

# R E S U M E - William Bajjali, Ph.D.

## **ADDRESS**

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## **EDUCATIONS**

1994 - Doctor of Philosophy (Ph.D.) – Hydrogeology, University of Ottawa

1990 - Master of Science (M.Sc.) – Geology, University of Jordan

1982 – Master of Engineering (MS) – Mining Engineer, St-Petersburg Mining Institute

## **ACADEMIC TRAINING COURSES & Supervisory Leadership Program Workshop**

<b>Item</b>	<b>Professional Development</b>	<b>Date</b>
1	Performance Feedback	1-29-2013
2	Coaching for Peak Performance	5-15-2012
3	Institute for Hydrology (GSF), Munich, Germany Scientific Exchange Program in Hydrochemistry	10/1990 - 1/1991
4	Petro Canada International Assistance Corporation, in Jordan Training in Exploration Mapping and Hydrodynamics	6/1989
5	International Atomic Energy Agency (IAEA), Vienna, Austria Extensive Course in Isotope Hydrology	3/1987 – 6/1987
6	United States Geological Survey (USGS), USA Training Courses in Groundwater Modeling and Borehole Geophysics	11/1985-2/1986

## **SCHOLARSHIPS & AWARDS**

1. Fulbright Scholars Award (Served at Water Authority of Jordan and Jordan University) 2012
2. Max H. Lavine Performance Award for Research – UWS 2006
3. Dr. Brian Rust Memorial Scholarship – University of Ottawa (Canada) 1994
4. Intro scholarship at the University of Ottawa – Canada 1991- 1994

## **Professional Skills and Expertise**

My career spans 39 years in the environmental field as a water resources specialist, researcher, and educator. Have broad practical experience in quantifying water resources and use, assessing water quality and contamination, groundwater modeling, drilling and pumping test supervision and analysis, GIS applications in environmental related problems. I have been project manager and technical advisor of environmental development projects in several public and private sector organizations in Canada and Middle East (Oman & Jordan).

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## **APPOINTMENT**

**A - WISCONSIN UNIVERSITY -SUPERIOR (USA)**

Assistant / Associate/ Professor of Hydrogeology and GIS

**August 2001 – Present**

*I have been involved in the following:*

### **1. TEACHING COURSES**

1. GEOL 300 Watershed Hydrogeology
2. GEOL 360 Surface Process and Soil
3. GEOL 110 Physical Geology
4. GEOL 170 Earth Science
5. GEOL 130 Environmental Geology
6. GEOL 120 Our Water Resources
7. ENSC 100 Environmental Science
8. FYS 104 First Year Seminar
9. GEOG 241 Fundamentals of GIS I
10. GEOG 343 Fundamentals of GIS II
11. GEOG 442 Advanced Principles of GIS

### **2. PARTICIPATE IN ESTABLISHED THE GIS MINOR AT UWS**

### **3. DESIGNED & TAUGHT THE GIS CERTIFICATE FOR PROFESSIONALS COMMUNITY**

1. Certificate part 1 ArcGIS (65 hours)
2. Certificate part 2 ArcGIS extensions (65 hours)

### **4. RECEIVED FULBRIGHT SCHOLAR AWARD IN FALL 2012**

Performed the following activities in Jordan:

- **Water Authority of Jordan (WAJ):** Carried a project entitled “Fate of groundwater resources and the environmental and socio-economic implication of their overexploitation in Amman-Zarqa Basin” June 2012 – July 2013
- **WAJ:** Provided 5-days customized GIS training workshop in hydrogeology case study from Jordan for the geologists at WAJ. September 2 - 6, 2012
- **Jordan University:** Provided 5-days customized GIS training workshop in geology case study from Jordan for the faculties, department of geology September 9 - 13, 2012)
- **Jordan University:** Teaching graduate hydrogeology and GIS courses at the department of geology September 15 – December 31, 2012
- **Jordan University:** Lecture related the potential effect of the proposed nuclear power station on water resources in Dhuleil area – Jordan October 8, 2012

### **5. DESIGNED & TAUGHT SHORT TRAINING COURSES IN GIS APPLICATIONS (2003 – 2012)**

1. Five-days beginning GIS training course for faculties from University of Wisconsin System. The course was designed and instructed for faculties from social sciences (April 12-16, 2010)
2. Two-days beginning GIS training course for faculties from University of Wisconsin -Stout. The course was designed as part of an initiative to create the GIS minor (May 29- June 1, 2007)
3. Two-days advanced GIS training course for faculties from University of Wisconsin -Stout. The course was designed as part of an initiative to create the GIS minor (16-17 August, 2007)

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4. Three-days GIS training course for faculties from University of Wisconsin -Platteville. The course was designed for professional development (January, 2007)
5. 2-days advanced GIS training course for faculties from University of Wisconsin Campuses. The course was designed to introduce advance principles of GIS for faculties who teach GIS courses (16 – 17 August 2006).
6. Two-days beginning GIS training course for faculties from University of Wisconsin Campuses. The course designed to introduce GIS to faculties who has no GIS background and would like to use this technology in their classes (14 – 15 August 2006).
7. Three-days training course for the K-12 teachers in Bayfield and Maple high schools, WI about the GPS and its applications (12 – 14 June 2006).
8. Five-days training course for the K-12 teachers in Bayfield and Maple high schools, WI about the GIS and its applications (13 – 17 June 2005)
9. Five-days training course for the K-12 teachers in Superior, WI about the in Discovering Image Processing Using Scion Image (14 – 18 June 2004).
10. Three-days training course for faculties at the University of Wisconsin-Superior about the use of GIS technology in biology and water resources (April 2 - 4, 2002)
11. Three-days training course for the Department of Mathematics and Computer Science at the UWS about the use of Statistics in ArcGIS (December 4-6, 2003)
12. Two-days training course for the the teacher education department at UWS about the use of Statistics in ArcGIS 13 October, 2003 & 20 October, 2003
13. One-day Training Course for faculty and staff at UWS about the GPS data capturing and data integration and analysis in GIS (Jan 24, 2003)

### **6. FUNDED RESEARCH ACTIVITIES:**

1. Study the chemistry of groundwater in the Moccasin Mike Landfill to characterize the hazardous plume contaminant and its effect on shallow groundwater and Lake Superior using GIS.
2. Groundwater research: Investigation the shallow aquifer system and its water quality in Wisconsin using GIS
3. Study the water quality of surface water ponds in Kimmes Tobin Wetland in Douglas county, Wisconsin
4. Monitoring the discharge of the waste water treatment plant of Murphy Oil in Newton Creek and its effect on Hugs Bay of Lake Superior

### **7. PROFESSIONAL TALKS – GUEST SPEAKER:**

1. Presented talk at UMD entitled “GIS Minor Students’ project at UWS”. GIS Day – UMD  
Nov. 15, 2016
2. Presented talk at UMD entitled “Water Resources Scarcity in Jordan” Water Authority of Jordan  
July 12, 2012
3. Presented talk at Land and Water Department of Douglas County about the water quality of Newton Creek  
December 13, 2009
4. Natural Resources Research Institute – UMD. Titled: Water Resources in Jordan, Status, Availability, and Demand; Case Study of Azraq Basin focusing on the use of environmental isotope and

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- hydrochemistry techniques February 20, 2007
5. University of Western Illinois University Titled: Landfill Evaluation and its Effect on Groundwater & Lake Superior June 17, 2005
  6. Water Authority of Jordan - Seminar Titled: Projection and georeferencing and its use in GIS; case study from Jordan" July 26, 2004
  7. University of Wisconsin – Superior Seminar: Is Any Danger Emanating from a Landfill in the City of Superior?" February 5, 2004
  8. University of Minnesota at Duluth, Geological Seminar: Aspect of Environmental Isotope Chemistry in Thermal Groundwater: Insight into their Recharge History and Age Using Radioactive Carbon-14 April 10, 2003
  9. Duluth EPA lab- Presentation Titled: Fuzzy Logic Model Application in a GIS Environment to determine the most Vulnerable Region of a Shallow Aquifer for Contamination" January 22, 2003
  10. British Geological Survey – Wallingford, UK. Fuzzy Logic Model application in water quality of Amman Zarqa Area. May 1996

### **B - YARMOUK UNIVERSITY (JORDAN)**

**JANUARY 2001 – AUGUST 2001**

Assistant Professor - Institute of Archeology & Anthropology & Department of Earth Science

#### **1. TEACHING COURSES**

- a. GIS Course (CM-629)
- b. GIS Lab (CM-629)
- c. Ecology Course (CM-406)

#### **2. PROFESSIONAL ACTIVITIES**

- a. Establishing GIS lab at the Institute of Archeology and Anthropology
- b. Coordinating the Water Activities at Yarmouk University and Euro-Mediterranean Information System

### **C - MINISTRY OF WATER RESOURCES (OMAN)**

**12/1998 – 12/2000**

Hydrogeologist & GIS Expert

#### **PROFESSIONAL ACTIVITIES**

1. Water resources Assessment, water use and water quality analysis by conducting and supervising the following six hydrogeological projects
  - a) The mechanism of recharge in Jabal Al-Akhdar area using environmental isotopes.
  - b) The influence of the surface dams on the quality and quantity of groundwater.
  - c) Studying the hydrochemistry and transit time of the brackish groundwater in various basins and aquifers using the chemistry and environmental isotopes.
  - d) Study the type, status and quality of the whole Aflaj systems
  - e) Study the effect of the hydrocarbon contaminants from oil wells and under storage tanks on the quality of groundwater.
  - f) Study the high concentration of fluoride and the hyper - alkaline water (pH > 10) throughout Oman.
2. Strengthening the technical capacity of the local Omani of the Ministry of Water Resources by creating intensive courses (theoretical lectures and practical exercises) in water resources studies and

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management.

- a) Instructed 11 practical training courses in GIS applications in water resources for professionals and high Decision-Makers. The duration of each course was 5 days.
  - b) Provided practical training courses using Aquachem and AquiferTest software to analyse the water quality, modelling and hydraulic properties of the aquifers.
  - c) Provided practical training courses about the application of isotope techniques and geostatistical analysis using a real-world data from rain and groundwater from Bani Kharous catchment area.
3. Database Creation for all hydrogeological database
- a) The following database created: wells, aflaj, dams, rain gauges, catchments, streams, faults, soil, geology, roads, regions, and towns
  - b) The entire chemical and environmental isotope database from 176,000 groundwater wells and integrated into Geodatabase system.
  - c) Transform the un-projected digital database of AutoCAD format into projected GIS formats in order to make it usable and sharable between all departments in GIS.
4. Presented seminars and lectures about the hydrogeochemistry, water quality, groundwater contamination, and environmental stable and radioactive isotope and their applications in the hydrogeological studies.
5. Prepared and participating in various meeting related to water resources and environmental related problems.
6. Wrote various research proposals dealing with GIS applications in water resources studies and groundwater contamination.
7. Proposed new legislative laws regarding groundwater protection.
8. Reviewed and commented on various reports and studies related to groundwater in Oman.

### **OTHER PROFESSIONAL ACTIVITIES IN SULTANATE OF OMAN**

1. **Ministry of Electricity and Water, Muscat, Oman** 19-21/04/1999
  - Instructed 3-day GIS course in water resources
2. **Sultan Qaboos University, Sultanate of Oman** 12-14/04/1999
  - Created and instructed 3-day GIS course in water resources and environmental related problems for group of faculties from the Civil Engineering, Biology, and Earth Sciences departments at Sultan Qaboos University.
3. **United Nation – ESCWA (Lebanon)** 13-17/3/99
  - Provided two days GIS training course for the ESCWA (ENRED) dealing with the integration of Paleogen aquifer in the Arabian Peninsula into GIS system.
  - Provided one-day workshop for the Energy, Natural Resources, and Environment Division (ENRED), about the conversion of unprojected AutoCAD digital data format into projected GIS format and integration water resources database into GIS.

### **D - CONCORDIA UNIVERSITY (CANADA)**

**6/1996 – 6/1998**

Adjunct associate professor

1. Instructed different GIS Workshops and seminars for professionals in Canada and Middle East in ArcView and SPANS GIS.

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2. Conducted research project involving the use of a Fuzzy Logic Model in Water Resources Management.
3. Presented various project results at major international hydrogeological and GIS conferences (Canada, USA, England, Tunis, Jordan, Syria, UAE, Oman, and Bahrain).
4. Coordinated research with Yarmouk University regarding a study of paleo-groundwater in arid areas using the environmental isotope.
5. Lectured in hydrogeology, Hydrochemistry, and GIS at various academic institutions and universities in Canada (Health Canada, Environmental Canada), England (BGS) and Middle East (Jordan, Syria, UAE, Oman, and Tunis).

### **E - ALMERC INC. GATINEAU (CANADA)**

**3/1995 - 11/1998**

Director of Hydrogeology and GIS section

1. Director of Hydrogeology and GIS Division, responsible for all research and development in the area of hydrogeology and GIS.
2. Almerco's program manager and coordinator for 3 million dollars project at McGill University to develop 3-D GIS module.
3. Study for Health Canada the distribution of tetrachloroethylene and trichloroethylene as contaminants in groundwater throughout Canada.
4. Study the distribution of radioactive tritium in the atmosphere in north Canada using GIS for Environmental Canada.
5. Conducting a training course for group of professionals from the Middle East in how to use GIS in water resources studies through World University Service of Canada.
6. Conducted a 3-days training course for the employees of Ministry of Water Resources in Jordan in the application of the GIS in water resources management.
7. Business development visits to the Middle East (Tunis, Jordan, Syria, Palestine Oman, and Abu Dhabi). Seminars and lectures in hydrogeology and GIS applications were presented at various governmental organizations and universities in the above-mentioned countries.
8. Writing various research proposals dealing with the study of diverse environmental problems and GIS in order to be funded from the Federal and Quebec government in Canada.

### **F - University of Ottawa, Department of Geology, Ph.D. Candidate**

**9/1991 - 9/1994.**

1. Teaching Assistantship and Research Assistantship during my study for the Ph.D. I have taught the hydrogeochemistry and environmental isotopes courses.
2. Carry a research dealing with hyper-alkaline water at Maqaren area, Jordan
3. Working part time at the chemical and isotope laboratories.
4. Literature Review for the Middle East Water Supply Enhancement Program for the peace process in the Middle East (University of Ottawa, Water Engineering Centre) 1/1993-2/1993).

### **G - WAJ (ISOTOPE LAB - WAJ) – JORDAN**

**1/1987-9/1990**

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### Project Officer

1. Project officer for Amman-Zarqa Basin, studying the flow regime, water quality, groundwater contamination, and the hydrochemical behaviour of groundwater;
2. Project coordinator and conduct special studies for complete hydrogeological investigation dealing with 5 basins in Jordan involving isotopic and geochemical applications.
3. Serve as a lead hydrologist on established network of rainfall stations in Jordan to monitor and interpret the isotopic and chemical composition of precipitation.
4. Study the effluent of wastewater treatment plants and its effect on the quality of shallow groundwater.
5. Environmental impact assessment studies and the effect of the sewage treatment plants on groundwater quality.
6. Study the distribution of trace elements, mainly the mercury in soil and shallow groundwater downstream of some industrial factories.
7. Participating in establishing the Drinking Water Guideline for Jordan.

### **H- WAJ (RESEARCH DIRECTORATE - WAJ) – JORDAN**

**9/1982-12/1986**

#### Hydrogeologist

1. Conducted special studies as a member of hydrogeological teams to perform the following:
2. Monitored the water level and the quality of water in Azraq, Amman-Zarqa and Yarmouk basins
3. Prepared hydrogeological map for Azraq, Amman –Zarqa and Yarmouk basins
4. Conducted hydrogeological investigation to find best locations to drill groundwater wells
5. Managed different drilling programs in different basins
6. Conducted, evaluated and analysed several pumping tests
7. Conducted several hydrogeological studies to estimate the quantity of groundwater

### **VII - TEACHING ACTIVITIES IN THE MIDDLE EAST**

1. Gave hydrogeological and hydrochemical training course to Gulf state, Lebanon, Syria, Egypt and Jordan, organized by Arab Atomic Energy Nov. 27-29/, 1992.
2. Participated as a lecturer in training course in regional workshop on isotope hydrology in the Arab Middle East, Syria, organized by IAEA. Dec.10-14, 1989.
3. Participated as lecturer in training course in regional workshop on isotope hydrology in the Arab Middle East. Jordan organized by IAEA. Mar.21-26, 1989.

### **PUBLICATIONS:**

#### **Textbook**

1. **Bajjali W** (2018) ArcGIS for Environmental and Water Issues. Springer Textbooks in Earth Sciences, Geography, and Environment, ISBN: 978-3-319-61157

#### **Refereed Journals and Conference Proceedings**

2. **Bajjali W** (2019) Geospatial Statistical Approaches to Evaluate Groundwater Deterioration – Jordan. Esri User Conference on July 8–12, 2019 in San Diego, California
3. **Bajjali W** (2015) Geostatistical and Geochemical Approaches to Asses Groundwater Deterioration. ESRI USER Conference, July 20–24, 2015, San Diego, California, USA
4. **Bajjali W**, Al-Hadidi K, Ismail M (2015) Water Quality and Geochemistry Evaluation of Groundwater

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- Upstream and Downstream of the Khirbet Al-Samra Wastewater Treatment Plant / Jordan. *Journal of Applied Water Science*, DOI: 10.1007/s13201-014-0263-x
5. **Bajjali W** (2012) Water Quality Assessment of Newton Creek and its Effect on Hog Island Inlet of Lake Superior. *Journal of Water Quality, Exposure and Health: Volume 4, Issue 3*, Page 123-135.
  6. **Bajjali W** (2012) Spatial Variability of Environmental Isotope and Chemical Content of Precipitation in Jordan and evidence of slight change in climate. *Journal of Applied Water Science: Volume 2, Issue 4*, Page 271-283.
  7. **Bajjali W**, Davidson D, Balcer M (2009) Interdisciplinary Research in Ecology Using GIS Technique at Kimmes Tobin. 29th Annual ESRI International User Conference, July 13–17, 2009, San Diego, CA, USA
  8. **Bajjali W** (2008) Evaluation of groundwater in a three-aquifer system in Ramtha area, Jordan: recharge mechanism, hydraulic relationship and geochemical evolution. *Hydrogeology Journal*, <http://dx.doi.org/10.1007/s10040-008-0284-3>
  9. Davidson, D. W., Gitar, R., **Bajjali, W.** and Anderson, D. S. 2007. Past and Present Landscapes and Plant Cover of the Kimmes-Tobin Mitigated Wetlands, Foxboro, Douglas County, Wisconsin. (07-0160): 86th TRB Annual Meeting - January 21-25, 2007, Washington DC, USA
  10. **Bajjali, W.**, Hooper, D., Hagedorn, S. and Schueller, P. (2006) Groundwater Evaluation in Wisconsin Using Chemical and Radioactive Environmental Isotope Techniques in GIS Environment. 91st Annual Meeting of the National Council for Geographic Education, Lake Tahoe, Nevada October 5-8, 2006
  11. **Bajjali, W.** and Al-Hadidi K. (2006). Recharge origin, overexploitation, and sustainability of water resources in an arid area from Azraq basin, Jordan: case study. *NORDIC HYDROLOGY*, Vol.37 (3), pp.277-292.
  12. **Bajjali, W.** (2006). Recharge mechanism and Hydrochemistry Evaluation of groundwater in the Nuaimh Area, Jordan Using Environmental Isotope techniques. *Hydrogeology Journal*, Vol. 14, Numbers 1-4, pp. 180-191.
  13. **Bajjali, W.** (2005). Model the effect of four artificial recharge dams on the quality of groundwater using geostatistical methods in GIS environment, Oman. *Journal of Spatial Hydrology*, Vol. 5, No.2
  14. **Bajjali, W.** and Al-Hadidi K. (2005). Hydrochemical Evaluation of Groundwater in Azraq Basin, Jordan Using Environmental Isotopes and GIS Techniques 25th Annual ESRI International User Conference, July 25–29, 2005, San Diego, CA, USA
  15. **Bajjali, W.** (2003). Teaching GIS technology at UW-Superior. *Teaching with Technology Today*, Vol. 9 Number 8.
  16. **Bajjali, W.** (2002). The effect of Hilti/Salahi Recharge Dam in Batineh Area, Sultanate of Oman on the Quality of Groundwater Using GIS: Twenty-Second Annual ESRI International User Conference, July 8 – 12, San Diego, CA, USA
  17. **Bajjali, W.** (2002). Characterize the Process of Denitrification in Contaminated Shallow Groundwater by Hydrocarbon Using GIS System in Nizwa Area, Oman: 2002 UCOWR/NIWR Annual Conference "Integrated Transboundary Water Management" July 23-26, Traverse City, MI, USA.
  18. **Bajjali, W.** (2002). Characterizing the Hydrocarbon Contamination in Shallow Groundwater Using GIS in Sharqieh Area, Oman. Society of Environmental Toxicology & Chemistry Midwest Chapter & Society of Toxicology Northland Chapter. USEPA, April 9-10 Duluth, MN, USA,



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19. **Bajjali, W.** and Abu-Jaber, N. (2001). Climatological signals of the paleogroundwater in Jordan. *Journal of Hydrology*, Vol. 243, Issues (1-2), pp.133 – 147.
20. **Bajjali, W.** (2001). Characterizing the water quality and contamination level of groundwater Along the Ceil Zarqa River Using the Fuzzy Logic Approach in GIS Environment. INCO-MED Water Conference, Amman-Jordan, June 11 – 13.
21. **Bajjali, W.** (1998). Utilizing GIS System for Managing the Groundwater in Great Amman Area, Jordan, First Middle East International GIS Conference, Bahrain, October 19-21.
22. **Bajjali, W.**, Clark, I. D. and Fritz, P. (1997). The artesian thermal groundwaters of Northern Jordan: Insights to their origin and subsurface history. *Journal of Hydrology*, Vol.192, Issues 1-4, pp. 355-382.
23. **Bajjali, W.** (1997). Using ArcView to determine the origin of groundwater salinity in Dhuleil, Halabat, and Samra area of Jordan. ESRI User Conference, San Diego, Ca, USA, July 7-11.
24. **Bajjali, W.** (1997). Using a Fuzzy Logic Model in SPANS-GIS to Determine the Vulnerability to Contamination of the Amman-Zarqa Area Aquifer, Jordan. The Tunisian Water Forum, Tunisian Institute for Strategic Studies, Tunis, July 16-18.
25. **Bajjali, W.** (1996). Examining the Recharge Area for Three Aquifer Systems in the Yarmouk Basin (Jordan) Using SPANS-GIS Environment, Building the Community Through GIS, University of Memphis, Tennessee, USA, April, 1996.
26. Clark, I.D., **Bajjali, W.** and Phipps, G. Ch. (1995). Constraining  $^{14}\text{C}$  Ages in Sulphate Reducing Groundwaters: Two Case Studies From Arid Regions. IAEA-SM-336, pp. 43-56, Vienna.
27. **Bajjali, W.** (1995). Determining the suitability of the groundwater resources for drinking purposes in North Jordan by using a fuzzy logic model in a GIS environment. 1995 International SPANS Workshop, August30 - September 1, Ottawa, ONT, Canada.
28. Houry, H. N., Salameh, E., Clark, I. D., Fritz, P., **Bajjali, W.**, Milodowski, A. E., Cave, M. R. and Alexander, W. R. (1992). A natural analogue of high pH cement pore waters from Maqaren Area of Northern Jordan I: Introduction to the site. *Journal of Geochemical Exploration*, Vol.46, pp. 117-132.
29. **Bajjali, W.** (1990). Isotopic Characteristic of Precipitation in Jordan, International Symposium on the Use of Isotope Technique in Water Resources Development Vienna, Austria, 1990, IAEA-SM-319/61P.

### Technical Reports

1. Bajjali, W., Munn, M. and Rogers, M. (2005). Potential Effects of Solid Waste Disposal on Groundwater of the Moccasin Mike Sanitary Landfill, City of Superior. Submitted to Solid Waste Research Program and City of Superior. Solid Waste Research Program. Madison, Wisconsin.
2. Bajjali, W., Ernst, A. and Peura, B (2003). Spatial data Collection from Moccasin Mike Sanitary Landfill using GPS and ArcPAD to create digital elevation model by applying geostatistical methods in GIS environment. University of Wisconsin-Superior.
3. Bajjali, W. (2000). Groundwater contamination by hydrocarbon in ISS wells in Nizwa area and approach to solve the problem. Ministry of Water Resources – Oman.
4. Bajjali, W. (2000). Preliminary study of the hydrocarbon contamination in Wilayat Bani Bu Hassan, Nizwa, Izkat, Barka, areas and PDO wells. Ministry of Water Resources - Oman.

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5. Bajjali, W. (1999). Study the groundwater salinity in Sultanate of Oman using GIS. Ministry of Water Resources – Oman.
6. Bajjali, W. (1999). Effect of Hilti/Salahi recharge dam on the quality of groundwater using GIS. Ministry of Water Resources – Oman.
7. Bajjali, W. (1999). GIS model to choose the best location for agriculture as an alternative method to the injection of water associated with hydrocarbon into shallow aquifers for the Petroleum Development of Oman (PDO). Ministry of Water Resources - Oman.
8. Bajjali, W. (1999). Study the groundwater in Bani Kharous and Al Fara catchment areas using environmental isotope in GIS environment. Ministry of Water Resources – Oman.
9. Bajjali, W. (1996) Study of the Distribution of Tetrachloroethylene and Trichloroethylene in Groundwater Throughout Canada Using GIS. Health Canada, Monitoring and Criteria Division, Bureau of Chemical Hazards, Environmental health Directorate, Ottawa, Canada.
10. Bajjali, W. (1991). Hydrochemical and isotopic approach for evaluating the salination problem in Hallabat, Dhuleil and Samra Areas, Water Authority of Jordan (WAJ).
11. Bajjali, W. (1990). Preliminary study on hydrochemical and isotopic of some thermal water in Jordan. Natural Resources Authority (NRA), Amman-Jordan.
12. Saqar, M., Matar, A., and Bajjali, W. (1989). Performance evaluation of wastewater treatment plants in Jordan and their effect on groundwater. Water Authority of Jordan, Amman-Jordan.
13. Bajjali, W. (1988). Clay Mineralogy in the Industrial Awajan Area. Water Authority of Jordan, Amman-Jordan.
14. Bajjali, W. (1988). Environmental isotope study of the springs in Jordan. Water Authority of Jordan, Amman-Jordan.
15. Bajjali, W. (1987). Environmental isotope chemistry in groundwater in Mukhebeh and Wadi Al-Arab in Jordan. Water Authority of Jordan, Jordan.

### **UNDERGRADUATE RESEARCH – UWS**

#### **Spring 2019 Undergraduate Research Symposium, UWS, Wednesday, May 1, 2019**

- SUSTAINABILITY OF GROUNDWATER IN THREE BASINS USING THE HYDROCHEMISTRY IN GIS ENVIRONMENT. (Dr. William Bajjali) Peter Birschbach and Peter Douglas, GIS Program

#### **Fall 2018 Undergraduate Research Symposium, UWS Friday, Dec 7, 2018**

- GEOSPATIAL STATISTICAL APPROACH TO EVALUATE THE GROUNDWATER DETERIORATION IN THREE REGIONS – JORDAN (Dr. William Bajjali) Maryam Albaghali, and Olivia Miller GIS Program

#### **Spring 2017 Undergraduate Research Symposium, UWS, Friday, May 4, 2018**

- USING MODEL BUILDER IN ARCGIS TO IDENTIFY A SUITABLE SITE TO BUILD A NUCLEAR POWER PLANT (Dr. William Bajjali) Kelly Cusick, Mryam Albaghali, Brady O'mara. GIS Program

#### **Spring 2017 Undergraduate Research Symposium, UWS, Friday, May 5, 2017**

- The Effect of Artificial Recharge on the Quality of Groundwater in Oman using the Geostatistical methods in GIS Environment. (Dr. William Bajjali) Nicole Geisler

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- Using Geostatistical Methods to Study Groundwater Resources in Four-Basins in Jordan. (Dr. William Bajjali) Kirsten Nevin

### **Spring 2016 Undergraduate Research Symposium, UWS, Friday, May 2, 2016**

- Mining and over-exploitation of groundwater resources in Azraq basin, Jordan and the effect on the ecological setting in the region, Brian Eckholm, GIS Program (Dr. William Bajjali)
- Groundwater resources in the state of Wisconsin Marinda Neubarth, GIS Program (Dr. William Bajjali)
- Using GIS techniques to analyze the effect of climate change on sea level and its consequences Cory Johnson, GIS Program (Dr. William Bajjali)
- Using GIS techniques to propose an area to build a nuclear power plant in the Dhuleil area, Paige Klassa, GIS Program (Dr. William Bajjali)

### **Fall 2015 Undergraduate Research Symposium, UWS, Friday, Friday, December 11, 2015**

- GROUNDWATER EVALUATION IN DHULEIL-HALABAT AREA, JORDAN USING THE STATISTICAL AND HYDROCHEMICAL APPROACHES IN GIS ENVIRONMENT Kevin Johnson, Earth Sciences Program, (Dr. William Bajjali)

### **Fall 2014 Undergraduate Research Symposium, UWS, Friday, December 5, 2014**

- STUDY OF THE GROUNDWATER GEOCHEMISTRY AND WATER QUALITY UP- AND DOWNSTREAM OF THE KHIRBET-AL-SAMRA WASTEWATER TREATMENT PLAN, JORDAN. (Dr. William Bajjali) Kevin Johnson
- ANALYZING LOCATIONS AND MAJORS OF ON-CAMPUS UNDERGRADUATE STUDENTS AT UW-SUPERIOR FROM 2009-2013. (Dr. William Bajjali) Ariel Johnson
- EVALUTING THE WATER QUALITY OF FAXON CREEK (Dr. William Bajjali) Benjamin Olson
- DIGITAL MAPPING OF THE UW-SUPERIOR CAMPUS USING ARCPAD (Dr. William Bajjali and Dustin Johnson) Mariah Fehri

### **Spring 2013 Undergraduate Research Symposium, UWS, Friday, May 3, 2013**

- A STATISTICAL ANALYSIS OF THE CAUSES OF LAKE SUPERIOR SHIPWRECKS FROM 1847-1975. Corey Ueland, Biology (Dr. William Bajjali)

### **Spring 2012 Undergraduate Research Symposium, UWS, Friday, May 4, 2012**

- Reed Schwarting: Earthquake Hazards in Wisconsin: Infrastructure at Risk (Dr. William Bajjali)
- Connor Rabideau: Historical Reconstruction of the Normandy Invasion using Spatial Analysis (Dr. William Bajjali)

## **R E S U M E - William Bajjali, Ph.D.**

- Ella Pelfrey and LaShawn Nohrenberg: The Impacts of the 1994 Northridge Earthquake and Its Relationship with Local Geology (Dr. William Bajjali)
- Michael Moretto and Nicholas Bax: PROJECTED SEA LEVEL RISE FROM GLOBAL WARMING (Dr. William Bajjali)

### **Posters in the Rotunda State Capitol, Madison, WI. 8th Annual Celebration of Undergraduate Student Research, April 6, 2011**

- Urban Stream Contamination: Evaluating Sources of Pollution through the Comparison of Local Area Streams. Daniel Fuller and Cole Holstrom (Dr. William Bajjali)

### **13th Annual Undergraduate Research Symposium, University of Wisconsin-Superior, Friday, May 6, 2011**

- Comparison Study of Urban Streams in Superior, Wisconsin. Daniel Fuller and Cole Holstrom, Department of Natural Sciences, University of Wisconsin- Superior (Dr. William Bajjali)

### **Posters in the Rotunda State Capitol, Madison, WI. 7th Annual Celebration of Undergraduate Student Research, May 5, 2010**

- Water Quality Study of Newton Creek. David Braun and Kimberly Slanga (Dr. William Bajjali)

### **12th Annual Undergraduate Research Symposium, UWS, April 30, 2010**

- HYDROCHEMICAL EVOLUTION OF THE BASE FLOW WATER IN NEWTON CREEK FROM THE HEADWATERS TO THE MOUTH (Dr. William Bajjali) David Braun and Kim Slanga, Department of Natural Sciences, University of Wisconsin-Superior, Superior, WI 54880
- USING HYDROLOGY TOOL IN SPATIAL ANALYST TO DELINEATE THE WATERSHED OF NEWTON CREEK IN SUPERIOR, WISCONSIN. (Dr. William Bajjali), Sacha Mkheidze Department of Natural Sciences, University of Wisconsin-Superior, Superior, WI 54880
- WINTER ROAD SALT USE AND ITS EFFECT ON THE WATER QUALITY OF CHESTER AND TICHER CREEKS IN URBAN DULUTH, MINNESOTA. (Dr. William Bajjali), Linda Sellner\* Department of Natural Sciences, University of Wisconsin-Superior, Superior, WI 54880
- LAND COVER/LAND USE CREATION AND CLASSIFICATION WITHIN THE NEWTON CREEK WATERSHED AND ITS EFFECT ON THE QUALITY OF WATER IN THE CREEK (Dr. William Bajjali) Jan O'Malley and Allan Siers, Department of Natural Sciences, University of Wisconsin-Superior
- SEX OFFENDERS IN THE STATE OF WISCONSIN (Dr. William Bajjali) Ross Dudzik and Samantha Licht, Department of Natural Sciences, University of Wisconsin-Superior, Superior, WI 54880

## **R E S U M E - William Bajjali, Ph.D.**

### **11th Annual Undergraduate Research Symposium, UWS, May 1, 2009**

- KIMMES-TOBIN MITIGATED WETLAND: WATER QUALITY AND DEPTH ANALYSIS (Dr. William Bajjali and Dr. Mary Balcer) Teresa O'Keefe, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- SPATIAL ANALYSIS OF EARTHQUAKE GEOHAZARD IN WISCONSIN (Dr. William Bajjali) Linda Sellner and Hollie Parsons, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- WATER CHEMISTRY ANALYSIS OF NEWTON CREEK (Dr. William Bajjali) Jeremy Bates and Jillian Holm, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- ANALYZING CUSTOMER DEMOGRAPHICS FOR BUSINESS DECISIONS (Dr. William Bajjali) Ben Hansen, Steve Mickolajak, and Josh Pearson, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 5488
- INVESTIGATING FLOODING IF THE SEA LEVEL WERE TO RISE DUE TO GLOBAL WARMING (Dr. William Bajjali) Matthew Jahnke and Wendy Wohlwend, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880

### **10th Annual Undergraduate Research Symposium, UWS, May 20, 2008**

- The groundwater quality in the state of Wisconsin. Alyssa Anderson and Teresa O'keefe (Dr. William Bajjali), Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- Growing America's fuel. Ryan Vanlanduyt (Dr. William Bajjali), Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880

### **9th Annual University of Wisconsin System Symposium for Undergraduate Research and Creative Activity, UW-Stout April 20, 2008**

- Water quality and assessment of Newton Creek. Jason Bramstadt and Jared Leino (Dr. William Bajjali)
- The groundwater quality in the state of Wisconsin. Alyssa Anderson and Teresa O'keefe (Dr. William Bajjali)
- Growing America's fuel. Ryan Vanlanduyt (Dr. William Bajjali)

### **9th Annual Undergraduate Research Symposium, UWS, May 20, 2007**

- Analyzing flood potential in GIS environment; a case study from Kansas. (Dr. William Bajjali) William Whirry, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- Earthquake hazards in Wisconsin: infrastructure and population at risk. (Dr. William Bajjali) Matthew J. Goodman, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- The use of GIS to understand the geology of earthquakes in North America; case study from California and Alaska. (Dr. William Bajjali) Reed A. Coil, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 54880
- Volcano modeling of mount rainier in GIS environment. (Dr. William Bajjali) Matthew

## **R E S U M E - William Bajjali, Ph.D.**

Miller and Gary Wernlund, Department of Biology and Earth Sciences, University of Wisconsin-Superior, Superior, WI 548

### **8th Annual University of Wisconsin System Symposium for Undergraduate Research and Creative Activity, UW– Stout, April 20, 2007**

- Potential Earthquakes in Wisconsin and its influence on the Population and Transportation. Mathew J. Goodman (Dr. William Bajjali)
- The Use of GIS to Understand the Geology of Earthquakes in North America; Case Study from California and Alaska Reed A. Coil (Dr. William Bajjali)
- Analyzing the Potential Flood in USA in GIS Environment; Case Study from Kansas William Whirry (Dr. William Bajjali)

### **8th Annual Undergraduate Research Symposium, UWS, May 5, 2006**

- Radioactive Tritium in Precipitation and Groundwater and its Implication in Applied Hydrogeology. David Hooper, (Dr. William Bajjali)
- The Potential Effects of the Sarona Lanfill on the Environment. Paul R. Lehman and Zachary M. Polaske, (Dr. William Bajjali)
- Water Quality Assesment of Newton Creek of Superior, Wisconsin Eric D. Johnson\* and Nicklas R. Sandstrom\*, (Dr. William Bajjali)
- Earthquakes Occurance along Sant Andreas Fault in Western California and its Potential Effects on the Population. Jill A. Wallin\* and Kara J. Kent\*, (Dr. William Bajjali)
- Groundwater Evaluation in Wisconsin using GIS techniques. Anthony J. Bartolerio\*, and Matthew W. Schlapper\*, (Dr. William Bajjali)

### **7th Annual Undergraduate Research Symposium, UWS, May 6, 2005**

- The Lake Superior Research Institute GIS analysis Application. Steve Hagedorn (Dr. William Bajjali)
- Saline Groundwater and population in Wisconsin. John Cavanaugh (Dr. William Bajjali).
- Radioactive Tritium Level in Precipitation and Groundwater in Wisconsin and it Applications in Hydrogeology. David A. Hooper (Dr. William Bajjali)
- Potential Effects of Solid Waste Disposal on Groundwater of the Moccasin Mike Sanitary Landfill. Michele A. Rogers and Mary L. Munn (William Bajjali).

### **6th Annual UW System Symposium for Undergraduate Research and Creative Activity, UW – Oshkosh April 28, 2005**

- Potential Effects of Solid Waste Disposal on Groundwater of the Moccasin Mike Sanitary Landfill. Michele A. Rogers and Mary L. Munn (Dr. William Bajjali).
- Radioactive Tritium Level in Precipitation and Groundwater in Wisconsin and it Applications in Hydrogeology. David A. Hooper (Dr. William Bajjali)
- Spatial Relationship between bar, schools and churches in Superior, Wisconsin. John Cavanaugh (Dr. William Bajjali).

## **R E S U M E - William Bajjali, Ph.D.**

### **6th Annual Undergraduate Research Symposium, UWS, April 30, 2004**

- Radioactive Occurrence in Wisconsin Groundwater as a Tool for Dating and Potential Harmful Effects. Steve Hagedorn (Dr. William Bajjali)
- Geochemical Evolution of Groundwater in Wisconsin Based on the Content of the Salinity and Nitrate. Paul Schueller and Justin Van De Hey (Dr. William Bajjali)
- Distribution of Cladoceran Zooplankton in the Great Lakes using GIS Environment. Michael Travis (Dr. Mary Balcer and Dr. William Bajjali)
- A Study of Dragonflies in Empire Bog, Empire Wilderness Area, Douglas County. Julie Pleski (Dr. William Bajjali, Mr. Robert DuBois)
- Using GIS as a Data Management Tool to Characterize the Contaminants Discharging Toward Lake Superior. Josh Zika (Dr. William Bajjali)
- Ecological Evaluation of Superior School Forest Using GIS Technique. Laura Bosak, Paul Schueller, and Josh Zika (Dr. Mary Balcer and Dr. William Bajjali)
- Study of Incoming Students to the Continuing Education Program at the University of Wisconsin - Superior. Justin A. Van DeHey (Dr. William Bajjali and Ms. Sheryl Homan)
- Data Collection and Design to Create a Handicapped Accessibility map at UWS Using GIS Steve Hagedorn, Genelle Lamont, and Zakary Thumbi (Dr. William Bajjali) <

### **Symposium for Undergraduate Research & Creative Activity UW- Oshkosh April 28, 2004**

- Ecological Evaluation of Superior School Forest Using GIS Technique. Laura Bosak, Paul Schueller, and Josh Zika (Dr. Mary Balcer and Dr. William Bajjali)
- A stroll through Geologic Time at Amnicon Falls. Emily Loomis and David Lamont (Dr. William Bajjali)
- A Study of Dragonflies in Empire Bog, Empire Wilderness Area, Douglas County. Julie Pleski (Dr. William Bajjali)
- Data Collection and Design to Create a Handicapped Accessibility map at UWS Using GIS Steve Hagedorn, Genelle Lamont, and Zakary Thumbi (Dr. William Bajjali)

### **Symposium for Undergraduate Research at UW – Eau Claire April 29, 2003**

- Andrew Ernst and Bruce Peura (Dr. William Bajjali) Landfill Investigation of Shallow Groundwater Quality of Lake Superior.
- Joshua Watten (Dr. William Bajjali) Tree Mapping of the Campus of University of Wisconsin – Superior using GIS.
- Michael Anderson (Dr. William Bajjali) Health Care Services and Facilities in Duluth, MN and Superior
- Jennifer Rico (Dr. William Bajjali) Japanese American Internment Project

### **5th Annual Undergraduate Research Symposium, UWS – Superior May, 2002**

- Jennifer Rico (Dr. William Bajjali) Japanese American Internment Project
- Michael R. Anderson (Dr. William Bajjali) Health Care Services and Facilities in Duluth, MN and Superior, WI

## **R E S U M E - William Bajjali, Ph.D.**

- Andrew Ernst and Bruce Peura (Dr. William Bajjali) Landfill Investigation of Shallow Groundwater Quality of Lake Superior