Exhibit 550

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Date: 8 May 2025

RE: *Gary L. McElhiney v. United States, Case No. 7:23-cv-01368*

I, Dr. Michael Young, M.D. am a board-certified neurology physician. This independent medical expert report is being conducted for the purpose of independent neurologic medical review and assessment. This report is strictly for independent review purposes only and no medical treatment or clinical recommendations will be made. All of the opinions herein are offered based on a reasonable degree of medical certainty. A review of prior medical documentation was carried out, as was an independent medical exam of Mr. Gary L. McElhiney, Sr.

A copy of my curriculum vitae, which includes a list of publications, is attached hereto as Exhibit A.

I have not testified as an expert in the last four years.

My rate is $525 per hour

1. Overview of Report

This report provides a review of Mr. Gary McElhiney's pertinent medical records, deposition testimony, and current scientific literature, with a focus on the diagnosis, progression, and etiologic factors of Parkinson's disease. Also incorporated is a summary of an independent medical evaluation (IME) of Mr. Gary McElhiney that I conducted on March 26, 2025. The following sections detail his clinical history, diagnostic evaluation, and an assessment of potential risks, culminating in my independent neurologic opinion regarding his condition and underlying risks.

2. Expert Opinion

Based on my training, clinical experience, a thorough review of the records provided to me, and IME, it is my medical opinion, to a reasonable degree of medical certainty, that Mr. Gary McElhiney has Parkinson's disease. Additionally, it is my opinion that there is insufficient evidence to conclude to a reasonable degree of medical certainty that his condition is definitively caused by exposure to contaminated water at Camp Lejeune.

I reserve the right to modify my opinions based on the acquisition of additional information that might arise in the future.

3. Methodology

In formulating this opinion, I reviewed Mr. McElhiney's medical records and deposition testimony and all records referenced in this Report, as well as relevant and up-to-date medical literature concerning the diagnosis and potential etiologies of Parkinson's disease. I also performed an IME of Mr. McElhiney on March 26, 2025, using a secure videoconferencing platform. I formulated a

differential diagnosis and comprehensive evaluation to come to my opinion on causation, which includes an evaluation of all potential risk factors and etiologies, including idiopathic.

4. Medical Records and Other Records Reviewed

Prior medical and legal documentation was reviewed, including the following documents:[1]

- Department of the Navy, Letter from Commandant, 21 March 2002
- Records from Dr. Vera Huffnagle
- Records from Vanderbilt University Medical Center (VUMC)
- Records from Dr. Sherwood
- Records from Dickson Medical Associates
- CV Nicole Salloum MD
- SSA Itemized Statements of Earnings
- Discovery Pool Profile Forms
- National Archives and Records Administration records
- Forms 1040
- VA Chemistry/Hematology PHR
- Department of VA regional office rating decision 4/22/2021
- Department of VA regional office rating decision 6/2/2021
- MyHealtheVet Personal Information Report
- Photos from time in service
- VA Summary (creation date 9/25/2023)
- Form 1040-SR 2019
- Form 1040A
- Results of FOIA search conducted in the case of Gary L. McElhiney
- Certificate of Release or Discharge from Active Duty
- Track 1 Trial Plaintiff Damages Assessment
- Globe newspaper excerpts
- VA progress notes, including cardiology, sleep medicine, neurology, ophthalmology
- VA compensation and pension exam inquiries
- Statement in Support of Claim 10/26/2009
- VA benefits administration rating decision documents
- Compensation and Pension Exam Report, 10/22/2014
- Enlistment/Reenlistment Document, Armed Forces of the United States
- Chronological Record of Medical Care (Standard form 600)
- Application for disability compensation and related compensation benefits (VA form FEB 2016 21-526EZ)
- Disability benefits questionnaire
- VA Claims Intake Center records
- Application for medical benefits
- VA consent for clinical treatment/procedure
- VA request for and auth to release health information
- Treater depositions including by:

[1] All materials considered at provided in the attached Appendix A.

    - Drs. Sherwood
    - Dr. Salloum
    - Dr. Huffnagle
    - Dr. Koons
- Depositions of:
    - Gary McElhiney
    - Simmone McElhiney
- Expert Report of Dr. Richard Barbano, February 7, 2025
- Expert Report of Kay Hairston, February 7, 2025
- Expert Report of Chad Staller, February 7, 2025
- Expert Report on Gary McElhiney of Judy LaKind, May 8, 2025
- Expert Report on Gary McElhiney of Lisa Bailey, May 8, 2025
- Mr. McElhiney's responses to the United States's Requests for Admission

5. Background on Parkinson's Disease

What is Parkinson's Disease (PD)?

Parkinson's disease (PD) is a gradually progressive neurodegenerative disorder that impacts both motor and non-motor functions.[1] James Parkinson first described the condition in 1817 in *"An Essay on the Shaking Palsy"* and in 1872, Jean-Martin Charcot dubbed the condition Parkinson's disease.[2,3] PD involves the loss of dopamine-producing neurons in the subtantia nigra (a part of the midbrain, in the upper part of the brainstem), that results in a dopamine deficiency.[4] Dopamine is a neurotransmitter – a chemical substance that plays a key role in nervous system signaling.[5] Disruptions of dopamine signaling in PD is associated with a range of motor and non-motor symptoms.[6] Abnormal aggregates of proteins including a-synuclein have been identified in the central, autonomic and enteric nervous systems of individuals with PD, and have been associated with cell dysfunction and cell death,[7] though the exact pathophysiologic mechanisms in PD are not fully understood, and are being actively researched.[8] Prototypical symptoms of PD include motor symptoms (e.g., bradykinesia, muscle rigidity, rest tremor, gait disturbance)[9] and non-motor symptoms (e.g., constipation, REM-sleep disorders, impaired sense of smell, autonomic changes).[10,11] While PD was initially considered a disorder of the brain alone, there is increasing recognition that PD affects multiple systems throughout the body, and as evidenced by identification of a-synuclein aggregates not only in the brain but also in the gut, peripheral autonomic nervous system, skin, olfactory system, and salivary glands of individuals with PD.[12-15]

How Common is PD?

PD is considered the second-most common neurodegenerative disease worldwide.[16] It has been estimated to affect over 6 million people globally, and over 900,000 people in the United States.[16,17] The Global Burden of Disease (GBD) project found that between 1990 and 2016, the number of people diagnosed with PD increased by approximately 76%.[18,19]

How is PD Diagnosed?

There is no single test that can definitively diagnose PD.[20-23] Diagnosis of PD relies principally on comprehensive medical history and meticulous neurological examination.[1,20-23] It is a clinical diagnosis, and no single laboratory or neuroimaging test has been identified that can definitively

diagnose PD with 100% sensitivity and 100% specificity, though research efforts are underway to identify biomarkers that may be used to diagnose, subclassify and track disease progression in the future.[24-27]

In 2015, the Movement Disorder Society (MDS) published Clinical Diagnostic Criteria that provided a more detailed method for diagnosing PD based on movement symptoms, response to medication, and other clinical factors.[28-30] The first essential requirement for a diagnosis is parkinsonism, which is defined as bradykinesia (slowness of movement) in combination with at least one of the following: resting tremor or muscle rigidity.[28] Once parkinsonism is established, the diagnostic process determines whether the patient meets criteria for Clinically *Established* PD or Clinically *Probable* PD. This determination requires assessment of supportive criteria, exclusion criteria, and red flags.[28]

Supportive criteria increase confidence in a Parkinson's diagnosis.[28] A clear and dramatic response to dopaminergic therapy is one of the strongest indicators, where the patient returns to near-normal function with medication.[28] If detailed records of the initial response are unavailable, a dramatic response can still be confirmed by marked improvement with dose increases or significant worsening with dose decreases.[28] Additional supportive criteria include the presence of levodopa-induced dyskinesia; rest tremor documented in a clinical exam; and either olfactory loss (loss or diminution of smell) or cardiac sympathetic denervation on MIBG scintigraphy.[28]

Absolute exclusion criteria are features that definitively rule out a Parkinson's diagnosis.[28] These include cerebellar abnormalities (e.g., cerebellar gait, limb ataxia, or cerebellar oculomotor abnormalities); downward vertical gaze palsy or significantly slowed downward eye movement; a diagnosis of probable behavioral variant frontotemporal dementia or primary progressive aphasia within the first five years of disease; Parkinsonian symptoms that are restricted to the lower limbs for more than three years; treatment with dopamine receptor blockers or dopamine-depleting agents at doses that could cause drug-induced parkinsonism; and a lack of an observable response to high-dose levodopa despite significant disease severity.[28] Additional exclusions include unequivocal cortical sensory loss (e.g., loss of graphesthesia or stereognosis with intact primary sensory modalities), clear limb ideomotor apraxia, progressive aphasia, or normal presynaptic dopaminergic neuroimaging, which suggests the absence of dopaminergic degeneration.[28] If another condition known to cause parkinsonism better explains the patient's symptoms, or if an expert physician determines that an alternative syndrome is more likely, PD is ruled out.[28]

Red flags are warning signs that suggest another condition may be responsible for the patient's symptoms.[28] A major red flag is rapid progression, where the patient develops significant gait impairment requiring regular wheelchair use within five years of symptom onset.[28] A complete absence of motor symptom progression over five or more years, unless the stability is due to treatment, also raises concerns.[28] Other red flags include early bulbar dysfunction, such as severe speech impairments (dysphonia or dysarthria) or swallowing difficulties (dysphagia), within the first five years, as well as respiratory dysfunction, including inspiratory stridor or frequent sighing.[28] Severe autonomic failure in the first five years is another red flag; this may present as orthostatic hypotension, defined as a drop in blood pressure of at least 30 mmHg systolic or 15 mmHg diastolic within three minutes of standing, in the absence of dehydration or medications that could explain it.[28] Severe urinary retention or incontinence within the first five years is also concerning, unless it is part of a long-standing or mild stress incontinence history or attributable to prostate disease.[28] Recurrent falls (more than one per year) due to balance issues within three years of onset is another red flag.[28] Additional red flags include disproportionate anterocollis (dystonic neck posture) or

contractures of the hands or feet within the first ten years, as well as the absence of common non-motor features of Parkinson's despite five years of disease duration, such as sleep dysfunction (insomnia or symptoms of REM sleep behavior disorder), autonomic dysfunction (constipation, urinary urgency, symptomatic orthostasis), reduced sense of smell, or psychiatric symptoms (depression, anxiety, or hallucinations).[28] Unexplained pyramidal tract signs, such as pathologic hyperreflexia or pyramidal weakness, is also detailed as a red flag, as is bilateral symmetric onset, where both sides of the body are equally affected from the beginning with no side predominance.[28]

The diagnostic process follows a systematic approach. If a patient meets the basic movement symptom criteria (bradykinesia plus either rest tremor or rigidity), the neurologist first checks for absolute exclusion criteria.[28] If any are present, Parkinson's is ruled out.[28] If no exclusion criteria are found, the neurologist then assesses the number of red flags and supportive criteria.[28] If the patient has at least two supportive criteria and no red flags, they meet the criteria for Clinically Established PD.[28] If there are no more than two red flags, but the number of supportive criteria equals or outweighs them, Clinically Probable PD can be diagnosed.[28]

A diagnosis of Clinically Established PD requires three conditions: the absence of absolute exclusion criteria, the presence of at least two supportive criteria, and no red flags that could indicate an alternative condition.[28] Clinically Probable PD, which allows for some uncertainty, also requires the absence of absolute exclusion criteria, but it permits the presence of red flags, provided that they are counterbalanced by supportive criteria. If one red flag is present, at least one supportive criterion is needed to offset it.[28] If two red flags are present, at least two supportive criteria are required.[28]

Why Might Someone Develop PD?

A person's risk of developing PD is influenced by a complex interplay of risk factors.[6,31-33] Risk factors are characteristics or conditions that may independently or in combination increase the likelihood of (but do not necessarily guarantee) a person developing PD. Risk factors can be extrinsic (e.g., environmental factors, lifestyle behaviors, physical factors) or intrinsic (e.g., genetic vulnerability, medical comorbidities that may place one at higher risk of PD).[16,34] Some risk factors are modifiable (such as physical inactivity), whereas others are nonmodifiable (such as genetic mutations).[35]

General examples of PD risk factors include genetic vulnerabilities (e.g., pathogenic mutations in SNCA, LRRK2, GBA, parkin, PINK1, DJ-1, ATP13A2, PLA2G6, FBXO7; VPS35; ATP13A2; PLA2G6; FBXO7; SMPD1; APOE; ATP1A3, C19orf12, CSF1R, DCTN1, DNAJC6, FTL, GCH1, GRN, LYST, MAPT, OPA3, PANK2, PRKRA, PTRHD1, RAB39B, SLC30A10, SLC39A14, SLC6A3, SPG11, SPR, SYNJ1, TH, TUBB4A, VPS13A, and WDR45);[36-38] environmental factors (e.g., exposures to air pollution/particulate matter,[39] certain chemicals, micro/nanoplastics,[40-42] pesticides);[39] medical comorbidities (e.g., history of head trauma,[40,41] certain infectious diseases[42-45] and autoimmune conditions,[46,47] diabetes/prediabeltes,[48] cardiovascular disease,[49] PTSD,[50-52] upper gastrointestinal mucosal damage as may occur in GERD);[53,54] and lifestyle factors (e.g., physical inactivity, certain dietary choices).[55] Also among non-modifiable risk factors are older age (PD is rare in individuals under age 50, with increase in incidence after age 60[60]), male sex, and positive family history.[58,59]

While the presence of risk factors may increase the likelihood of developing PD, no single risk factor is categorically deterministic. This means that no risk factor's presence absolutely guarantees

disease onset; many individuals with known risk factors never develop PD, and conversely, some individuals without identifiable risk factors nonetheless develop PD. Most cases of PD (estimated at around 70-80%) are considered idiopathic, meaning that they arise without a definitive, singular known cause.[60,61] Even when a specific cause is uncovered, the presentation can vary considerably across individuals, underscoring the multifactorial and heterogeneous nature of PD and its progression.[61,62]

Notably, risk factors do not necessarily constitute mechanisms of causation. While epidemiology frequently identifies risk factors through the observation of statistical associations with a disease on a population level, risk factors themselves do not necessarily carry causal power to drive disease pathogenesis.[63] For example, while being male is a risk factor for PD (insofar as male sex is associated with increased risk of developing PD), being male does not cause PD. Risk factors alone, derived from population-level statistical associations, neither provide mechanistic explanations nor establish individual-level disease causation.[64] I defer to Dr. Goodman's meticulous report discussing PD causation more generally.

Prognosis and Management of PD

The prognosis of PD typically involves progressive neurodegeneration, leading to increasing motor and nonmotor symptom burden; however, the tempo and nature of symptom progression varies considerably among individuals.[65] Even as PD leads to deterioration in neurological function, quality of life may be maintained through multifactorial symptom management involving multidisciplinary care and therapeutic management.[66,67] Dopaminergic pharmacotherapy, lifestyle interventions (e.g., exercise-based strategies), and careful symptomatic treatment, are among main strategies to manage PD, and neurotechnological approaches such as deep brain stimulation (DBS) may also play a role in some cases.[68,69]

6. Plaintiffs' Relevant Medical History

Mr. Gary L. McElhiney is a 70-year-old right-handed male, raised in Fairview, TN, 4th born with 4 brothers and 1 sister, who grew up on a farm with well-based water supply, and served in the Marine Corps from April 4, 1972 to September 30, 1995. Mr. McElhiney has a complex medical history including chronic lumbosacral radiculopathy (R chronic L5-S1 radiculopathy with lower extremity demyelinating motor neuropathy); lumbar stenosis with spondylolisthesis; trigeminal neuralgia; acquired right foot drop; multiple myeloma (s/p bone marrow biopsy); adjustment disorder with anxiety and depressed mood; PTSD; chronic insomnia; tinnitus with hearing loss; GERD; BPH; postural dizziness and autonomic dysfunction; bladder disorder; prediabetes; low B12; Raynaud's phenomenon; dysesthesia; polyarticular arthralgia; seborrheic dermatitis, eczema and rosacea; hyperlipidemia; ventricular premature complexes; herpes zoster; trigeminal neuralgia; arthroscopic knee surgery (1987) and bilateral inguinal hernia repairs (1994, 2001); prior traumatic head injuries (including sports-related head injury in 1991), broken nose (1980s), and multiple epidural steroid injections (~5) for chronic musculoskeletal pain. In late 2010s he sought treatment for neuromotor symptoms that ultimately led to a diagnosis of Parkinson's disease, as further detailed below.

By way of background, Mr. McElhiney served in the Marines during Gulf War Era, Peacetime and Vietnam Era. USMC fitness report 4/6/1987 described him as a "highly dedicated, conscientious Staff NCO. He sets high standards for himself and maintains a neat, well-groomed appearance at all

times. His attention to detail, drive and flexibility contribute to his consistently outstanding performance."

Mr. McElhiney's timeline at Camp Lejeune reflects a complex and varied service history, and I defer to the exposure timelines determined by Drs. LaKind and Bailey for the precise time period that Mr. McElhiney was at Camp Lejeune, which began in July 1972.

The following is a recitation of certain pertinent entries from Mr. McElhiney's medical records:

On 7/29/1982 Mr. McElhiney was evaluated at Camp Johnson Branch Clinic for "very sharp pain to posterior, upper R hip x 6 days following heavy lifting, general auto shop work with tires etc. Relates lots of sitting on hard surface, squatting and working 'bent over.'… similar problem during 1981 from heavy lifting…states pain is very sharp, located in general area of spot mentioned, and radiates down back of R leg to behind R knee. Also notes a tingling sensation when it occurs. Pain is not constant but easily irritated by pressure to said area...walk is normal but 'slower than usual', irritating when climbing stairs…cannot lay on back in bed due to soreness." Bending at the waist, chin to chest, upper body rotation and sitting on hard chair was noted to be irritating/worsening discomfort as well. Assessment was "moderate muscle strain of lower R back/hip" and "suspect sciatic irritation." He was prescribed oral analgesics, placed on "light duty" and plan to return to clinic for follow-up in 24-28 hours.

Mr. McElhiney has a long history of orthopedic issues:

- On 12/29/1982 Mr. McElhiney was seen for "continued soreness to lower L leg x 2 wks, irritated by running and standing…related hx of cellulitis in L foot (date unknown). Prior entries concerning knee trauma. No known allergies. Works as a mechanic." Assessment was documented as stress injury from running, possible fracture, and rule-out cellulitis.

- On 1/7/1983 Mr. McElhiney was seen at Urgent Medical Care Center in Greensboro, NC for "probably medial meniscus injury" with "pain in the R knee and some swelling in the medial joint for past 1 mo[nth]".

- On 9/1/1983, then "28-year-old Gunnery Sergeant" was seen in orthopedics clinic in the Camp LeJeune Naval Hospital "with a problem of his left knee for approximately eight months. While engaged in a run at the turn around point, he had a catching sensation in his knee, with subsequent pain along the lateral aspect of this knee. Since that time, he has had three episodes in which the knee apparently locked in a position of flexion at approximately 90 degrees and slowly unlocked on its own." It was not felt that he had a "surgically addressable lesion as he is not significantly incapacitated" and it was recommended "that he begin a progressive running program."

- On 8/10/1988 Mr. McElhiney underwent evaluation by Dr. C.E. Ballenger III for "pain and tingling in the left leg, foot and hip. He is felt to have a radiculopathy with the date of onset being given as several months ago." EMG/NCV at that time was "in keeping with a very mild left L5 radiculopathy."

- On 12/25/1988 Mr. McElhiney underwent evaluation in the Acute Care Clinic, USNH Branch Clinic, Iwakuni (Japan) with a chief complaint of "poss[ible] broken nose / assault." He stated "I think I was bunched in the nose. I was dizzy for a little while, but I never fell." Exam was notable for nasal bleeding, nose "deviated markedly to L". He was administered local anesthetic, 15mg Valium IV push, and nasal boned were elevated and stabilized.

- On 5/12/1989 Mr. McElhiney underwent consultation by J.V. Wolfe M.D. in the Orthopedics division and referred to Neurology for "L sciatica...main limitation to activity is pain. No weakness." Physical exam at that time was notable for decreased sensation to light touch in the medial aspect of the L lower extremity (L4-5); + trigger point in the L paralumbar/sacral region and plan to trial elavil and motrin and return to clinic in 6 weeks.

- On 10/4/1989 he was evaluated in the Orthopedic Department of the Naval Hospital in Camp Lejeune for "bad L knee (old since early 80s)…also has LBP [low back pain] being managed conservatively." Plan was made for arthroscopy at that time.

- On 5/29/1990 Mr. McElhiney was evaluated by Physical Therapy in Iwakuni Branch Clinic (Japan); at that visit, he was noted to have "chronic L sciatica, L knee pain, L lower extremity tingling sensations from hip to ankle…L lumbar area discomfort…L5 radiculopathy."

- On 7/20/1991 Mr. McElhiney was seen in the Acute Care Clinic at USNH Branch Clinic Iwakuni, Japan after "being struck by softball" and was found to have "volar dislocation DIP R index" finger with no fracture seen on X-ray. He underwent reduction by longitudinal traction with good reduction seen on post-reduction X-cray with no fracture.

- On 8/28/1991 Mr. McElhiney was seen in the Acute Care Clinic at USNH Branch Clinic Iwakuni, Japan after "he collided with another player while playing softball." He was found to have a "tender distal radius…able to make fist, dorsiflex, ulnar & radially rotate wrist." X-ray showed a "nondisplaced radial fx [fracture]" and a radial splint and sling were placed with instructions to elevate with ice and follow up.

Of note, apart from longstanding orthopedics issues, on 7/9/1991 Mr. McElhiney was seen by Dr. K Byrd, MD in Iwakuni, Japan for 3 days of right-sided abdominal pain, and was diagnosed with dyspepsia.

Certificate of Release or Discharge from Active Duty detailed that Mr. McElhiney served as a Master Gunnery Sergeant (E-9) in the United States Marine Corps, and that he served for 23 years before his honorable discharge in 1995 (active duty beginning in 1972). His primary specialties were Motor Transport Maintenance Chief and Motor Vehicle Operator. During his service, he earned numerous awards/medals/ribbons/badges, including the Good Conduct Medal, Navy

Commendation Medal, National Defense Service Medal, Navy Arctic Service Ribbon, Meritorious Mast, Sharpshooter Badge, Pistol Expert Badge, and the Armed Forces Expeditionary Medal. He completed military leadership and technical training in maintenance and vehicle operations. Upon separation, he was transferred to the Fleet Marine Corps Reserve. Per a letter dated 21 March 2002 (Subj: Retirement), Mr. McElhiney retired from the Fleet Marine Corps Reserve as a Master Gunnery Sergeant on 1 April 2002.

VA rating decision rendered 5/16/1996 based on review of service medical records from 1972-1995 evaluated issues of tinnitus, knee impairment, lumbosacral strain, dermatitis, inguinal hernia, hearing loss, bilateral hip pain, right knee pain, and swelling of right temporal artery, and determined that Mr. McElhiney had multiple conditions connected to his military service, including tinnitus (10%, based on persistent tinnitus consistent with a history of "head injury, concussion, or acoustic trauma"); for left knee impairment with a history of surgery (10%); lumbosacral strain (10%); dermatitis and a right inguinal hernia (0%). At the time of that evaluation, Mr. McElhiney's combined service-connected disability rating therefore totaled 30%.

VA Rating decision 3/4/2010 included evaluations for rosacea (determined to be 10% disabling); spondylosis of thoracolumbar spine (10%); tinnitus (10%); right inguinal hernia (0%). Notes from the VA indicate findings of RLE radiculopathy, right 5th cranial nerve with post herpetic neuralgia (previously rated as right temporal arteritis), lumbar disc disease, and left L5 radiculopathy, which were evaluated on 11/19/2014 as 20, 10, 20, and 20 percent disabling.

Mr. McElhiney's constellation of disabling conditions were recapitulated in a visit with Dr. Ronald Wiley, MD, PhD on 7/27/2012 who additionally documented that "at the time he first developed the right facial pain/tingling/rash he was very active in athletics including football, soccer, softball, etc…other problems include low back pain – has repeated steroid injections, walks with cane in right hand." Dr. Wiley's assessment was consistent with trigeminal neuropathy secondary to herpesvirus: "1 - this patient does not now, nor did he ever have temporal arteritis because the age at onset was too young, he has a normal sed rate, he does not have anemia and polymyalgia rheumatica symptoms which are all inconsistent with temporal arteritis. 2 - the most likely diagnosis is herpes simplex involvement of right maxillary division of the trigeminal nerve which began around 1990. This is usually acquired through skin-to-skin contact with an infected individual such as in sports. 3 - this condition is at least mildly disabling since he has modified his work schedules and leisure activities to some degree to deal with flares of symptoms. 4 - he also has dermatologic diagnoses: seborrheic dermatitis and rosacea, which may, or may not, be related to the presumed recurrent herpes."

Later adding to Mr. McElhiney's complicated medical were visual problems. On 8/24/2014 Mr. McElhiney was seen by Dr. Chomsky for ophthalmology consultation at the VA for a chief complaint of blurry vision. At that visit it was noted that he was experiencing daily fluctuations in vision, "light gray everywhere" as well as R temporal pressure and swelling, with brow ache and V2 hyperesthesia. At that visit, a temporal artery biopsy and rheumatology consultation was recommended, recognizing the reported history of temporal arteritis, as well as continued monitoring and management of Meibomian gland dysfunction, dry eyes and cataracts.

During this time McElhiney's back pain persisted. He was seen on 9/26/2014 in routine follow-up at primary care clinic where it was noted that "low back pain persists." MRI was ordered which showed neural foraminal stenosis at L4-L5 and L5-S1 bilaterally.

Mr. McElhiney's significant visual symptoms continued, and 11/4/2014 Mr. McElhiney was seen in evaluation at Neuro-Ophthalmology clinic by Dr. John Bond III for "right facial pain/swelling is felt to represent trigeminal neuropathy." It was noted that he "developed a large floater in the left eye" and "occasionally sees flash of light in the left eye." He was also found to have posterior vitreous detachment in the left eye.

Mr. McElhiney's longstanding disabling conditions were again recapitulated when he was seen on 10/17/2014 in consultation with Dr. Daniel A. Birchmore of the VA rheumatology service, who chronicled that he "came out of the military in 1995 after 24 years of service in the Marines and was listed as service-connected for inflammation of the 5th cranial nerve, disk disease of the lumbar spine, and neuralgia of the sciatic nerve, plus eczema and knee condition and tinnitus. He continues to have episodic swelling of the right temporal area and right supraorbital headaches; these have increased in frequency and now are occurring about every 2 weeks. The headache and the swelling last for 2 or 3 days. The numbness in his right cheek area and the paresthesias are always present… continues to have episodic swelling of the right temporal area and right supraorbital headaches; these have increased in frequency and now are occurring about every 2 weeks. …numbness in his right cheek area and the paresthesias are always present… When seen in oculoplastics/neuro-ophthalmology, it was noted that his inflammatory markers were normal and there were no findings at that time indicative of temporal arteritis from an ocular standpoint and it was recommended that he not undergo a temporal artery biopsy. … no improvement with the prednisone 3-week course on this occasion… He has had some graying of vision of the left eye at times. He has had some vision changes on the right several times per day during these episodes. … does have hip pain that he attributes to the disk disease of his lumbar spine. There is a history of concussions. He is to undergo a fee basis colonoscopy at some point. On exam, he is healthy appearing, although a bit overweight. The temporal artery pulsations are normal. There is no nodularity in the right temporal artery. There is absent light touch sensation anterior to the right ear over the cheek area. This altered sensation extends to, but does not include, the right side of his nose. There is some tenderness of the cervical spine, but full mobility of it. He has limited range of motion of his back." HSV-1 IgG titers returned elevated (38.00) and it was thereupon concluded that there was a "Reasonable probability that his trigeminal neuropathy is 2 [secondary to] HSV 1 infection." Rash in V2 distribution suggested this might be a post-Zoster syndrome, and plans for treatment and follow-up were thereupon made.

Overall, Mr. McElhiney had a well-documented history of chronic low back and leg pain long before his Parkinson's diagnosis. By 2012, he was already using a cane due to worsening back and sacroiliac joint pain, which interfered with daily activities and mobility. Multiple interventions, including physical therapy, epidural steroid injections, sacral nerve blocks, and radiofrequency ablation, were trialed starting in 2015, with only partial or temporary relief. Despite treatment, he reported ongoing disabling pain and was unable to work, stating as early as 2015 that he was "disabled and cannot work." Clinical notes also describe balance difficulties, a fall, and progressive functional impairment, all corroborated by contemporaneous imaging findings and VA disability determinations. These longstanding musculoskeletal and neuropathic issues significantly limited his work capacity and quality of life prior to the emergence of overt Parkinsonian symptoms.

The clinical encounters that detail these findings are as follows. On 1/26/2015 Mr. McElhiney was seen in evaluation by Dr. Jenna Walters at VUMC pain management for evaluation of low back and leg pain. At that visit he stated *"that his pain began back in the 90s, and at that time he underwent 4-5 epidural steroid injections with good relief. He states he started with a few injections in a row and then spread out to*

approximately once a year…about 4 years since he had his injections…pain has slowly worsened over time and he is currently walking with a cane…denies any numbness or tingling in his legs…pain starts primarily in the low back worse on the left than the right and radiates around to his anterior thighs…pain does not go past his knee… lumbar MRI from September of 2014 which shows mild neuroforaminal stenosis at L4/5 and moderate at L5/S1…BC powder …greatly improved his pain… currently going to physical therapy. The pain score today is 6. The average pain score for the last 3 months is said to be 6." During the exam he was noted to be "alert, oriented, and appropriate; speech normal cadence; no cranial nerve deficits; walks with cane. TTP over left > right sacroiliac joint. Some left lumbar paraspinal muscle tenderness. Strength 5/5 in lower extremities. No sensory deficit to ice in lower extremities. Reflexes 2+ and symmetric. No clonus. Babinski's downgoing. FABER + bilateral, greater on left. Negative SLR bilaterally. No pain with hip internal or external rotation was noted. Assessment was consistent with sacroiliitis and he was referred for bilateral SI joint injections, Mobic and Voltaren gel, and continued PT. Of note prior XR spine from 9/10/2014 revealed mild narrowing of the L5-S1 disk space with 10 mm of retrolisthesis of L5 on S1, and slight vacuum disk at L5. SI injections were documented on 2/26/2015 and were noted to be well tolerated with no complications. Followed in 3/10/2015 where he noted that SI injections helped greatly on R but not L, and underwent L5 epidural injection on L on 3/24/2015. Also discussed at that visit was right sided facial pain. Review of systems was + for dry mouth, dry eyes, skin rash and "fingers turn white when cold."

Mr. McElhiney followed up with Dr. Niconchuk at the pain center on 5/26/2015, where it was noted that there was "no significantly noticeable relief following the injection." Pain was rated 5/10 (7/10 prior to procedure). He described a "constant 'electrical' pain…along his L paramedian lower back, with occasional radicular symptoms radiating down his lateral L thigh and into his L foot…standing or sitting in one position for too long worsens his symptoms, while performing the exercises he learned at PT alleviate his symptoms." Exam at that time was notable for "tenderness to palpation along L SI joint, decreased sensation to light tough in lateral upper thigh, lumbar facet loading left sided, and 5/5 strength throughout extremities. Plan was thereupon made for L sacrolateral branch blocks and then radiofrequency ablation if good relief, as well as trial of gabapentin." He underwent L sacrolateral branch block on 6/26/2015 which were noted to be well tolerated without complications.

Mr. McElhiney followed up with Dr. Martha Jane Smith at the Interventional Pain clinic on 7/10/2015. At that time, Mr. McElhiney's BMI was 28.4, and he was noted to have "serious difficulty walking or climbing stairs. Requires walking stick, sometimes uses cane." Pain was endorsed at 5/10 in severity. Tinnitus and hearing loss requiring use of hearing aids was documented. Underwent additional L sacroiliac branch block, which was well tolerated without complication. A procedural follow-up on 8/7/2015 recorded pain as 5/10 in severity. Pain was described to moderately interfere with daily activities. In response to "how much does your pain interfere with your ability to work?" Mr. McElhiney self-responded "I am disabled and cannot work."

In a follow-up with Dr. Smith and Dr. Walker on 12/11/2015 it was noted that he had "developed some radicular symptoms in an L5 distribution in his RLE." He underwent L L5-S3 sacrolateral RFA, which was noted to be well tolerated without complication. At 4 week interval follow-up it was recorded that "within a week, the pain abruptly increased and is now the worst it has ever been. He rates the pain as 7/10. He reports the aching and burning pain is greater on the left compared with the right and is at its worst when he sits. He describes a sharp, shooting pain that originates in his left lumbar region and shoots into his left anterior thigh to the knee. He feels he is off balance

and his reaction time has slowed. He is unsure if he is feeling progressively more weak as he is drowsy due to the medications, but he does endorse that he fell last month. He is taking mobic 15 mg Qday, gabapentin 100 mg TID, and cyclobenzaprine 10 mg TID." At that point he denied bladder and bowel changes and saddle anesthesia. A plan was then made to pursue a lumbar spine MRI. MRI L spine (interpreted by Dr. Paul Nau) on 2/3/2016 revealed L2-3 posterior annular tear without significant disc protrusion; L3-4 mild disc protrusion slightly more pronounced on the RIGHT; L4-5 posterior annular tear with mild disc protrusion paracentrally on the RIGHT mildly narrows RIGHT lateral recess zone; L5-S1 desiccation and disc narrowing with slight retrolisthesis of L5 on S1 and mild disc protrusion. No significant stenosis. At follow-up on 2/9/2016 he continued to endorse "low back pain which has become debilitating, as well as continued L sacral pain…it feels like there is a tennis ball stuck inside of there." He was "referred to an orthopedic surgeon in Dixon."

On 2/25/2016 Mr. McElhiney was seen in clinic at Dickson Medical Associates by Dr. Vera Huffnagle for back pain noted to be of moderate severity, with radiation to the left ankle, right ankle, right arm, left calf, left foot, right foot, left thigh and right thigh. It was described as "an ache, numbness, sharp and shooting." EMG was performed and revealed R L5-S1 sciatica. Examination showed wide-based gait and "stiff movements" as well as stuttering. He followed up in 3/2016 for facial pain suspected secondary to trigeminal neuralgia; it was noted that "etiology is head trauma and injury to the face…had a facial injury on right with broken nose in 1980s, in 1991 also had head injury after colliding with another player during a softball game…on Gabapentin 1200mg q day." MRI brain 3/14/2016 revealed findings suspicious for bilateral supraclinoid ICA stenosis, with remainer of intracranial arterial vasculature appearing normal. He was found to have low B12 and prediabetes. He continued to follow with Dr. Huffnagle for this condition and was placed on Trileptal which was noted to help in 2016.

VA records from 2015-2016 indicate that Mr. McElhiney continued to receive care for a range of medical issues unrelated to PD, including hematologic abnormalities, B12 deficiency, mood changes, cardiology for symptomatic palpitations, PTSD, facial pain with rash, back/hip pain, renal cyst, left hand pain, *inter alia,* over that time period.

On 3/1/2016 Mr. McElhiney was seen by Dr. Juan Dinkins of orthopedics, and underwent arthrocentesis and injection of R hip trochanteric bursa with triamcinolone acetonide for pain.

In light of ongoing back pain and neuropathic symptoms, an EMG/nerve conduction study was performed on Mr. McElhiney on 3/6/2016 and revealed findings consistent with right chronic L5-S1 radiculopathy and lower extremity demyelinating motor neuropathy, with prolonged H reflexes bilaterally, slowed conduction velocity in the right tibial motor nerve, and degenerative changes in the right tibialis anterior and medial gastrox muscle.

On 6/10/2016 a Disability Benefits Questionnaire was filled out by Daniel J. Sullivan PsyD, indicating depression and anxiety symptoms "increasing as his chronic pain from his service-connected condition increased." Occupational history was detailed as follows: "Veteran stated that he has not worked January of 2016. Veteran explained that he worked in recruiting for a trucking company, which he did since 2010. He explained that starting in 2014 he went from working full-time to working 1 day per month on average. Veteran explained that he could no longer drive because of chronic pain and the medications that he was on. Veteran reported that he owned his own construction business from 2000 to 2010. He said that the business failed because of the

recession. Veteran stated that he worked at the Belle Mead Plantation as Executive Director, which he did from 1997 to 2000, leaving due to wanting to work with the hands outside… Veteran stated that he was working in 2014. He said that his back pain became overwhelming. He said he was also suffering from Paralysis of the Fifth Cranial Nerve. He said that his right temple would swell and he was getting severe headaches leading to physical dysfunction. Veteran reported that he has bilateral leg pain from his hips to his toes, increasing over time. Veteran stated that he has several degenerating discs in his back leading to constant pain, which has been increasing over time. These issues, combined, have led to him having to drastically reduce his work and stop social functioning outside of the home." At that visit, additional symptoms were noted to include chronic sleep impairment, and mild memory loss, such as forgetting names, directions or recent events. Application for increased compensation based on unemployability was completed on 9/3/2016; on that form, in response to "what service-connected disability prevents you from securing or following any substantially gainful occupation?" Mr. McElhiney entered "lumbar disc disease, radiculopathy right lower extremity, left L5 radiculopathy. Data disability affected full-time employment was listed as 9/14/2014; date last worked full time listed as 10/30/2014; and data became too disabled to work listed as 1/10/2016. In 2013 he earned $72,000 which was the most he had earned in one year, working as a truck driver trainer. This documentation reinforces that Mr. McElhiney experienced substantial and disabling pain-related impairment independent of PD, and further supports the broader assessment that his overall disability reflects a confluence of chronic conditions. The following section further examines how these conditions evolved in parallel with and later intersected with his Parkinson's disease.

Further illustrating the extent to which Mr. McElhiney's overall function was compromised prior to the onset of overt PD symptoms, a C&P Examination conducted by Max Gunther, PhD, dated 10/3/2016 describes PTSD as a disorder that Mr. McElhiney was diagnosed with, with symptoms including depressed mood, anxiety, suspiciousness, panic attacks, chronic sleep impairment, mild memory loss, disturbances of motivation and mood, difficulty in establishing and maintaining relationships, difficulty in adapting to stressful situations, and as having met diagnostic criteria for PTSD. At that visit, Service Connection/Rated Disabilities included eczema (10%), chronic adjustment disorder (50%), intervertebral disc syndrome (20%), sciatic nerve paralysis (20%), which is mentioned twice, knee condition (10%), tinnitus (10%), neuralgia of the fifth cranial nerve (10%), paralysis of the anterior crural nerve (10%), which is mentioned twice. The note concludes that "…the veteran's PTSD would make it difficult if not impossible to participate in gainful employment due to the inability to maintain work relationships with other people based solely on the symptoms of PTSD. PTSD would be considered a change in diagnosis from chronic adjustment disorder."

Later, in 1/2017 Mr. McElhiney returned to follow-up where it was noted that he had been seen in ED for detached retina. He had been waiting on a nerve block for facial pain. He stopped Trileptal. It was noted that "neuropathy in legs worsening and…recommended to speak with neurology about this issue."

Building on the documentation of Mr. McElhiney's longstanding and multifactorial disability, a VA rating decision dated 2/3/2017 further affirmed the extent of his PD-independent impairments and their impact on employability. This rating decision detailed that evaluation of left femoral nerve and tibial nerve (claimed as left leg condition), which had been 10 percent disabling, was increased to 20 percent effective August 9, 2016; evaluation of right femoral nerve and tibial nerve (claimed as right

leg condition), which had been 10 percent disabling, was increased to 20 percent effective August 9, 2016; service connection for left external cutaneous nerve of thigh was granted with an evaluation of 0 percent effective August 9, 2016; service connection for right external cutaneous nerve of thigh was granted with an evaluation of 0 percent effective August 9, 2016; service connection for scar, left knee was granted with an evaluation of 0 percent effective August 9, 2016; entitlement to individual unemployability was granted effective August 9, 2016; evaluation of left L5 radiculopathy (previously evaluated under DC 8720), which had been 20 percent disabling, was continued; evaluation of lumbar disc disease, which had been 20 percent disabling, was continued; evaluation of radiculopathy right lower extremity, which had been 20 percent disabling, was continued; evaluation of left knee impairment with history of surgery, which had been 10 percent disabling, was continued; evaluation of tinnitus, which had been 10 percent disabling, was continued; evaluation of postherpetic neuralgia, right side of face, 5th nerve (previously rated as right 5th cranial nerve with postherpetic neuralgia (HSV) (previously rated as right temporal arteritis)), which had been 10 percent disabling, was continued; claim for an increased evaluation for adjustment disorder with anxiety and depressed mood (claimed as anxiety and depression) was deferred.

This recognition of Mr. McElhiney's unemployability and chronic pain conditions was soon followed by continued efforts to address his worsening mental health symptoms through outpatient behavioral care. On 10/17/2017, Mr. McElhiney underwent intake assessment at the Behavioral Health Interdisciplinary Program (BHIP) by Tiffinea Reid-Breaux, LCSW, referred "for the stated reason of continued outpatient psychotherapy to address depression." On symptom review it was noted that "in 2014 his neuropathy and back pain was so bad that he returned to VA for treatment…in the process 'I became overwhelmed by going from someone who has something to offer society to nothing. From no medications to having to take everything under the sun.'" At that visit PTSD was also discussed relating to military service and observed suicide of "one [of] my guys" in Puerto Rico after returning from Haiti, and "Beirut Lebanon bombings in 1983", and "friend who hung himself in Japan 1991." At that time sleep disturbance was also reported "that when he wakes up his mind begins to race, and he has a difficult time returning to sleep 3.30am most early mornings." Neuropathy was described as "herniated disk in my back" with "5-7" out of 10 pain rating in intensity, with quality described as "sharp, throbbing, shocking, nagging." At that visit he was noted to be 100% service connected for eczema (10%), fifth cranial nerve neuralgia (10%), chronic adjustment disorder (70%), sciatic nerve paralysis (20%), which is listed twice, limited flexion of knee (10%), and tinnitus (10%).

Continuing the pattern of extensive and multifactorial PD-independent impairment, Mr. McElhiney was evaluated by Pain Psychology on 6/5/2018, where a detailed review of his chronic pain history and related conditions was documented. Then, Mr. McElhiney was evaluated with Pain Psychology, where pain history was detailed, including history of pain assessment and management includes low back pain for eight years, which began during a military force march when he carried a heavy pack and squatted down, along with an injured left knee from running and force marching since 1985 (History & Physical, 9/30/97); a history of receiving injections at Premier Radiology (Primary Care Note, 7/30/10); worsening vision in the right eye and pounding right temporal headaches with a tender bulge over the right temporal artery area (Primary Care Clinic, 8/25/14); a diagnosis of chronic trigeminal neuralgia with a reasonable probability that it is related to HSV 1 infection (Rheumatology Consult Report, 10/17/14); presentation of medication options including carbamazepine, oxcarbazepine, and baclofen (Neurology E-Consult Note, 10/20/14); physical therapy for low back pain (PT Initial Outpatient Consultation, 12/30/14); a history of a successful

left L5-S3 sacroiliac branch block at Vanderbilt (Pain Clinic E-Consult Note, 7/24/15); continued radiofrequency ablation (RFA) of sacral lateral branches, meloxicam, and gabapentin, with a scheduled right L4-5, L5-S transforaminal procedure (Pain Clinic Consult Report, 11/23/15); a hematology report meeting criteria for MGUS with confirmation by bone marrow biopsy, with current management as observation only (Hematology, 6/22/16); multiple ER visits due to pain (ER Nursing Assessment Notes); a left-hinged knee brace issued by the Orthotics Lab (12/6/16) and orthopedic footwear (2/27/17); a podiatry consultation diagnosing neuropathy with a recommendation for diabetic shoes (2/3/17); a plastic surgery consultation for left ulnar joint pain and right second-digit MCP pain, with no obvious etiology found on X-ray, and the veteran declining steroid injections despite a possible early arthritis diagnosis (8/7/17); and a neurology E-Consult request for an EMG (4/26/18). Other medical conditions include a history of an acute large horseshoe/giant retinal tear with detachment involving the macula of the right eye (History & Physical, 9/16/16), repaired on 9/16/16, and cataract surgery (Pre-Op Attending Physician Note, 8/1/17). It was documented that he was considered 100% service-connected for: tinnitus (10%-SC), intervertebral disc syndrome (20%-SC), paralysis of the sciatic nerve (20%-SC), eczema (10%-SC), and paralysis of the anterior crural nerve (20%-SC); scars (0%-SC), paralysis of the external cutaneous nerve (0%-SC) on both sides, and another instance of paralysis of the anterior crural nerve (20%-SC); chronic adjustment disorder (70%-SC), limited flexion of the knee (10%-SC), an inguinal hernia (0%-SC), and neuralgia of the fifth cranial nerve (10%-SC).

Shortly thereafter, on 6/7/2018, Mr. McElhiney was evaluated by Dr. Vera Huffnagle at Dickson Medical Associates for emerging neurologic symptoms, including new-onset tremors, facial pain, toe curling, and foot cramping. He reported struggling with facial pain and toe curling, and cramping in feet. "C/o new onset tremor/shaking. Shaking noticed while pt sitting still…has been dx'd with hypotension by VA recently." It was described that "no agent orange exposure, TCE and PCE exposure at Camp LeJeune. No FH of shaking. Lived on a farm, 5 siblings." A slight change in writing was documented, as well as reduction in sense of smell. At that visit, leg pain was also explored "onset gradual, occurs constantly and stable...bilateral…aching and burning" along with "muscle spasm" noted to have "began on 12/1/2017 and generally lasts 24 hours…chronic and uncontrolled…cramping/spasm in toes constantly…has had in feet >1.5 years but more recently in toes." Tremor was noted to have been gradual in onset and occurring "intermittently" with location including right hand, head and right leg, "not controlled by voluntary effort" and "aggravated by sitting still". It was also described that "decreased sense of smell…began on 06/01/2017." Contrast enhanced MRI brain 6/2018 was described as "normal" by Dr. Huffnagle. The source images were not available for my review.

Further underscoring the progression of neurologic symptoms, a 7/17/2018 note documents an email from Mr. McElhiney to his VA primary care provider, Dr. Salloum, in which he reported seeking evaluation from Dr. Vera Huffnagle (neurology) due to concerns that could not wait on VA scheduling. Per note dated 7/17/2018 email from Mr. McElhiney to PCP Dr. Salloum, "I saw Dr. Vera Huffnagle (Neurology) with Dickson Medical Association. I had some issues that I was concerned about and couldn't wait any longer on the VA. Issues with my feet. I started having tremors on the right side of my body and decreased sense of smell. Dr. Huffnagle performed an EMG, MRI on my brain and complete blood work. I have the results from these tests and would like to get them to you…". Diagnosis of PD from 7/10/2018 appears on 01368_MCELHINEY_0000000209-10.

On 7/31/2018, Mr. McElhiney was evaluated by Recreational Therapist Shannon A. O'Rawe, further documenting the breadth of his multifactorial physical and psychological challenges. There he reported "that he has issues with both his feet where they go numb and his toes and curling. Veteran stated that he has a herniated disc and his lower back pain…. Veteran stated that his average pain level is 5/6… Veteran stated that he has depression. Veteran stated that it is like a rollercoaster and that he is more depressed during the month of October/November due to his time of service. Veteran stated that he sleeps about 2-3 hours in increments a night. Veteran stated that he has issues falling and staying asleep. Veteran stated that he has had 2 TBIs. Veteran stated that they both occurred overseas and in service time. Veteran stated that he was hit in the face hard. Veteran stated that he leans towards his right side and has vertigo issues. Veteran stated that his right temple swells up a lot and is painful. Veteran stated that this affects him along with his Parkinson's. Veteran stated that he has PTSD." A recreational therapy plan including aquatic therapy, adaptive sports and Guitars4Vets was discussed.

On 10/11/2018, Mr. McElhiney followed up with Dr. Huffnagle, reporting worsening of his right-sided tremor, as confirmed by his wife, though he himself was not significantly bothered by it. Per intake comments from those records "tremor worse – wife confirms. Pt not bothered by tremors. Temple still swells on right side of face – will get numbness and tingling, most agitated by wearing glasses. No change in symptoms in feet… frequent urination – every 2 hrs during the day and 3-4x at night…also c/o unable to use fingers on right hand – cannot button clothes." Because of this worsening, a plan was detailed by Dr. Huffnagle to attempt treatment with ropinirole, "then consider mysoline, amantadine, artane then sinemet. Will need to discuss with the VA. Vanderbilt movement disorders is another option in the future."

On 11/6/2018 Mr. McElhiney was by Dr. Lohrasbi for urinary complaints, onset 1 year prior, notable for "urinary frequency (every 2 hours), urinary hesitancy, nocturia (3 times per night), slow stream and urgency." Assessment was BPH with urinary frequency and that some of the "lower urinary tract symptoms are due to Parkinsons and some due to BPH." He was started on Flomax with plan for follow-up. On follow-up 8/2019 it was noted that he was taken off of Flomax due to syncope.

By early 2019, Mr. McElhiney was thus experiencing a constellation of motor and non-motor symptoms consistent with PD, including a resting tremor in the right hand (worsened by stress), difficulty with fine motor tasks (like buttoning clothes and brushing teeth), reduced vocal strength, smaller handwriting, and loss of smell. These symptoms were layered on top of longstanding medical issues, chronic facial and leg pain, spinal degeneration, and PTSD, contributing to significant functional impairment. The following section provides further context regarding the progression of PD symptoms, their management, and their interplay with pre-existing conditions.

On 2/5/2019, Mr. McElhiney underwent a comprehensive neurologic evaluation by Dr. Heather Koons at the Tennessee Valley VA, which captured the breadth and complexity of his symptoms:

- it was reported that "in 1/2018 he developed right hand tremors - he describes a resting predominant tremor that increases with stress. It is associated with decreased dexterity - he is having trouble with buttons, brushing his teeth. Then in 8/2018 he developed "spasms in the spine" that have lead to jerky head movements and secondary headaches. His head feels

like it wants to pull to the right. The jerky tremors increase when he looks right or left. … It improves with activity. He also reports toe curling in the mornings that does not recur with prolonged ambulation. All of these symptoms increased with anxiety. Pt describes associated micrographia and some decrementation of vocal volume when speaking - this has lead to him "not talking much." His gait feels very unsteady (x2yr) but not slow. No freezing. He reports RLE RLS sx, insomnia due to nocturia, vivid dreams and dream enactment. He reports constipation, orthostastis and incomplete bladder emptying with urinary frequency. He reports easily losing things and needing to leave keys, phone, etc in a regular location. He denies significant word finding difficulty. He lost his sense of smell -2 years ago. He does not recall any significant medication changes around time of onset. He denies any hx dopamine blocking medications. He does report recurrent head trauma with 1 associated w LOC. He reports military chemical exposure. … also been following patient for chronic facial pain (onset 1992, R eye and -V2-3, +TN type sensitivities), leg pain (severe bilateral aching and burning). Previous medications trials have included gabapentin leading to grogginess, trileptal was helpful."

- At that visit, previous tests were also reviewed including:
    - "- MRA brain 3/2016 concerning for bilateral supraclinoid ICA stenosis - MRI brain w w/o contrast 6/2018 unremarkable - MRI lumbar spine 2/2016 w L3-4 R>L mild disc progrusion; annular tears at L2-3 and L4-5 - Cervical XR 6/2018 moderate multilevel degenerative cervical spondylosis - Lumbar XR 6/2018 mild-to-moderate multilevel degenerative lumbar spondylosis - EMG 7/2018 R Sl radic, generalized sensorimotor demyelinating polyneuropathy - EMG 2/2016 R chronic L5-S1 radic, lower extremity demyelinating motor neuropathy … HgbAlc 5.6; negative thyroid Abs; B12 614, Vid D 38.6; SPEP and UPEP negative …."
    - Prior treatment course and medical history was also reviewed at that time: "- Outside neurologist trialed Vit E - Outside neurologist trialed Requip - Outside neurologist trialed Requip improved his RLS sx but not his hand - Lyrica has helped with "shocks" in feet with no change in sx 0.25mg TID which lead to severe nausea XL 2mg QHS (which he remains on) - this has or head tremors. his right face, left hand, and bilateral …
    - His past medical history was then also reviewed as including "Hyperlipidemia (SCT 55822004) Post-traumatic stress disorder (SCT 4750 Monoclonal gammopathy (SCT 109983007) Abdominal pain (SCT 21522001) Second division of fifth cranial nerve disorder (SCT 59979003) Temporal arteritis (ICD-9-CM 446.5) Meibomian gland dysfunction (ICD-9-CM 373.12) Dry eyes (ICD-9-CM 375.15) Nuclear cataract (ICD-9-CM 366.04) Disorder of refraction (ICD-9-CM 367.9) Rosacea (ICD-9-CM 695.3) Tinnitus (ICD-9-CM 388.30) Lumbago (SCT 279039007) "Peripheral neuropathy" with sx starting -5-6yrs ago --- outside EMG 7/2018 concerning for demyelinating process and Si radic --- outside EMG 2/2016 with right chronic L5-

S1 radic, LE demyelinating motor neuropathy --- outside neuro notes previously low B12, dx prediabetes ….

- At the visit, neurological exam was as follows. "Neuro: Mental status: - Attention and concentration: Normal - Orientation: Oriented to person, place, and time - Memory: Intact recent and remote memory - Language: Fluent without aphasia - Fund of knowledge: Normal Cranial nerves: - II: VFF; Fundi with sharp disc margina - III, IV, VI: EOMI - V: Right V1, 2 "numb with tingling, shocking sensation" - VII: eyebrow raise, eyelid closure, smile symm - VIII: hearing intact and symm - IX, X: palate elevation symm - XI: shoulder shurg 5/5 symm - XII: tongue midline Motor: Power is 5/5 throughout the bilateral upper and lower extremities. Jerky head tremor without null point, sensory trick; + distractable. RUE resting tremor with ossilatory movement but not more complex "pill rolling" quality but did increase with distraction. It does not entrain. Pt also noted to have what looks like right sided myoclonus with concentration. Tone is NORMAL. RAM on the right slow but not decrementing in amplidue. DTR: UE 2+, bilateral patellars 1+ but ankles 2+. Downgoing toes Sensory: intact to light touch throughout Coordination: intact FNF b/1 Gait: Casual gait with good stride length, subtle decreased RUE arm swing. Normal turing. + Postural instability with pull testing."
- Dr. Koons' assessment and plan at that visit was as follows: "64yo man with previous dx secondary PD who presents for subspecialty evaluation. While he does have resting tremor, historical bradykinesia, and typical associated features (anosmia, RBD) he lacks rigidity or bradykinesia on exam and has atypical features including a dysontic appearing head tremor and abdominal myoclonus. While this may be atypical parkinsonism related to CTE/PCE exposure, chemical exposure as suggested it is notable that his MRI brain is unremarkable without basal ganglia abnormality. There are features suggestive of functional etiology. His RLS does seem significantly better with requip, may consider checking his ferretin next visit. - Increase Requip XL from 2 to 4mg qdaily….Start Sinemet with titration initially to 25/100 1 tab TID with plans for a full levodopa trial monitoring his tremor, abdomal, and head movements- Agree with pending EMG and eval of his neuropathy- Will need to closely monitor his autonomic dysfunction- RTC 2 months [sic]".

Mr. McElhiney's autonomic symptoms persisted, and on 8/9/2019 Mr. McElhiney was evaluated by Dr. Sherwood for postural hypotension and dizziness, along with syncope (fell on carpet after getting up from watching TV). Flexeril and Flomax were stopped at that visit. ECG was normal.

On 9/3/2019 Mr. McElhiney was seen by Dr. Daniel Sherwood for preventative medicine. It was noted that he had "felt down, depressed or hopeless and has felt little interest or pleasuring in doing things." Fine motor impairment was noted, along with prolonged up and go test and risk of falls. He had fallen 2 times in the past year, along with postural dizziness. Noted to have tried salt tabs which caused reflux. On 10/2019 Mr. McElhiney followed up with Dr. Sherwood who noted that

symptoms had improved on salt tabs. He was noted to be "depressed and anxious much of the time but he does not want to take additional medication." On 11/2019, Mr. McElhiney followed up again with Dr. Sherwood for a shoulder injury after a fall, and was found to have impingement syndrome of the right shoulder for which he was prescribed a short course of Celebrex for pain, home exercises. On 1/2020 he was seen by Dr. Sherwood who noted that he had been intolerant of most recent therapy for PD (Rasagline) and had been following closely by Dr. Huffnagle. On 10/11/2019 Mr. McElhiney followed up again with Dr. Sherwood for his autonomic symptoms where it was noted that "symptoms much better on salt tablets…although he is quite dizzy and still unsteady on his feet which would be expected with his Parkinson's is no longer feeling like he is going to fall when he stands up." It was noted that a 2 week event monitor (cardiac) found PVCs. Trigeminal neuralgia and peripheral neuropathy were also addressed at this visit for which Lyrica was noted to be controlling symptoms. Exam at that point was notable for resting tremor and "typical parkinsonian gait."

On 1/2020 Mr. McElhiney was seen in clinic at Dickson Medical Associates by Dr. Vera Huffnagle who noted "no change in tremors." Was using CBD oil and "RLS not noticeable now." Noted to be "still off balance". On 7/2020 he reported to Dr. Huffnagle that his "tremors have improve lately" but "feet are still painful." Sinemet was increased. Noted to have been experiencing dizziness with tinnitus.

On 4/2/2020, Dr. Koons saw Mr. McElhiney in follow-up in neurology clinic and noted to have "some progression since last visit with increased motor symptoms, new fluctuations, and minor hallucinations." At that visit Mr. McElhiney reported "seeing movement of cats/people in corner of vision." Plan was made to increase Sinemet and Rasagiline, and "avoid DA agonists and amantadine given hallucinations."

On 4/7/2020 Mr. McElhiney was evaluated by Dr. Salloum at VA Primary Care, who noted that "tremors are a little worse when he is anxious or tired…R sided weakness/off balance persists, not really worse, walks with cane...cont to have 'fast heart beat' occ no dizziness/cp/sob/syncope as he had previously, feels sob after episodes. They happen weekly no trigger." Plan was made to obtain ziopatch and echocardiogram, and neurology follow-up for Parkinson's.

A 4/22/2021 rating decision by the VA regional office determined "[s]ervice connection for balance impairment, Parkinson's disease, is granted with an evaluation of 30 percent effective May 27, 2020; service connection for tremor, muscle rigidity, and bradykinesia of the right upper extremity, Parkinson's disease, is granted with an evaluation of 30 percent effective May 27, 2020; service connection for tremor, muscle rigidity, and bradykinesia of the left upper extremity, Parkinson's disease, is granted with an evaluation of 20 percent effective May 27, 2020; service connection for constipation, Parkinson's disease, is granted with an evaluation of 10 percent effective May 27, 2020; service connection for loss of automatic movements, facies, left, Parkinson's disease, is granted with an evaluation of 10 percent effective May 27, 2020; service connection for loss of automatic movements, facies, right, Parkinson's disease, is granted with an evaluation of 10 percent effective May 27, 2020; service connection for loss of sense of smell, Parkinson's disease, is granted with an evaluation of 10 percent effective May 27, 2020; service connection for sexual dysfunction, Parkinson's disease, is granted with an evaluation of 0 percent effective May 27, 2020; service connection for stooped posture, left, Parkinson's disease, is granted with an evaluation of 0 percent effective May 27, 2020; service connection for stooped posture, right, Parkinson's disease, is granted with an evaluation of 0 percent effective May 27, 2020; entitlement to special monthly compensation

based on loss of use of a creative organ is granted from May 27, 2020; the claim for an increased evaluation for adjustment disorder with anxiety and depressed mood (claimed as anxiety and depression) is deferred." 4/22/2021 rating decision by the VA regional office determined evaluation of urinary incontinence associated with Parkinson's disease was increased to 10 percent from 0 percent disabling, effective May 27, 2020."

On 7/12/2022 Mr. McElhiney was seen in clinic at Dickson Medical Associates by Dr. Vera Huffnagle when it was noted that he continued on Sinemet per Vanderbilt movement disorders and vitamin E. He noted "worsening of tremors and cold feet." Per that note "there has been rediscussion at Vanderbilt movement disorder with Dr. Koons that he could be considered for DBS" or possible levodopa infusion pump. An extended release carbidopa/levodopa was added at nighttime for complaints of significant sweating at night.

Bilateral lower extremity ultrasound was performed on 8/10/2022 due to sensory changes in legs, without evidence of arterial insufficiency.

On 5/10/2023 Mr. McElhiney was seen in follow-up with Dr. Koons at the VA Neurology clinic, where it was noted that tremor "mildly persists with highly variable severity (triggered by fatigue/big emotions)…dexterity has decline…but this is improved with current therapy." Other symptoms were reviewed including bradykinesia, rigidity, hypophonia, "subjective imbalance with recent increase in tripping…~1 year history of what sounds like propgressive [sic] foot drop…uses a cane." No hallucinations were noted. Mood noted to be. "better with improved cognition and sleep." Also noted were significant "sleep fragmentation waking multiple times per night which he attributes to nocturia – this has improved with recent increased exercise and probiotic-associated improved constipation. Melatonin 3mg qHS has been somewhat helpful w/o excess sedation." Also reviewed were orthostasis which had led to a syncopal event during COVID infection 2022/2023 and improved with stopping Flomax and requip and adding sodium supplementation and midodrine. It was reported that SLP evaluated his dysphagia, which was mild and "feeling less symptomatic with increased fluids, smaller bites." Levodopa was titrated to TID and "helped improve his tremors and fluctuations." No dyskinesias were noted. On neurological examination, he was noted to be alert and oriented, with good attention and concentration, intact recent and remote memory, speech fluent without aphasia or dysarthria. Right upper extremity demonstrated a resting tremor with bradykinesia and rigidity. Right foot dorsiflexion was noted to be weak (4-/5), and gait was notable for "some sensory ataxia with turns more impacted by imbalance than en block turning." Plan was outlined to continue Sinemet, exercise, probiotic, Mediterranean diet, request EMG." It was also detailed that "Advanced therapies such as DBS, dopa pump, clinical trials, etc., briefly discussed today. I think he is doing too well at this point to justify risks of surgeries."

On 7/23/2023 Mr. McElhiney was seen in clinic at Dickson Medical Associates by Dr. Huffnagle "for 1 year follow-up…hospital stay in December due to hypotension related to medication…pt waiting for dopamine pump. Sees Dr. Koons at Vanderbilt." It was noted that medications had been titrated, and probiotics had been helpful, along with Mediterranean diet and exercise. It was described that the "blood pressure problems supervene and has had difficulty getting to physical therapy." He was taking salt tabs and using stationary bike on a regular basis. Other medical problems were reviewed including facial pain (onset 1992), leg pain with nocturnal wakening, muscle spasm (onset 2017), tremor with gradual onset particularly affecting R hand, head and R leg, not controlled by voluntary effort, and decreased sense of smell noticed since June 2017 ("can only smell

loud scents, i.e., pine sol, gas.") Has affected sense of taste. Exam was notable for wide based, Parkinsonian gait, stiff movements, pill rolling tremor of right hand, pressured speech.

On 2/2024 Mr. McElhiney was seen in follow-up with Dr. Sherwood, at which point sleep disorder was discussed, along with urinary frequency, trigeminal neuralgia, and PD with reported continued autonomic symptoms, REM sleep behavior disorder, motor symptoms, tiredness, and nausea.

During 3/11/2024 visit with Dr. Sherwood, it was noted that Mr. McElhiney "spent 6 years at Camp Lejeune between 1970s and up to 1996." On 3/24/2024 Mr. McElhiney was seen in clinic at Dickson Medical Associates by Dr. Huffnagle, who noted that "due to put a claim in for Camp Lejeune water – would like to discuss about this." ROS on that day was positive for blurred vision, double vision, lightheadedness, tingling, tremors, and weakness. Physical exam was notable for pill rolling tremor in the right hand, normal insight, judgement, attention span and concentration.

On 4/17/2024 Mr. McElhiney was seen by psychiatric mental health NP, where he was assessed to have depression and chronic PTSD; he had increased citalopram to 20mg po daily for his depression "and feels it is effective." Sleep Evaluation Clinic Consult was performed on 4/29/2024, due to insomnia and "drenching night sweats," as well as snoring, daytime fatigue, nocturia, moving in sleep with kicking, episodes of sleepwalking, calling out during sleep. Plan for home sleep study was made.

In the April 11, 2024 video deposition of Mr. McElhiney, he described the course and onset of PD symptoms as follows: "At that time in 2017, I was – I couldn't – I was getting to where – before the tremors showed up in my head and hand, I can't pick up – I noticed I couldn't pick up silverware with my right hand. I couldn't really button my shirt. Those kind of things. I'd have to take my left hand and push like a fork to my right hand so I could grip it. And as time progressed with my right hand, the tremor showed up and I couldn't – I couldn't cut my food up, and I couldn't get the food on my forks or spoon. And my coffee cup, I couldn't really grip that. So the grip started leaving, I guess, basically a year before the tremor showed up. And, of course, my speech was before that. And so all from 2017 is when everything other than the tremors really reared its ugly head, as far as the Parkinson's goes… The emotional distress is the mood swings that I go through. Anxiety one time. Heavy depression the next time. When I wake up in the morning, my wife don't know who is really going to wake up. Is it going to be a depressed Gary, or is it going to be high-anxiety Gary? My life is a roller coaster, and it's very hard for my wife to deal with it because of the fact of how lack of sleep affects me. It's just having to take medications four times a day. It really – if – I can't go nowhere. I'm no longer driving. I surrender that at the end of this year, whenever I passed out at the restaurant. So if I do go somewhere, my wife has to take me. And if someone really wants me to go have a cup of coffee with them or something, my wife hits the panic mode simply because she don't know how I'm going to get home. If – well, she knows the individual will bring me back home, but she don't know if I'm going to come home about ready to pass out, which happened once. So it's really emotional. It has affected my wife and I so bad that I pretty much am homebound. If I do want to go somewhere, my wife takes me. No restaurants. That's out now. So I'm sort of trapped in a cave. And like I said, I – I pretty much feel like I live in an empty shell of a body. It's hard to explain, so – but yeah, emotionally wise, it's horrible."

In the deposition, he also described features of his chronic pain: "The back pain, it was – this back pain and the joint pain, of all the things we've been talking about so far, has been – it's sort of hard to explain pain. It's been just zeroed in a certain location on my back. But in 2014, this – it's a

different pain. It's a different bone pain. The joint pain. It wasn't the typical back pain that I was used to dealing with when I was in service and then when I'd got out. This wasn't my typical back sprain where I picked up something wrong or I twisted wrong or I had a disc. This wasn't that type of pain. It's so hard to explain this, but the pain that was actually starting to go down my legs, I was feeling it in my upper extremities, as well, but it was getting worse in the back. It's just – the pain that's there, it's two different types of pain. It's just so hard to explain. The pain that I was used to dealing with was just in the back area and then, because it was in the back area, I could feel it, you know, going down my leg a little bit. But this was totally different where I was having – in my left side, it felt like there was a softball right there on my left buttocks. And then right underneath my thighs it would feel like – it – I just had like tennis balls in those areas that I was sitting on. This was just a different nerve pain. And the bone pain, it was excruciating, and it was nothing compared to what I dealt with throughout my career from the mid-'80s until the '90s when I went driving. It was altogether a different pain, but it was also affecting my upper extremities, as well."

Mr. McElhiney was also followed with the VA Neurology Clinic, including with Dr. Heather Koons. Per a note dated 5/1/2024, onset of cardinal motor features was in 2014, with right greater than left sided tremor, which started after bradykinesia and rigidity. Severity was noted to be highly variable, triggered by fatigue and emotions. In addition to right greater than left bradykinesia and tremor, additional symptoms were noted to include hypophonia and decline in dexterity. For example, Dr. Koons noted Mr. McElhiney to have trouble picking up silverware, doing buttons, spilling things, but "this improved with current therapy." Additionally commented upon were subjective imbalance, mild concerns with word finding difficulties, mood "better with improved cognition and sleep; on citalopram." Insomnia with sleep fragmentation with some REM-sleep behavioral disorder symptoms as well with a 2023 incident where he woke up with a black eye were noted. Some of these sleep symptoms were noted to be improved with addition of entacapone and melatonin. Additionally, symptoms of dysautonomia were noted including orthostasis and syncopal events, that "improved with stopping Flomax, requip and adding sodium supp. He is currently on midodrine 2.5mg TID although he says his is "always dizzy." Constipation was noted to be "much better with current probiotics and Mediterranean diet." He was noted to have some "dysphagia with food getting "stuck" a few times a month. SLP reported his dysphagia to be mild…feeling less symptomatic with increased fluids, smaller bites." Carbidopa-levodopa were titrated, along with addition of entacapone. No dyskinesias were noted. Fluctuations noted to be improved. Plan included continuing Sinemet, entacapone, consideration of advanced therapies, increase of midodrine for dysautonomia, increase of melatonin for insomnia/RBD, and plan for follow-up.

In the deposition of VA neurologist Dr. Koons, when asked "do you have an opinion as to what caused Mr. McElhiney's Parkinson's?" the response was "I do not." When asked about risk factors Dr. Koon noted that "he grew up on a farm and had some other potential toxin exposures."

In the deposition of neurologist Dr. Huffnagle, when asked "is the precise cause of Parkinson's generally unknown?", Dr. Huffnagle responded "Yes." When asked what the risk factors for PD are, Dr. Huffnagle answered "age, environmental factors, genetic factors are risk factors. Head injury is a risk factor. Exposure to certain, as we said, environmental factors."

More recently, on 1/14/2025, at Vanderbilt University Medical Center, Mr. McElhiney underwent implantation of bilateral deep brain stimulation (DBS) electrodes (Medtronic system Percept PC system) into subthalamic nuclei, and on 1/21/25, underwent implantation of the internal pulse generator with connection to the 2 electrode arrays, without complications, by neurosurgeon Dr.

Sarah Bick. He underwent intraoperative DBS cortical and subcortical mapping, led by Dr. Heston Arnold, that indicated a good response; it was noted intraoperatively that Mr. McElhiney "did not have significant rigidity or bradykinesia to assess efficacy, so resting tremor was assessed for efficacy… Efficacy marked by 1st, 2nd, 3rd and 4th quartile improvement of contralateral rest tremor … There was at least 3rd quartile improvement in contralateral rest tremor". He has experienced substantial symptom improvements since implantation and has been able to drastically reduce his levodopa-carbidopa requirement. He continues to undergo optimization/titration of stimulation parameters with the team at VUMC.

7. IME

On March 26, 2025, I performed an IME of Mr. McElhiney via a secure videoconferencing platform. During my interview with Mr. McElhiney during the IME, he stated that he was born in Nashville, Tennessee, and has four siblings. He is right-handed and attended elementary school in Fairview, Tennessee. As a child, he lived on two farms: the first was a 125-acre pig farm, and the second was a 63-acre show-horse farm. The family maintained a garden, growing tomatoes, beans, corn, and potatoes, and relied on well water. They raised their own pork and, as he put it, "ate what we planted." At age 17, Mr. McElhiney enlisted in the Marine Corps. During his military career, Mr. McElhiney recalled that in 1986 he began experiencing right knee pain, which was successfully treated at an Air Force base. By 1987–1988, his left knee was "giving me a lot of trouble," exacerbated by frequent physical training (running, push-ups, sit-ups three times a week). On Christmas Eve 1987, he intervened in a dispute between Marines and Japanese locals, "took a punch in the face," and broke his nose, and he did not recall losing consciousness. Around that time, while returning to Camp Lejeune, he served as a battalion maintenance chief responsible for equipment repair, including "pulling engines out of trucks," lifting brake pads, cleaning parts, and changing fuel filters with rubber gloves. He developed a "double hernia from pulling an engine," which required surgery. He also described a longstanding history of back pain that began in 1988, with pain radiating "down through the hip portion and down through the leg," sometimes accompanied by tingling sensations. In 1989, while stationed in Japan, he collided with a softball player, broke his wrist, felt "dizzy," but returned to work after a brief medical evaluation. In 1993, Mr. McElhiney was at Camp Lejeune (2nd Maintenance Battalion) rebuilding vehicle components, including engines, transmissions, axles, later transferring to MTM Company for "component replacement," and then deploying aboard ship to Haiti in 1994 for four to five months as senior enlisted for the Combat Service Support Detachment. He vividly recalled a traumatic event aboard ship: a young Marine committed suicide with an M16. This incident profoundly influenced his decision to retire in 1995, as he "didn't want to see something like that again." After retirement, he worked briefly as a maintenance supervisor, then returned to Fairview, Tennessee, to run a home remodeling business. He obtained an associate's degree in construction technology and remodeled hotels until around 2007–2008. Throughout this period, he experienced intermittent pain flare-ups and eventually sought care in the VA system. After approximately two years without employment, he obtained a commercial driver's license in 2010 and began working as a long-haul truck driver, typically traveling "2,500–3,500 miles a week" all over the United States. Around 2014, he developed severe "bone pain and neuropathy," describing numbness, tingling, burning sensations, and loss of grip strength in his hands, particularly his right index finger. These symptoms interfered with truck driving, and he stated, "I knew then I couldn't do what I was doing." He reduced his driving duties and worked part-time in truck driving schools, hiring future drivers, but that position eventually ended. He also started receiving injections for back pain. In 2016, he was diagnosed with B12 deficiency and began B12 injections. Between 2016 and 2017, he noticed new symptoms including constipation, frequent

urination, sexual dysfunction, loss of smell, PVCs, low blood pressure, balance problems, and tremors. He was subsequently diagnosed with Parkinson's disease in 2018. He has continued to experience "bone pain," describing it as "like walking barefooted over gravel." He wears orthopedic shoes, which help, and rates the average intensity of his pain at 5–6 out of 10, primarily in the mid-to-low back. Flare-ups sometimes coincide with toe curling and foot cramps that mainly occur when lying down and inactive; he denies cramping in his hands or other body areas. He reports persistent numbness and tingling in his hands and feet, more on the right side than the left. He does not recall having a skin biopsy, DaT Scan, or genetic testing for PD. He takes midodrine for low blood pressure, which he notes has been beneficial, and has used nasal CPAP since it was prescribed six months ago by the VA after being diagnosed with obstructive sleep apnea, noting many years of snoring.

Three weeks prior to this IME, Mr. McElhiney underwent deep brain stimulation (DBS) for Parkinson's and is "pleased with it," noting improved stiffness and tremors. He has substantially reduced his carbidopa-levodopa requirement since DBS has been active. Despite improvement in stiffness and tremors, he continues to have foot pain when walking, requires a cane for balance, and wears a right-foot brace for foot drop, which began in 2023.

Mr. McElhiney stated that he continues to experience "bone pain", numbness and tingling particularly in feet and hands ("like walking barefooted over gravel"), balance issues (requiring a cane, orthopedic shoes, and a foot-drop brace), sleep disturbances (including "punches and kicks at night"), intermittent memory lapses, visual disturbances ("seeing shadows"), and tinnitus since retirement. The "bone pain" along with numbness and tingling remains unchanged by PD medications or DBS. He remains independent in most activities of daily living but needs assistance with buttons and some home maintenance tasks.

Physical and Neurological Examination

Mr. McElhiney was in no acute distress, breathing comfortably on room air, and presented with a calm, cooperative demeanor. His mental status was alert; eye contact was good, affect was euthymic, and there were no signs of hallucinations or delusions. His thought process was linear, with normal psychomotor speed and intact executive functions. Serial 7 subtractions from 100 through 65 were performed correctly. Phonemic fluency was intact. He accurately performed and continued Luria hand sequences. Speech was fluent, with normal rate, syntax, grammar, and prosody; there were no issues with word retrieval or paraphasias, and repetition was intact. He was oriented to year, month, date, day, and place, and demonstrated good recall of recent autobiographical and current events. On clock drawing, the circle, numbers, and hand placement were all correct. He also correctly completed tests of transitive and intransitive praxis and successfully mimicked interlocking finger postures.

Cranial nerve examination showed intact visual fields to finger count and no evidence of ptosis. Extraocular movements appeared intact without nystagmus or saccadic intrusion. Facial movement was symmetric, and he had symmetric forehead wrinkling, blinking, and smiling. There was mild hypomimia. He reported hypoesthesia to light touch over the right temple. The tongue protruded midline. No dysarthria or dysphonia was evident over the course of the IME. Hearing was grossly functional for the videoconference, though he experiences tinnitus and uses hearing aids.

Shoulder shrugs were normal bilaterally. Muscle bulk appeared normal in the arms. He displayed a tremor with resting, postural, and kinetic components, more pronounced on the right side, with some entrainment, as well as slowed finger and foot tapping on the right more than the left. There was no pronator drift or orbiting, and he had at least antigravity strength throughout. There was no clearly observed micrographia, though he reported his handwriting is less legible than in the past. Finger-to-nose testing was normal, and there was no truncal ataxia. He demonstrated a stable gait without using a cane, though arm swing was reduced on the right more than the left, and turns were normal.

8. Prior Medical and Surgical History

Review of Mr. McElhiney's medical history reveals the following past medical and surgical issues.

Dysesthesia
Lumbosacral radiculopathy (EMG with R chronic L5-S1 radiculopathy and lower extremity demyelinating motor neuropathy 2-2016)
Multiple myeloma s/p bone marrow biopsy
Trigeminal neuralgia
Arthroscopic knee surgery (1987)
Hernia repairs (1994; 2001)
Gastroesophageal Reflux Disease (GERD)
Prediabetes
B12 deficiency
Cataract s/p correction (8/1/2017)
Temporal arteritis s/p prednisone
Bladder disorder
Lumbar stenosis
Spondylothisthesis
Neuropathy of left hand
Arthralgia of multiple joints
Former smoker
Postural dizziness
Seborrheic dermatitis
Chronic insomnia
Hyperlipidemia
Ventricular premature complex
Adjustment disorder with anxiety and depressed mood
PTSD
Obstructive sleep apnea (OSA)
Anxiety
Depression
Low testosterone
Myelogram (1990s)
Epidural injections (~5)
Tinnitus and hearing aids
Broken nose in 1980s
Head injury in 1991 after colliding with another player during softball game
Acquired R foot drop

Benign Prostatic Hyperplasia (BPH)
Herpes zoster without complication
Raynaud's phenomenon
Rosacea
Eczema

Of these conditions, the following have been described in the medical literature as PD risk factors:

PTSD, [50-52] head injuries, [40,41] GERD,[53] seborrheic dermatitis,[70] herpes zoster,[45] rosacea,[71] hearing loss,[72] anxiety,[73,74] depression,[75] prediabetes,[76] B12 deficiency,[77,78] eczema,[79] sleep apnea.[80-82]

9. Family History

Review of Mr. McElhiney's medical records reveals that there is no reported family history of PD or other neurological conditions in the family, apart from stroke in Mr. McElhiney's mother.

10. Medications

Per available notes, medications included but were not necessarily limited to B12, citalopram, artificial tears, carbidopa-levodopa, sodium chloride tablet, probiotic, melatonin, Vitamin E.

11. Social History

Review of Mr. McElhiney's medical history reveals the following social history:

Associate degree in Applied Science, Austin Peavy University, 2000
Married. 1 son, 4 daughters. 12 grandchildren.
~2 cups coffee per day
Served in Marines for 24 years with honorable discharge
Previously worked as mechanic (including in military), as truck driver, and doing home repairs.
Prior regular alcohol use

12. Allergies

Rasagiline (malaise)
Mesylate

13. Assessment

Mr. Gary L. McElhiney is a 70-year-old right-handed male, raised in Fairview, TN, 4th born with 4 brothers and 1 sister, who grew up on a farm, and served in the Marine Corps from April 4, 1972 to September 30, 1995, with a complex medical history including chronic lumbosacral radiculopathy (R chronic L5-S1 radiculopathy with lower extremity demyelinating motor neuropathy); lumbar stenosis with spondylolisthesis; trigeminal neuralgia; acquired right foot drop; multiple myeloma (s/p bone marrow biopsy); adjustment disorder with anxiety and depressed mood; PTSD; chronic insomnia; tinnitus with hearing loss; GERD; BPH; postural dizziness and autonomic dysfunction; bladder disorder; prediabetes; low B12; Raynaud's phenomenon; dysesthesia; polyarticular arthralgia; eczema (atopic dermatitis), seborrheic dermatitis and rosacea; hyperlipidemia; ventricular premature

complexes; herpes zoster; trigeminal neuralgia; arthroscopic knee surgery (1987) and bilateral inguinal hernia repairs (1994, 2001); prior traumatic head injuries (including sports-related head injury in 1991), broken nose (1980s), and multiple epidural steroid injections (~5) for chronic musculoskeletal/back pain.

In late 2010s Mr. McElhiney sought treatment for neuromotor symptoms that ultimately led to a diagnosis of PD in 2018. As discussed in prior sections, PD is a neurodegenerative disorder characterized by dopamine-producing neuron loss in the substantia nigra, resulting in motor features (e.g., tremor, rigidity, bradykinesia, postural instability) and a range of non-motor manifestations (e.g., autonomic dysfunction, sleep disturbances, mood changes).

Onset and Progression of PD

Review of the records indicates that Mr. McElhiney initially experienced subtle motor changes and hyposmia prior to overt tremors in 2017-2018. This gradually progressed to more pronounced bradykinesia, rigidity, and other non-motor features. Neurologists, including Dr. Vera Huffnagle (private practice) and Dr. Heather Koons (VA), have confirmed the diagnosis – beginning with Dr. Huffnagle in July 2018 – and he has been treated with standard PD therapies, most notably carbidopa-levodopa, along with adjunctive agents targeting mood, sleep, pain, and autonomic symptoms, and more recently with deep brain stimulation (DBS). Mr. McElhiney's non-motor PD symptoms have included REM-sleep disorder behaviors, autonomic dysfunction, hyposmia, constipation, syncope, and more recently, cognitive changes including intermittent visual hallucinations.

Etiology and Risk Factors

PD is most frequently idiopathic, meaning no singular cause is definitively identified. Commonly cited risk factors include age, possible genetic predisposition, pesticide exposure, lifestyle factors, certain infections and autoimmune conditions, and a history of head injury. In Mr. McElhiney's case, potential risk factors include repeated head injuries,[40,41] PTSD, [50-52] GERD,[53] seborrheic dermatitis,[70] herpes zoster,[45] rosacea,[71] hearing loss,[72] anxiety,[73,74] depression,[75] prediabetes,[76] B12 deficiency,[77,78] male sex,[83] eczema,[79] sleep apnea,[80-82] advancing age,[84] potential exposure to solvents over years of machine/engine mechanics work,[85] having grown up on a farm (possible pesticide exposure),[59,86-88] and sedentary lifestyle.[89,90] While each of these factors could, in theory, incrementally contribute to neurodegenerative risk, no single factor can be definitively pinpointed as causative under the current state of medical knowledge. Even if Mr. McElhiney had not been exposed to TCE, it is my opinion, within a reasonable degree of medical certainty, that Mr. McElhiney still could have developed PD. Mr. McElhiney's Parkinson's disease should be regarded as idiopathic, potentially arising from multifactorial risk factors rather than from a single, clearly defined cause.

Functional Limitations and Disability

Of note, Mr. McElhiney's quality of life and work capacity have been significantly impacted by a confluence of conditions other than PD. (Please see section beginning on page 16 for a more detailed review of the relevant records, or the notes from the 2/5/2019 evaluation by Dr. Heather Koons at the Tennessee Valley VA, which captured the breadth and complexity of his symptoms.) Notably, Mr. McElhiney had decades of substantial back and lower-extremity pain issues (and associated workplace limitations), as well as PTSD, anxiety and depression (for which he sought

mental health care at the VA) well before the overt onset of PD symptoms. I concur with the Plaintiff's expert, Dr. Barbano, in the observation on page 23 of his report that "*Mr. McElhiney has other comorbidities that clearly affected his gait, starting with his long-standing lumbar spine orthopedic issues from the 1990s, his neuropathy, and possibly from Vitamin B12 deficiency*." While I also agree with Dr. Barbano's assertion that anxiety and depression can, in some cases, precede or accompany the onset of Parkinson's disease, it is important to emphasize that in Mr. McElhiney's case, multiple VA mental health evaluations indicate that his anxiety and depression escalated in parallel with his chronic pain (including back pain) and related functional limitations (which were unrelated to PD), and mental health issues were also related to PTSD from occurrences in the United States Marine Corps. This pattern suggests that his mood symptoms were more directly attributable to the cumulative burden of non-PD related physical disability, rather than definitively serving as early non-motor manifestations of Parkinson's disease. Mr. McElhiney's chronic lower back pain with radiculopathy and multiple nerve involvements, and other conditions, contributed to limitations in his employability and daily functioning for many years prior to clear onset of PD symptoms; these findings are buttressed by Mr. McElhiney's 100% disability rating by the VA prior to PD diagnosis, and departure from the workforce due to factors unrelated to PD (the reason for which was described in disability-related documentation as lumbar disc disease, left L5 radiculopathy, conditions entirely unrelated to PD). These concurrent disabilities and chronic conditions preceded and now coexist with his PD, substantially affecting his overall clinical picture and long-term prognosis.

Despite these significant medical complexities, Mr. McElhiney appears to be receiving coordinated, multidisciplinary care involving neurology, pain management, and mental health services. Such collaboration, along with Mr. McElhiney's commitment and adherence to recommended treatment plan (including PT and vocal exercises, which have been inconsistent), is crucial for addressing both his Parkinson's disease and the range of comorbid conditions impacting his overall prognosis and quality of life.

14. Conclusions

Based on my comprehensive review of the medical records, deposition transcripts, and other records, along with my analysis of the IME I conducted with Mr. McElhiney, I conclude the following within a reasonable degree of medical certainty:

1. Mr. McElhiney has a well-established diagnosis of PD, supported by comprehensive neurologic assessments, and characterized by progressively worsening motor features (tremor, rigidity, bradykinesia) and non-motor features (sleep disorders, autonomic dysfunction, mood changes) since at least 2018.

2. There is insufficient evidence to conclude to a reasonable degree of medical certainty that Mr. McElhiney's Parkinson's disease was caused by exposure to contaminated water at Camp Lejeune. My opinions regarding the Mr. McElhiney's exposure history relied on a review of toxicological evidence of general causation by Dr. Goodman and exposure calculations/risk assessment reports of Drs. LaKind and Bailey respectively. Other causes must be considered in this analysis.

3. Mr. McElhiney's Parkinson's disease should be regarded as idiopathic, potentially arising from multifactorial risk factors rather than from a single, clearly defined cause. Potential risk

factors in Mr. McElhiney's case include repeated head injuries,[40,41] PTSD, [50-52] GERD,[53] seborrheic dermatitis,[70] herpes zoster,[45] rosacea,[71] hearing loss,[72] anxiety,[73,74] depression,[75] prediabetes,[76] B12 deficiency,[77,78] male sex,[83] advancing age,[84] eczema,[79] sleep apnea,[80-82] potential exposure to solvents over years of machine/engine mechanics work,[85] having grown up on a farm (possible pesticide exposure),[59,86-88] and sedentary lifestyle.[89,90] Of these, advancing age is likely the biggest risk factor (PD is rare in individuals under age 50, with sharp increase in incidence seen after age 60,[56] and correspondingly with a mean age of diagnosis in the early to mid 60s, consistent with Mr. McElhiney's presentation); [57,84] while the others have been associated with increased risk in various contexts, current medical evidence does not allow for precise weighting or ranking of these risk factors individually or in combination in any given patient.

4. Mr. McElhiney's overall disability is the result of a confluence of conditions, including chronic lumbar disc disease with radiculopathy, right femoral nerve and tibial nerve condition, left knee impairment with history of surgery, tinnitus, and postherpetic neuralgia affecting the right side of the face. These longstanding medical issues, described in greater detail in the preceding record review, were significant enough to affect his activities of daily living and occupational potential prior to the overt onset of PD. These PD-independent factors continue to affect Mr. McElhiney's daily activities and continue to contribute to his discomfort and functional limitations.
    a. This is conclusion is supported by the following facts:
        i. Application for increased compensation based on unemployability was completed on 9/3/2016; on that form, in response to "what service-connected disability prevents you from securing or following any substantially gainful occupation?" it was entered "lumbar disc disease, radiculopathy right lower extremity, left L5 radiculopathy." Data disability affected full-time employment was listed as 9/14/2014; date last worked full time listed as 10/30/2014; and became too disabled to work listed as 1/10/2016— all prior to overt onset of PD symptoms.
        ii. Rating decision 2/3/2017 from VA detailed that evaluation of left femoral nerve and tibial nerve (claimed as left leg condition), which had been 10 percent disabling, was increased to 20 percent effective August 9, 2016; evaluation of right femoral nerve and tibial nerve (claimed as right leg condition), which had been 10 percent disabling, was increased to 20 percent effective August 9, 2016; service connection for left external cutaneous nerve of thigh was granted with an evaluation of 0 percent effective August 9, 2016; entitlement to individual unemployability was granted effective August 9, 2016; evaluation of left L5 radiculopathy (previously evaluated under DC 8720), which had been 20 percent disabling, was continued; evaluation of lumbar disc disease, which had been 20 percent disabling, was continued; evaluation of radiculopathy right lower extremity, which had been 20 percent disabling, was continued; evaluation of left knee impairment with history of surgery, which had been 10 percent disabling, was continued; evaluation of tinnitus, which had been 10 percent disabling, was continued; evaluation of postherpetic neuralgia, right side of face, 5th nerve (previously rated as right 5th cranial nerve with postherpetic neuralgia (HSV) (previously rated as right temporal arteritis)), which had been 10 percent disabling, was continued;

claim for an increased evaluation for adjustment disorder with anxiety and depressed mood (claimed as anxiety and depression) was deferred.

5. Symptomatic management with pharmacotherapy, physical therapy, speech therapy, mental health support, and advanced interventions (e.g., device-assisted therapies such as DBS, which Mr. McElhiney is now experiencing significant benefits from since undergoing DBS implantation in 2025) can optimize function and quality of life for Mr. McElhiney. Mr. McElhiney appears to be under competent, multidisciplinary clinical management, which is appropriate given the complexity of his medical and mental health needs; adherence to the care plan recommended by clinicians is also necessary.

6. Ongoing specialized neurologic care, coupled with targeted interventions for chronic pain, mental health, and autonomic regulation, as well as close monitoring and management of comorbid conditions will remain paramount to managing Mr. McElhiney's complex medical presentation.

7. Parkinson's disease is a progressive and complex disorder that requires specialized, multidisciplinary care, which Mr. McElhiney appears to be receiving by a competent and caring team. Advances in treatment options continue to evolve, offering opportunities to optimize function and quality of life (with some studies notably demonstrating improvements in quality of life with DBS).[91-94]

Comments on the Expert Report of Dr. Barbano

I agree with Dr. Barbano's conclusion that Mr. McElhiney has Parkinson's disease. I also concur with his assessment that "there are other potential causes for his foot pains, such as his neuropathy and lumbar radiculopathy." These conditions are well-documented in Mr. McElhiney's medical history and are common causes of toe dystonia and foot cramping, making it difficult to conclude within a reasonable degree of medical certainty that these particular manifestations are attributable to PD.[95-98] Regarding etiology, Dr. Barbano remarks that "in conducting my differential diagnosis, I have also considered other possible causes of Mr. McElhiney's Parkinson's disease. The potential causes I considered are necessarily limited to the possible causes to which Mr. McElhiney was exposed given his work and life history. The other factors that I considered were: (1) Head Trauma; (2) Genetics/Family History; and (3) exposure to other neurotoxins known to cause Parkinson's disease." Regarding head trauma, Dr. Barbano opines that "[w]hile there is an association between head trauma and Parkinson's disease, in my opinion Mr. McElhiney has not had the significant head trauma often considered as a risk factor." It is important to note here that even mild head injuries have been shown to increase PD risk[41,99-101] and may have contributed as a significant risk factor in Mr. McElhiney's case.

I agree with Dr. Barbano that there is no compelling evidence that family history played a significant role. Although various factors may increase the likelihood of PD, no single factor categorically guarantees its onset; many people with known risk factors never develop PD, while some without any known risk factors do. Most cases are idiopathic with no clear cause is identified and even when a specific cause is found, presentations vary widely, reflecting PD's multifactorial and heterogeneous nature. Importantly, risk factors do not necessarily constitute mechanisms of causation. They emerge from population-level associations and do not singularly drive disease processes, known to be multifactorial.[61,62] For a more extensive discussion of PD causation, I refer to Dr. Goodman's thorough report and to the discussion above starting on page 5.

Based on the detailed analysis above, I diverge from Dr. Barbano's conclusion in that his attribution of causation to TCE exposure appears to omit a comprehensive evaluation of the broader range of potential risk factors present in Mr. McElhiney's case, including repeated head injuries,[40,41] PTSD, [50-52] GERD,[53] seborrheic dermatitis,[70] herpes zoster,[45] rosacea,[71] hearing loss,[72] anxiety,[73,74] depression,[75] prediabetes,[76] B12 deficiency,[77,78] male sex,[83] advancing age,[84] potential exposure to solvents over years of machine/engine mechanics work,[85] eczema,[79] sleep apnea,[80-82] having grown up on a farm (possible pesticide exposure),[59,86-88] and sedentary lifestyle.[89,90] each of which individually or in combination may serve as a contributor to PD risk. Given the current state of medical knowledge and the multifactorial nature of PD, I thus find that there is insufficient evidence to conclude within a reasonable degree of medical certainty that TCE exposure caused Mr. McElhiney's PD. I likewise cannot conclude within a reasonable degree that Mr. McElhiney would not have developed PD if he were not exposed to TCE, especially in light of his numerous risk factors. While one cannot know the counterfactual, it is essential to consider the full spectrum of Mr. McElhiney's individualized risk factors rather than attributing causation to a single exposure, especially in someone with such a complex and multifactorial medical history.[6,102]

All of the above opinions are offered within a reasonable degree of medical certainty. I reserve the right to modify my opinions should additional relevant information become available in the future.

Dr. Michael Young, MD

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