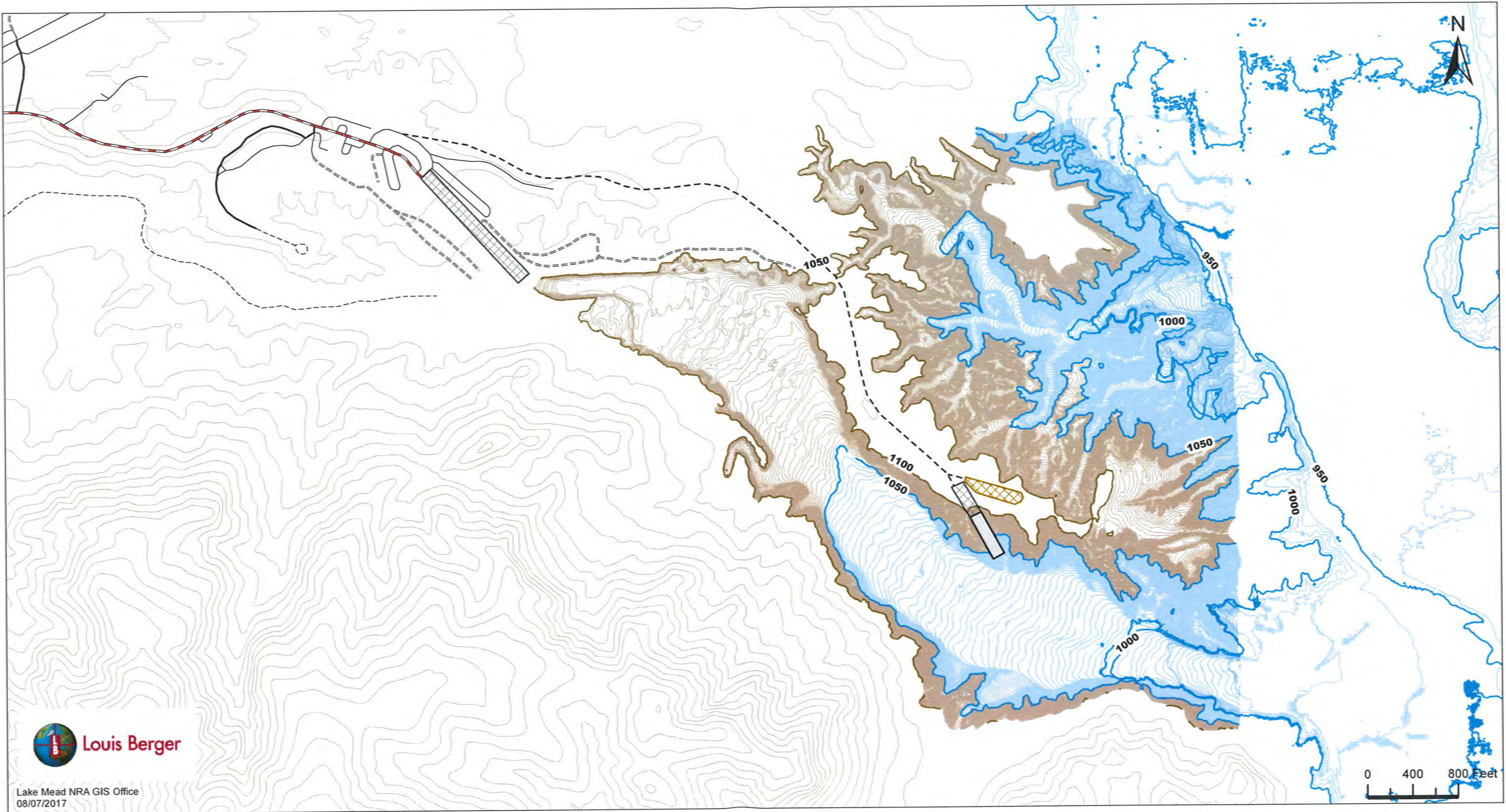




Low Water Planning: Echo Bay, Lake Elevation 1050 ft



- |                                  |                      |  |
|----------------------------------|----------------------|--|
| --- Echo_Bay_ExistingAccess_1050 | Proposed Launch Ramp | 1 ft bathymetric contour               |
| --- Secondary highway            | Existing Launch Ramp | 50 ft index bathymetric contour (2008) |
| --- Major road                   | Existing Parking     | 1 ft terrestrial contour               |
| --- Local road                   |                      | Terrestrial Index contour              |
| ==== Maintained unpaved road     |                      |  |
| --- 4WD road                     |                      |  |





Low Water Planning: Echo Bay, Lake Elevation 1000 ft



- |                              |                                     |  |
|------------------------------|-------------------------------------|--|
| — Secondary highway          | - - - Existing Access               | — Terrestrial Index contour              |
| — Major road                 | ▨ Echo_Bay_ExistingLaunchRamps_1000 | — 50 ft index bathymetric contour (2008) |
| — Local road                 | ▤ Echo_Bay_ExistingParking_1000     | — 1 ft terrestrial Index contour         |
| ==== Maintained unpaved road | ■ Echo_Bay_ProposedParking_1000     | — 1 ft bathymetric contour               |
| - - - 4WD road               | □ Echo_Bay_ProposedLaunchRamp       |  |
| — Proposed Access            |                                     |  |

