

## **Workshop nº 2**

**By: David Pyne (ASR Systems, Gainesville, Florida) and Russell Martin (Wallbridge Gilbert Aztec, Adelaide, South Australia)**

### **Title: Addressing the challenges to achieve successful groundwater recharge and recovery through wells**

#### **Objectives**

The aim of this workshop is to provide attendees with an appreciation and practical understanding of the technical, scientific, engineering design, and other issues that need to be addressed when contemplating managed aquifer recharge systems that utilise aquifer storage and recovery (ASR) wells or recharge wells.

#### **Description**

Failure of some MAR systems, can be attributed directly to the poor design of the recharge wells, inadequate characterization of the source and receiving water, poor engineering design of the well equipping or wellhead facilities, or miscommunication concerning the objectives of the MAR system. ASR wells are quite different from standard water supply wells. Successful and sustainable recharge via wells requires a collaborative effort by scientists and engineers from across multiple disciplines.

This short course will guide participants through the pre-requisites for, and technical feasibility of ASR systems for a variety of water sources, aquifer types, and end uses. The focus of the workshop will be on the key technical issues associated with planning, feasibility assessment, design, construction, operation and performance evaluation of recharge and recovery systems via wells. Case studies will be used to illustrate the key technical issues, performance and scientific considerations that need to be employed to deliver successful, integrated and sustainable ASR operations.

The workshop is aimed at MAR practitioners across all experience levels (Basic, Intermediate or Advanced). Some prior knowledge of MAR techniques and terminology is useful but not essential to attend this course.



Supported by selected case studies illustrating the technical and scientific issues of ASR, the key points to be covered during this workshop include:

- A recommended approach to ASR project development to achieve success.
- Aquifer characterization and understanding the scientific considerations such as aquifer hydraulics, water quality issues, and geochemistry.
- Technical considerations for ASR well, wellhead and wellfield design and operation.
- Recovery efficiency and clogging remediation approaches.
- Achieving water supply reliability and sustainability using ASR as an integrated water resources management tool.
- ASR applications, plus recent developments and technical / scientific advances.
- Legal and regulatory frameworks for ASR using USA and Australian examples.
- ASR economic considerations.

## **PROGRAM.**

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- ASR economic considerations.

The workshop format will consist of presentations on the specific topics supported by detailed case studies from USA and Australia. Other international case studies will be used where relevant. Attendees will be invited to discuss key issues and challenges that they are experiencing. Interactive hypothetical case studies for ASR well and wellhead facilities design will be utilized to stimulate discussion.

The workshop would be presented in a lecture style setting.

1. David Pyne (Instructor)
2. Russell Martin (Instructor)



n. Discussion – All attendees

m. Questions. Collective summary & photo. All attendees

**Proposer CV:**

David Pyne has presented ASR workshops since 1994, ranging from one-hour to two days' duration, throughout the USA and also at several previous ISMAR symposia. Co-presenters have included Dr Herman Bouwer, Dr Daniel Stephens, Russell Martin and Tom Morris. David is a professional civil engineer. He pioneered the development of Aquifer Storage Recovery technology and has directed or contributed significantly to the development of many ASR wells and wellfields globally. For ISMAR10, Russell Martin will be a Co-Presenter, as he was for ISMAR9 in Mexico City.