

Northern Nevada Water Planning Commission

STAFF REPORT

DATE: April 28, 2016
TO: Chairman and Members, Northern Nevada Water Planning Commission (“NNWPC”)
FROM: Jim Smitherman, NNWPC Water Resources Program Manager
SUBJECT: Discussion and possible recommendation to the WRWC to accept a Clean Water Act Grant and Subgrant from the State of Nevada Department of Conservation and Natural Resources, Division of Environmental Protection (“NDEP”), in the amount of \$40,000 to partially fund the ongoing regional integrated wastewater system planning project, which includes Bedell Flat; and possible direction to staff – Jim Smitherman.

SUMMARY

Staff has been in recent communication with Randy Pahl of NDEP concerning the possibility that approximately \$40,000 in federal economic stimulus package funding may be available to the WRWC, as the local "208 Agency", in the form of a Clean Water Act grant. John Enloe of the Truckee Meadows Water Authority (“TMWA”) has indicated interest in having the grant money applied to a proposed Bedell Flat component of the ongoing regional integrated wastewater system planning project in the Bedell Flat hydrobasin, as described below.

The proposed investigation includes infiltration testing to determine the potential for use of rapid infiltration basins (“RIBs”) as part of an integrated water resource aquifer storage and recovery (“ASR”) program. Geologic/hydrogeologic feasibility investigations and environmental clearance and permitting work will also be conducted to gain an understanding of the feasibility, scope and cost of an integrated water resources program in Bedell Flat. The attached draft scope of work outlines the project elements.

RECOMMENDATION

Staff recommends that the NNWPC make a recommendation to the WRWC that it apply for and accept the grant from the State, to partially fund the proposed scope of work in the Phase I Rapid Infiltration Basin Investigation in the Bedell Flat

CW:jd

Attachment

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September 29, 2015

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Operational Strategies Manager
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Subject: Phase 1 RIB Investigations for the Bedell Flat Area, Washoe County, NV

Dear Mr. Enloe:

Brown and Caldwell (BC) appreciates the opportunity to assist the Truckee Meadows Water Authority (TMWA) with a field investigation, and related activities requested by TMWA, to assess the infiltration capacity of select portions of the Bedell Flat area. Bedell Flat is located in Washoe County, Nevada, approximately 15 miles north of the City of Reno. BC understands that the objectives of the investigation are to: 1) determine the potential use of Rapid Infiltration Basins (RIBs) to conduct aquifer storage and recovery (ASR) operations; and 2) subsequently, if ASR operations appear feasible, collect sufficient hydrogeochemical and geotechnical information to design the RIBs to accommodate TMWA's storage requirements. Based on our September 24th meeting, we also understand that TMWA approves of a phased approach to the investigation.

This proposal for the initial Phase 1 RIB investigations at Bedell Flat is based on: 1) the ECO:LOGIC Engineering (EE) memo dated May 16, 2007 entitled Results of Bedell Flat Soil Borings; and 2) information and maps prepared by Kennedy/Jenks (KJ) Consultants in 2001. Subsequent phases may include RIB pilot testing, potential use of dry wells for infiltration (to access more permeable materials beneath less permeable surficial soils), vadose zone and groundwater characterization activities (i.e., borehole drilling to collect samples for geotechnical and geochemical tests) and groundwater monitoring well installation) and assessing the infiltration capacity of a proposed surface water reservoir site within the Bird Spring drainage (adjacent to Bedell Flat).

Scope of Work

BC has identified the following five tasks for the Phase 1 RIB investigations:

- Site Visit and Data Review
- Development of Field Testing Plan (FTP)
- BLM Permitting
- FTP Implementation
- Preparation of Draft and Final Technical Memos

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Task 1 - Site Visit and Data Review

BC plans to conduct a site visit to Bedell Flat with TMWA prior to developing the FTP. Before the site visit, we will review all available soils and hydrogeologic information that is relevant to the project including information provided by TMWA and public domain publications (e.g., Washoe County soil maps and geologic maps of the project area). The BC personnel who will perform the review and conduct the site visit include Chuck Zimmerman, Rich Mattucci, Brad Hart and Penny Bassett (the project roles for these individuals, and others, are described below).

The primary objective of the site visit will be to determine the locations and number of infiltration test pits for the Phase 1 investigation. Based on the EE and KJ reports, two areas appear viable: 1) near the mouth of the Bird Spring drainage; and 2) an area about 3 miles north of the Bird Spring drainage area (respectively, bfA and bfB in the KJ report and the BF-2/3 and the BF-12/13 borehole locations in the EE memo). BC suggests that, during the site visit, we begin at these two areas and work our way around the perimeter of Bedell Flat. A related objective of the site visit will be to determine the acreage to be permitted with BLM, which would be assessed by the cultural and ecological resource subcontractors described below.

Task 2 - FTP Development

The FTP will be based on the site visit and our review of other relevant project-related information. The FTP will include: 1) the technical approach to percolation testing (briefly described below); 2) the scope of the cultural and ecological surveys to be used to support BLM permitting; and 3) a project-specific health and safety plan (HASP) that will also include security related elements for the trackhoe and water truck needed for the infiltration tests. The cost estimate for this proposal assumes 10 locations will be subjected to pilot infiltration testing (PIT).

Task 3 - BLM Permitting

BC will serve as TMWA's agent in permitting the field activities as a right-of-way activity with the BLM - Carson City District Office (i.e., the Phase 1 activities should not require an Environmental Assessment ([EA])). We propose to use Kautz Environmental Consultants (KEC) and Rubicon Environmental Consultants (REC), respectively, for the cultural and ecological surveys required for the right-of-way permitting with BLM (KEC performed a similar service for BC, when we permitted RIB locations with the BLM on behalf of Lyon County, and they have previously worked in Bedell Flat). The cost estimate for this proposal assumes 10 acres will be subjected to the cultural and ecological surveys.

Task 4 - FTP Implementation

BC will develop a draft FTP for TMWA approval, which will subsequently be finalized to incorporate TMWA comments and ideas. The FTP will include the scopes for BC, KEC, REC and TMWA staff (the latter being dependent on staff availability). The project schedule, to be determined once permitting activities with the BLM are better defined, will also be included in the draft FTP.

The infiltration testing method recommended for the Bedell Flat area consists of a larger modified pilot infiltration test (PIT) procedure, documented by the State of Washington Department of Ecology (DOE). This approach will reduce some of the scale errors associated with relatively small-scale double ring infiltrometer or "stove-pipe" infiltration tests, and will better approximate infiltration rates for potential facility design. This method will use a trackhoe (or backhoe) to excavate to depths of 6 to 8 feet below ground surface, producing a flat base with an area of approximately 5-10 square feet. Although this is not a standard infiltration test, this approach is a practical field procedure that has been widely used in the western U.S.

The PIT procedure, documented by the DOE, involves the following steps:

- Excavate the test pit to the depth of the bottom of the proposed infiltration facility. Lay back the slopes sufficiently to avoid caving and erosion during the test.
- Log the excavated soils as a function of depth using the SCS (soil classification system; ASTM D2487).
- Collect soil samples for potential grain size analyses for select or all PIT locations.
- The horizontal surface area of the bottom of the test pit should be approximately 10 square feet.
- Accurately document the size and geometry of the test pit.
- Install a vertical measuring rod (staff gauge) of sufficient length marked in half-inch increments in the center of the pit bottom.
- Use a rigid 6-inch diameter pipe with a splash plate on the bottom (or equivalent system) to convey water to the pit and reduce side-wall erosion or excessive disturbance of the pond bottom (excessive erosion and bottom disturbance will likely yield lower than actual infiltration rates).
- Add water to the pit at a rate that will maintain a water level between 3 and 4 feet above the bottom of the pit, and continuously record water levels and discharge rates during the early testing period to maintain a water level of 3 to 4 feet.
- Add water to the pit until one hour after the flow rate into the pit has stabilized (constant flow rate) while maintaining the same pond water level (this steady-state condition should be maintained for at least one hour).
- After the flow rate has stabilized, turn off the water and record the rate of infiltration in inches per hour from the measuring rod data, until the pit has drained.

After each test pit has drained, the trench will be backfilled with the excavated materials to approximate the surrounding land surface. This proposal assumes that the backfilling would satisfy BLM requirements, but some additional reclamation efforts may be required by the BLM. Our understanding of such reclamation efforts would be achieved during the permitting process. In addition, depending on our site visit, off-road test locations may be selected, which could require road building and subsequent reclamation by BLM (this is the basis for the assumption that the cultural and ecological surveys would cover 10 acres). This proposal assumes a 10-day field program up to 10 hours/day.

Task 5 – Preparation of Draft and Final Technical Memos

BC will prepare a draft technical memo for TMWA review, which will summarize all pertinent aspects of the PIT field program including infiltration test and soil classification results. BC plans to discuss the content of the report with TMWA after the Phase 1 investigation has been completed to optimize the report contents. The final tech memo will include recommendations for the next phase of work, as appropriate.

Project Schedule

As indicated above, the project schedule for the Phase 1 RIB investigation is preliminary and largely dependent on the timing of BLM permitting and, in part, weather conditions as freezing conditions can affect field activities. BC expects that the following initial five sequential activities can begin within two weeks after receipt of written notice to proceed (e.g., TMWA purchase order), and that FTP implementation would not likely start until 2016:

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Chuck Zimmerman is a geologist with over 36 years of experience who will manage the project on behalf of TWMA. He will be responsible for quality control of the technical work and client communications, as well as being the BC point-of-contact for TMWA.

Rich Mattucci, PE, is a registered civil engineer in Nevada and other western U.S. states with over 30 years of experience. His project role will be to evaluate the laboratory geotechnical results in the context of the infiltration test results. Rich will also participate in potential future RIB and groundwater investigations.

Penny Bassett, CEM/CSP, is a geologist who has 22 years of experience in conducting geological and soil field investigations. She is a Nevada CEM and a Certified Safety Professional. Her role in the project will be to manage the BLM permitting process, assist with field logistics and prepare/implement the health and safety plan.

Brad Hart, RG, is a hydrogeologist with over 25 years of experience in conducting hydrogeological field investigations and quantitative analysis of vadose zone and groundwater systems including numerical modeling. He is a registered geologist in California and Idaho. His project role will be to identify promising RIB test locations during the site visit and to participate in potential future RIB and groundwater investigations.

If you have any questions regarding this proposal or cost estimate, please call me at 775-883-4118 or contact me via e-mail: czimmerman@brwnncald.com.

Very truly yours,

BROWN AND CALDWELL

Chuck Zimmerman
Vice President